

ON A SECOND COLLECTION OF REPTILES AND AMPHIBIANS
TAKEN IN TANGANYIKA TERRITORY BY C. J. P. IONIDES, Esq.

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INTRODUCTION

When, four years ago, I published a report (1951a, pp. 177-204) on material taken by Mr. Ionides during the years 1947-1949, I remarked that, judging by the number of new fossorial species he had discovered, southeast Tanganyika was herpetologically the least known section of the Territory. The present paper deals with 1563 specimens, chiefly collected during 1950-1952, and submitted to me for study. As a result of Ionides' industry I think it might be fairly said that herpetologically the Southern Province is now among the best known areas of the country.

With characteristic generosity Mr. Ionides has donated some of this material to the British Museum, over 500 specimens to the Coryndon Memorial Museum, Nairobi, and the remainder to the Museum of Comparative Zoology at Harvard University. In the following pages these last are referred to by the letters M.C.Z. followed by their registration numbers which, of course, do not necessarily correspond to the total of any particular series as the balance has been sent to Nairobi. In cases where all of a series have gone to Nairobi, one or more of Ionides' field numbers, preceded by the letter "P", has been cited in order to identify it. For, with few exceptions, Ionides added greatly to the value of the collection by carefully tagging each individual with a serial number, locality, and date—thereby providing precise data as to breeding seasons and, to some extent, incidence.

However, it is as well to emphasise once again that deductions regarding the relative abundance of species in the area covered by this report cannot be made. This is on account of the collection submitted being selective, i.e. Ionides forwarded to me only those species in which he knew I was interested, principally forms whose variational range was inadequately known. The wealth of statistics that has resulted is too extensive to publish here, but has been entered on cards preserved in the Museum of Comparative Zoology where it is available for checking by interested students. Indeed, it is for the convenience of future investigators that the M.C.Z. numbers are here cited for specimens displaying unusual variations or exceptional measurements.

Generally only "records" or outstanding measurements are furnished, the total length being followed in parentheses by that of the head and body, then the tail, which, if truncated, has a plus sign added. Except for a very few, specifically mentioned, each of the 1,084 snakes, and almost every other specimen, has been measured and its scales counted. A considerable and tedious task where series range from 50 to 150 individuals. The more important results have been condensed into a few lines of print.

For convenience the localities from which material was obtained have been listed alphabetically in the text. They are :

Kilimarondo, Nachingwea District
Kilwa, Kilwa District
Kitessa Forest, Matengo Hills, Songea District
Lihuni, Liwale District
Lipumba, Matengo Hills at 3,900 feet, Songea District
Lindi, Lindi District
Liwale, recently incorporated in the Nachingwea District
Luhila, Songea District
Luhuu Juu, Liwale District
Lumesule River, rises on the northeast Tunduru/southwest Liwale border and empties into the Rovuma
Manyoni, Central Province
Masasi, Masasi District
Mbeya, Southern Highlands Province
Mbwemkuru, Liwale District
Mchangoni, Songea District
Miguruwe, Kilwa District
Mtepera, Kilwa District
Nachingwea, Nachingwea District includes the former Northern Masasi, northwestern Lindi, and all of Liwale District
Ngahama, Kilwa District
Rovuma River, forms frontier with Mozambique
Ruangwa River, Lindi District
Ruponda, Nachingwea District
Songea Boma, 3,800 feet, Songea District
Tunduru, Tunduru District

Following the locality the collecting dates are given with the month in roman numerals. I should like to invite the attention of East Africans to this method which I adopted thirty years ago so as to avoid ambiguity in this increasingly international era. When an English field collector writes 1.5.54 on a label he intends it to mean the first of May. When an American reads it, however, it is January 5th. Some American entomologists now write v.1.54 for 1st May, personally I think a better balance is achieved by placing the month in the centre as 1.v.54 and retaining the logical sequence of day, month and year. Occasionally the same date occurs on widely separated localities due to Ionides' African collectors being in different areas.

In this report only a single species is described as new, viz.

Ancylocranium ionidesi sp. nov.

a strange-looking, wedge-snouted, worm-lizard of which four examples were obtained in the Kilwa District. In 1953, however, I designated as paratype, a large and distinctive gecko (*Pachydactylus tetensis*) actually secured by Ionides on the Lumesule River, near Liwale, before I captured the type on the Zambezi River, near Tete, though the Tanganyika specimen did not reach me until long afterwards.

Other additions to the herpetofauna of Tanganyika Territory contained in the present collection are :—

Tetradactylus fitzsimonsi simplex (Laurent) of Congo
Typhlops tettensis tettensis (PETERS) of Mozambique
Schistometopum gregorii (BOULENGER) of Kenya Colony
Bufo anotis (Boulenger) of Southern Rhodesia

Not only is the serpentiform, whip-tailed lizard (*simplex*) also recorded here as a genus new to Tanganyika, but the species is new to Northern Rhodesia. The blind snake (*tettensis*) replaces a tentative identification of *T.t. ? obtusus* in the earlier Ionides' collection. The monotypic caecilian (*gregorii*), taken near the Ruvu River, has for the past sixty years been known only from the delta of the Tana River and vicinity. An earlier (1925) Tanganyika record of the earless toad (*anotis*) was based on an erroneous identification of mine, long since corrected.

Among other items of unusual interest I might mention the rediscovery after 40 years of what is apparently the second known example of a limbless skink (*Scolecoseps acontias*). The second Tanganyika record of an aquatic snake (*Lycodonomorphus r. whytii*); further examples of a recently described shovel-snout (*Prosymna pitmani*). The occurrence of four related species of centipede-eater (*Aparallactus*) at Liwale, raised a problem which is now unravelled—to facilitate recognition of the four species a synoptic key is provided. A study of the 150 night-adders (*Causus defilippii*) shows that the midbody scale-rows range from 13 to 17, not just 17 as has been thought for the past 90 years.

However, this report is not concerned merely with questions of taxonomy. Included are notes on breeding, diet, enemies, parasites, together with interesting observations on snakebite, native names, and other items which Mr. Ionides has kindly permitted me to extract from his letters.

REPTILIA

GEKKONIDAE

Hemidactylus mabouia (JONNES)

♂ (I.1553) Liwale. 2.xi.49.

Preanofemoral pores of ♂, 47 (cf. Loveridge, 1947a, p. 167).

Ionides writes that at 10 a.m. on 17th November, at Mohamedi Makuliro's village of Mlembwe Juu, he observed a halfgrown House Gecko (*mabouia*) seized by the neck by a Two-striped Skink (*Mabuya s. striata*). A ten-minute contest ensued, during which, by a rapid succession of snaps, the skink improved its hold and the gecko apparently succumbed. The attack occurred on an unbarked, horizontal pole supporting the *banda* roof, and during the struggle the combatants moved along the pole, sometimes above, at others beneath it, until eventually they ended up on the roof outside. There, taking the gecko's head into its mouth, the skink gulped down its prey, the tip of the latter's tail disappearing about a quarter of an hour after the engorgement started. The skink (I.4306) was then caught and preserved with its meal intact.

Hemidactylus mercatorius GRAY

♂, ♀♀ (M.C.Z. 52401) Liwale. 5.xi.49 & 23.vii.50.

Preanofemoral pores of ♂, 36. This name of Gray (1842) for a Madagascar gecko takes precedence over *gardineri* Boulenger (1909), described from Farquhar Island, and *persimilis* Barbour and Loveridge (1928c.) of Dar es Salaam. Gray's Palm Gecko was recovered from the stomach of a *Hemirhagerris n. nototaenia*.

Lygodactylus grotei grotei (STERNFELD)

4 ♂♂, 2 ♀♀ (M.C.Z. 52402-3) Kilwa. 9-25.viii.50.

♂ ♀ (M.C.Z. 52404-5) Liwale. 24.vii.& 27.ix.50.

Preanal pores in ♂♂, 4-7 (two have latter high number); on 27th September, the ♀ was gravid with eggs measuring 6 × 5.5 mm. Twenty-two other *grotei* collected at Liwale by Mr. Ionides were forwarded to the British Museum.

Lygodactylus picturatus picturatus (PETERS)

- 15 ♂♂, 3 ♀♀ (M.C.Z. 52406-7) Kilwa. 10.viii-30.x.50.
 3 ♂♂, 1 ♀ (M.C.Z. 52408-9) Liwale. 10.ix.49-23.vii.50.

Preanal pores in ♂♂, 6-9 (7 have the higher number), average 8. One Painted Gecko was recovered from the stomach of a *Hemirhagerris n. nototaenia*.

Phelsuma dubia dubia (BOETTGER)

- ♂ (M.C.Z. 52410) Kilwa. 25.x.50.

Preanofemoral pores in ♂, 25. Owing to its habitat being in the crowns of coconut palms this Malagasy gecko is rarely collected, it has only been taken at four other localities along the Tanganyika littoral.

Pachydactylus bibronii turneri (GRAY)

- 2 ♂♂, 2 ♀♀ (M.C.Z. 52411-2) Kilwa. 26.viii-30.x.50.
 ♂, 4 ♀♀ (M.C.Z. 52413-4) Liwale. 14.vii.50.
 juv. (M.C.Z. 52415) Tunduru. 6.xii.48.

Males lack pores. On 27th October, three ♀♀ held shell-less eggs almost ready for laying. The recognizable contents of half-a-dozen stomachs examined consisted chiefly of termites with an occasional beetle, but most of the food had been finely masticated by the powerful jaws of these big geckoes. Parasitic nematodes were numerous in the alimentary tract.

Eight additional *turneri* from Kilwa were sent to the British Museum.

Pachydactylus tetensis LOVERIDGE

- ♂ (M.C.Z. 51753) Lumesule River on Liwale border. 29.iii.48.

This is a paratype of a large and distinctive gecko related to *tuberculosis* (BOULENGER), characterized in part by the possession of from 12 to 13 preanal pores. In the original description I (1953e, p. 175) copied the different rendering (LUNGSOLE) of the label. Mr. Ionides, who adds this fine species to the herpetofauna of Tanganyika, informs me that Lumesule is the preferred spelling. The paratype was taken far up the river about two hours walk south of the Mbwemkuru River, at the same spot where five *Amblyodipsas* have been taken on various occasions.

AGAMIDAE

Agama cyanogaster (RUPPELL)

- ♂ (M.C.Z. 52416) Kilwa. x-xi.50
 2 ♂♂ (M.C.Z. 52417) Liwale. 1948-49.

Preanal pores in two rows of 10 above 10, totalling 20.

Agama mossambica mossambica PETERS

- juv. ♀ (M.C.Z. 52418) Lindi. 1.v.49.
 15 ♂♂, 11 ♀♀ (M.C.Z. 52419-20) Liwale. 2-20.xi.49.
 3 ♀♀ (M.C.Z. 52421) Tunduru. 1949.

A dusky network is present on the throats of some ♀♀ and all ♂♂, but, in addition, the throats of adult ♂♂ are pale blue with a dark blue basal patch.

Mr. Ionides (20.xi.51) points out that in my (1951a, p. 179) previous report on reptiles received from him, in referring to *mossambica* ♀♀ being gravid at Liwale in mid-December I should have said "towards the beginning (not end) of the rains". In 1949, the year in question, the rains at Tunduru commenced on 23rd December, though normally they start in mid-December and end about mid-April.

From Ruponda Mr. Ionides forwards the following observation which we both think refers to this agama. On 4th April, 1950, Mr. B. D. Nicholson of the Game Department was sitting in his tent when he saw a bush squirrel (*Paraxerus flavivittis exgeanus*) chase a six-inch lizard up a tree. The lizard endeavoured to dodge its pursuer, but the squirrel had it in a flash. So quickly, in fact, that the observer failed to note whether the lizard was caught by the squirrel's claws or seized in its jaws. All but the head was eaten. A ♀ *mossambica* was found in the stomach of a Tiger Snake (*Telescopus s. semiannulatus*) by Ionides on 8.v.50.

CHAMAELEONIDAE

Chamaeleo dilepis dilepis LEACH

Ionides (7.ii.50) reports that the Common Flap-necked Chameleon is known as *kinyonga* to the Ngindo. As food for some Boomslangs (*Dispholidus typus*) he placed a large chameleon in their cage, and at intervals of about half-an-hour introduced two geckoes for the Hissing Sand Snakes (*Psammophis s. sibilans*). As each gecko, approximately five inches in length by two-and-a-half inches in girth, was put into the cage, the chameleon promptly caught and ate it. In due course the chameleon itself was seized and swallowed by a Boomslang. See remarks also under *Thelotornis k. capensis* and *Dispholidus typus*.

Brookesia brachyura ionidesi LOVERIDGE

Brookesia ionidesi LOVERIDGE, 1951a, Bull. Mus. Comp. Zool., **106**, p. 179: Kilwa, Southern Province, Tanganyika Territory.

♂ (M.C.Z. 52422) Liwale. 21.iv.50.
♀ (M.C.Z. 52423) Luhila, Songea. x.50.

Since describing this pigmy chameleon I have been able to examine the type and fresh Nyasaland material of *brachyura* (GUNTHER), of which Ionides' Short-tailed Chameleon is clearly a northern race. In the key to all African *Brookesia* which accompanied the description of *ionidesi*, the southern Tanganyika reptiles referred to as *brachyura* were actually an undescribed species which I (1953e, p. 190) have since named *nchisiensis*. Kilwa paratypes of *B. b. ionidesi* have been presented to the Coryndon Museum by Mr. Ionides.

Ionides writes (20.ii.50) that these *Brookesia* are very hard to find during the dry season. Towards the end of January through February, however, they appear to gather around the whitish fruit of a tree called *mikwambi*, or may be found on *mbazi*. [Possibly the fruit attracts small flies or other insects? A.L.] They are known as *kitoga* in Ngindo, and *kipande* by the Yao.

Some idea of their diminutive size may be obtained from the fact that the above-listed ♂ measures 45 (37 + 7) mm., the gravid ♀ only 51 (43 + 8) mm., though in October the developing ova were still small.

SCINCIDAE

Mabuya quinquetaeniata margaritifer (PETERS)

40 (M.C.Z. 52424-39) Kilwa. 19.vii-30.x.50.
3 (M.C.Z. 52440) Liwale. 7-21.vii.50.
2 (M.C.Z. 52441) Masasi. 5.ix.50.

Midbody scale-rows 42-46, average 42.8 for the 45 skinks. This means that they are referable to the South African race *margaritifer*, described from Tete (27 topotypes average 42.2 midbody scale-rows) instead of to the Tanganyika (and Nyasaland) race as one might have supposed!

Largest ♂ (M.C.Z. 52424), 228 (110 + 118) mm., largest perfect ♀ (M.C.Z. 52430), 222 (93 + 129) mm., but surpassed by a tailless ♀ with a snout to anus length of 101 mm. In October ova are small in all Kilwa ♀♀. The bright blue tail of a young specimen was present in the oesophagus of a large adult.

Mabuya maculilabris comorensis (PETERS)

♂♂, ♀ (M.C.Z. 52442-3) Kilwa. 17-23.viii.50.

Midbody scale-rows 32-34. Larger ♂, 239 (82 + 157) mm.; ♀ 207⁺ (80 + 127⁺) mm. This ♀, taken on 17th August, held spherical ova measuring 17 mm.

Mabuya maculilabris boulengeri STERNFELD

♂, 2 ♀♀, juv. (M.C.Z. 52444-5) Kilwa. 8.viii-31.x.50.

Midbody scale-rows 30. Length of ♂, 214⁺ (92 + 122⁺) mm.; larger ♀, 216 (90 + 126) mm. The latter, taken on 31st October, held six eggs measuring about 14 × 10 mm.

Mabuya planifrons (PETERS)

♂ ♀ (M.C.Z. 52446) Kilwa. 10-13.viii.50.
♀, juv. (M.C.Z. 52447) Liwale. 11.xi.49-7.x.50.

Midbody scale-rows 30. Larger ♀, 330 (116 + 214) mm.

Mabuya striata striata (PETERS)

♂♂, juv. (M.C.Z. 52448) Kilwa. 11-12.viii.50.
♂♂, ♀, juv. (M.C.Z. 52449) Liwale. 7.xi.49-2.iv.50.

The subocular fails to reach the lip on the right side of M.C.Z. 52449; midbody scale-rows 33-34. Largest ♂ (C.M.), 230 (101 + 129) mm. The ♀ taken on 2nd April, holds eight eggs containing small embryos. A caterpillar, cockroach, grasshopper, spider and vast numbers of termites were present in the two stomachs examined. One skink was observed seizing and swallowing a halfgrown gecko, *Hemidactylus mabouia*, which see. The Common Two-striped Skink is known as *kiuluundwa*, *vide* Ionides.

Mabuya varia varia (PETERS)

♀♀ (M.C.Z. 52450) Kilwa. 13-17.x.50.
♀ (M.C.Z. 52451) Kitesa Forest, Matengo Highlands, Songea. 28.v.50.
20 (M.C.Z. 52452-9) Liwale. 13.vii-9.x.50.

Midbody scale-rows 30-32 (but only ten of the Liwale series were counted). Largest perfect ♂ only 144 (48 + 96) mm.; largest ♀ (M.C.Z. 52451), 144⁺ (69 + 75⁺) mm., but tail regenerating. The following data was derived from breeding ♀♀ examined.

28th May	held very small ova (at Kitesa).
13th July	„ 6 eggs measuring about 5 × 5 mm.
23rd July	„ fully scaled and pigmented embryos.
7th Oct.	„ 5 eggs ca. 7 × 8 mm., containing colorless embryos.
7th Oct.	„ 7 eggs ca. 7 × 8 mm., containing colorless embryos.
8th Oct.	„ 7 eggs ca. 5 × 5 mm., without embryos.
8th Oct.	„ 5 eggs (irregular) containing minute embryos.
9th Oct.	„ 7 eggs ca. 7 × 7 mm., without embryos.
13th Oct.	„ very small ova (at Kilwa).
17th Oct.	„ very small ova (at Kilwa).

Ablepharus wahlbergii (A. SMITH)

25 (M.C.Z. 52460-6) Kilwa. 21.viii-1.xi.50.
7 (M.C.Z. 52467) Liwale. 21.vii-5.x.50.

Midbody scale-rows 22-26; lamellae beneath fourth toe 13-17 (but counts were made on only seven skinks from each locality). Largest perfect ♂ (I. 2451), 88 (40 + 48) mm., and ♀ (I. 2634), 90 (40 + 50) mm.

On both 21st July and 9th September, two ♀♀ each held three eggs measuring 8 × 4 mm. Five of the Kilwa series taken between 15th and 27th October are young ones of from 18 to 26 mm. in length. Many termites were present in the two stomachs examined. Five Wahlberg's Snake-eyed Skinks were recovered from the stomachs of as many *Psammodromus angolensis*.

Scelotes tetradactylus tetradactylus (PETERS)

1 (M.C.Z. 52480)	Kilwa.	26.x.50.
1 (M.C.Z. 52481)	Liwale.	ii.52.
1 (M.C.Z. 52482)	Songea.	14.i.50.

Midbody scale-rows 22-24; supraciliaries 4; fingers 4; toes 5; lamellae beneath fourth toe 3. Length of largest, a ♂ (M.C.Z. 52482), 128 (83 + 45) mm.

Riopa sundevallii (A. SMITH)

2 (M.C.Z. 52468-9)	Kilwa.	19.vii & 31.x.50.
20 (M.C.Z. 52470-9)	Liwale.	21.ii-11.vii.50.
3 (M.C.Z. 52540-1)	Mbeya, Tukuyu.	x.52.

Midbody scale-rows 25-29, average 27.1; lamellae beneath fourth toe 10-13, average 11.3. Largest perfect ♂ (M.C.Z. 52476), 223 (115 + 108) mm., surpassed in head and body length by a ♀ of 130 mm., whose tail, as is usual in this species, is regenerated. The smallest, taken on 9th July, measures 68 (39 + 29) mm., the tail being intact. One was recovered from the stomach of a *Lycophidion c. acutirostre*. Sundevall's Skink is known as *kijengamahuta* in Ngindo according to Ionides.

Melanoseps ater rondoensis LOVERIDGE

15 (M.C.Z. 52487-95)	Liwale.	7.xi.51.
1 (M.C.Z. 52484)	Songea.	ii.52.
4 (M.C.Z. 52485-6)	Tunduru.	14.i.50-4.ii.52.

The Songea skink clearly conforms to the race from Rondo Plateau and not to the larger *M. a. matengoensis* from the Matengo Highlands to the south of Songea.

Midbody scale-rows 18-20 (20 only on I. 2194, ex. Liwale); original tails (only 10 are perfect) included in length from snout to anus 3 to 3.3 times. Largest ♂ (M.C.Z. 52492), 131 (101 + 30) mm., though exceeded in length from snout to anus by another 10 mm. longer; largest ♀ (M.C.Z. 52487), 166 (125 + 41) mm. Consequently both considerably surpass any in the type series of 24 which I obtained on Rondo Plateau near Lindi. On 10th April one ♀ (M.C.Z. 52489) held small, but developing, ova, while M.C.Z. 52487 (exact date unknown) holds six roundish eggs with a diameter of about 4 mm.

Scolecoseps? acontias (WERNER)

juv. (M.C.Z. 52483)	Kilwa.	26.x.50.
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Midbody scale-rows 18; supraoculars 2; supraciliaries 2; nuchals 2 only. Length 52 (40 + 12) mm. Werner's brief description contains no mention of supraoculars, supraciliaries, or nuchals. Nevertheless I tentatively refer this limbless two-inch skink to the species of which the only known example was collected by Eichelbaum at Dar es Salaam in 1903, and described by Werner in 1913 (1912). I have spent more fruitless hours searching for this elusive sand-burrower at Dar es Salaam than I care to contemplate. Mr. Ionides is greatly to be congratulated on the capture of this choice rarity. It is quite definitely not *S. boulengeri* Loveridge of Mozambique, a species which lacks supraciliaries and differs in many other ways.

GERRHOSAURIDAE

Unless otherwise stated it may be assumed that the undermentioned representatives of this family conform to the keys furnished in the revision (Loveridge, 1942d, pp. 483-543).

Gerrhosaurus major grandis BOULENGER

♀ (M.C.Z. 52496) Kilwa. 18.viii.50.
♂ ♀ (M.C.Z. 52497-8) Liwale. 14.ix.50.

Ventrals from collar-row to anus 33-34; femoral pores 14-17, average for six counts 15.3. Length of ♂ (M.C.Z. 52497), 505 (205 + 300) mm., a record for this race. It remains to be seen whether *grandis* of Zululand can really be maintained as distinct from typical *major* of Zanzibar; it appears increasingly dubious. One would at least expect the plated-lizard from Kilwa, a coastal locality, to be referable to *major*, but it is not. Only by extensive collecting in the areas of intergradation will we be able to decide on the limits of the ranges.

Unfortunately these robust spiny-tailed lizards, almost two feet in length, are not easy to preserve on account of their subdermal bony plates being impervious to alcohol; the tails especially are apt to decompose and drop off after a week or two. This can be prevented only by inserting the point of a very sharp knife between the median rows of scales on the underside of the tail about three inches from the anus. Then cut *towards* the anus; should one attempt to do so in the opposite direction the readily discardable tail will simply fragment. A knife or scissors may be used to make an incision along the entire length of the lateral groove where it will be concealed. Through the opening thus made the viscera, with the exception of testes or ova, which should be left, can be removed. Failure to do this almost invariably results in decomposition setting in though often not apparent for a week or two. Under any circumstances, with so large a reptile it is advisable to decant the weakened alcohol after three or four days and replace it with fresh.

Ionides remarks that the Kilwa plated-lizard was basking on the side of a termite hill and retired into one of the openings. The reptile was strong enough to resist all efforts to pull it out by the tail; it was eventually withdrawn by tying a string around the groin in front of the hind limbs. On 30.vi.52 Ionides saw one of these lizards in the stomach of a cobra (*Naja n. nigricollis*). *Libulanjenje* is the name by which this lizard is known to the Ngindo.

Gerrhosaurus nigrolineatus nigrolineatus HALLOWELL

juv. (M.C.Z. 52499) Liwale. 19.vii.50.

Known as *mkwangula* to the Ngindo (*vide* Ionides), this quite typical Black-lined Plated-Lizard's stomach held, in addition to beetles and millipedes, a 68 mm. centipede, though the lizard itself measured only 353 (98 + 255) mm. Ionides recovered one from the stomach of an unusually large *Psammodromus t. tritaeniatum*.

Tetradactylus fitzsimonsi simplex LAURENT

Tetradactylus (sic) *fitzsimonsi simplex* Laurent, 1950b, Revue Zool. Bot. Afr., 43, p. 350: Kundelungu, 1750 metres, Belgian Congo.

♂ (M.C.Z. 52500) Luhila, Songea District x.50.
♀ (M.C.Z. 52501) Mchangoni, „ x.50.
♀ (M.C.Z. 52502) Songea, „ ii.52.

No member of this serpentiform genus has been taken in Tanganyika Territory previously, and Mr. Ionides' captures provide fresh evidence of the herpetofaunal affinities with the southeast Belgian Congo. This recently described race differs from other forms of *fitzsimonsi* in having the nostril pierced in an entire nasal, bordered by the first labial; and the absence of a claw on the vestigial hind limb.

The Museum of Comparative Zoology has other examples of *simplex*, viz.

♂ ♀ & juv. (M.C.Z. 47410-2) Mambwe Mission, N.R. ix.44

and though none of the six differ appreciably from Laurent's two types, data derived from them does extend the known range of variation.

Supraoculars 2-4; supraciliaries 2-4; dorsal scale-rows transversely 12 + 2 reduced, longitudinally 61-66; ventrals transversely 6, longitudinally 60-66. Length of head included in the length from snout to anus 5.1 to 7.3 times; into that of tail 3 to 3.6 times (that it was only twice in Laurent's paratype suggests a regenerating tail). Larger ♂ (M.C.Z. 52500), 170 + (60 + 110 +) mm., as tail regenerated, for the other ♂ (M.C.Z. 47140) measures 259 (56 + 203) mm., largest ♀ (M.C.Z. 52501), 306 (68 + 238) mm.

In February one ♀ held two eggs measuring about 10.5 × 5.5 mm.; in the October ♀ the eggs were respectively 11.5 × 7 mm. and 13 × 5.5 mm.

CORDYLIDAE

Cordylus cordylus tropidosternum COPE

♂, 4 ♀♀ (M.C.Z. 52503-7) Kilwa. 12.x-6.xi.50.
6 ♂♂, 7 ♀♀ (M.C.Z. 52508-14) Liwale. 10.vi.48-30.x.50.

Though eight different counts were made on each individual in this fine series of Eastern Girdle-tails, the only extensions to the ranges given in the revision (Loveridge, 1944p, p. 15) are : Lower labials 4-6; transverse rows of dorsals 24-28; transverse rows of ventrals 26-30. Also the previous maximum length for a ♀ is exceeded by M.C.Z. 52511 measuring 186 (103 + 83) mm.

Eight ♀♀ held from 2-4 embryos, those at Liwale on 30th September being very small and still in the eggs which measured about 20 × 10 mm. Embryos at Kilwa on 12th October measured 21 + 15 mm. and an embryo ♂ of 26 + 22 mm., ranging to those of 6th November measuring 32 + 23 mm. The stomach of one lizard held an unusually large cricket, that looked like a *Brachytrypetes*, together with a long-limbed *Palystes-like* spider. Parasitic nematodes were also preserved.

Likorembako is the Ngindo name for *tropidosternum* according to Ionides.

LACERTIDAE

Nucras boulengeri boulengeri O. NEUMANN

juv. (M.C.Z. 52524) Kilwa. 27.vii.50.
♀ (M.C.Z. 52525) Liwale. 17.vii.50.
juv. (M.C.Z. 53107) Miguruwe. 8.vii.53.
♂ (M.C.Z. 53108) Mtepera. 7.vii.53.
♂ (M.C.Z. 52526) Songea. 22.i.53.

Dorsals definitely smooth, at midbody in from 44-50 transverse scale-rows + 2 + 6 ventrals; femoral pores 12-14. Though the younger specimens exhibit a light vertebral line, surprisingly enough all agree with the typical race from Lake Victoria, and not with *N. b. kilosae* which is distinguished by keeled scales and colour. One ♂ had managed to overcome and swallow a relatively enormous black cricket.

Latastia johnstoni BOULENGER

♀ (M.C.Z. 52527) Liwale 15.vii.50.
3 ♂♂ (M.C.Z. 53109) Miguruwe. 7.vii.53.
♀ (I. 4141) Mtepera. 8.vii.53.
2 ♂♂, 1 ♀ (M.C.Z. 53110-1) Ngahama. 9.vii.53.

Dorsals keeled; midbody scale-rows 50-54, of which 6 are ventrals; femoral pores 14-17 a side. The largest, a Miguruwe ♂, measured 203 (55 + 148) mm. On 15th July one ♀ held three eggs measuring about 12 × 7 mm. The remains of a lizard, apparently referable to this species, were in the stomach of a Liwale Burrowing-Adder (*Atractaspis b. rostrata*).

Ichnotropis squamulosa PETERS

juv. (M.C.Z. 52528) Kilwa. 27.x.50.
 juv. (M.C.Z. 52529) Liwale. 1.x.50.

Midbody scale-rows about 49-53, of which 10 are ventrals; dorsals keeled; femoral pores 12-14.

Holaspis guentheri laevis WERNER

1 (M.C.Z. 52515) Kilwa. 29.x.50.
 10 (M.C.Z. 52516-23) Liwale. 24.vii-29.ix.50.
 2 (I. 2187-8) Tunduru. 11.viii.48.

Midbody scale-rows 72-96, of which 6 are ventrals. Largest, a ♂ (M.C.Z. 52520), 107 (47 + 60) mm. All agree in having, in addition to the black vertebral and dorsolateral lines, a single black lateral line, which recently (1953e, p. 233) led me to revive Werner's name for East African examples of this arboreal lizard.

Mr. Ionides remarks (20.xi.51) that owing to the adroitness with which these lizards hide, their presence in a district is often unknown to the natives. He also points out that in springing from one tree to another a *Holaspis* will cover quite a long distance laterally.

AMPHISBAENIDAE

Ancylocranium ionidesi sp. nov.

Type. Museum of Comparative Zoology 52530, an adult ♂ from Kilwa, Southern Province, Tanganyika Territory. Collected by Mr. C. J. P. Ionides, 21st August, 1950.

Paratype. M.C.Z. 52531, a juvenile with same data as the type but taken on 18th October, 1950. Also two adult ♀♀ (M.C.Z. 53112; and I. 4109, now in British Museum) from Kilongo, Kilwa. Collected by Mr. C. J. P. Ionides, 4th and 5th July, 1953.

Diagnosis. Differs from *somalicum* (Scortecci, 1930), and agrees with *barkeri* Loveridge (1946e, p. 74, fig.) in having only a single pair of shields (parietals) immediately behind the rostral on the vertebral line. Differs from *barkeri* as follows:—

31 (20 + 11) segments in a midbody annulus; median ventrals in a single transversely dilated series; 222 annuli on body, 5 on tail (but this is almost certainly regenerated as its posterior half lacks annuli); only the type ♂ from Mbemkuru River, Lindi, Tanganyika Territory, known . . . *barkeri*.

34 (18 + 16) segments in a midbody annulus; median ventrals scarcely broader than their fellows; 302-327 annuli on body, 19-23 on tail; only the type ♂, two adult ♀♀ and a juvenile paratype from Kilwa District, on east coast north of Lindi, T.T., known . . . *ionidesi*.

Description. Rostral enormous, compressed, arched, with sharp cutting edge; nostril pierced in the rostral (left side) or in a nasal that anteriorly appears fused with the rostral (right side and in paratype); nasal sutures indicated on three sides; no prefrontals; no frontal; no postfrontals; a single pair of very small, widely separated shields on either side of rostral correspond to the parietals of *barkeri*, each being immediately above a narrow, vertically elongate ocular which is bordered anteriorly by the rostral, posteriorly by the first annulus; eye hidden; no temporals; upper labials two (the third labial of *barkeri* being reduced to a small scale at the commissure of the mouth), second larger and immediately below the ocular, whose anterior corner rests on the first labial; lower labials three, the first minute, the third enormous; mental tremendously elongate, ribbon-like (owing to fusion with both the anterior and posterior sublinguals of *barkeri*) bounded posteriorly by a row of four elongate gulars, which again are followed by a row of six similarly elongate scales flanked on either side by a relatively small shield.

Body annuli 327 (I got the same number on the paratype at one counting, but owing to it being somewhat macerated at one point neither my colleague Benjamin Shreve nor I could get the same count twice; we feel that 327 + or - is the more accurate way in which to state the paratype's annuli) between the rostral and the row corresponding to the posterior edge of anal opening; 34 (18 + 16) segments in a midbody annulus, the median ventral series not, or but scarcely, broader than their fellows; six anals (clearly so in paratype, obscured by extruded hemipenes in holotype); no preanal pores.

Color. In alcohol. White, uniform (? flesh-pink in life).

Size. Total length of holotype ♂, 215 (196 + 19) mm.; of larger paratype ♀, 217 (200 + 17) mm.; of juvenile paratype, 107 (97 + 10) mm.

Collector's original numbers, 2551, 2719, 4109 and 4117 respectively.

Amphisbaena ionidesii BATTERSBY

60 (I. 1996 ... 3475) Liwale.	16.ii.50-20.vi.52.
♂ ♀ (M.C.Z. 52532-3) Liwale.	30.iii.50 & 16.xi.51.
♀ (M.C.Z. 52542) Liwale.	21.x.52.
♂ ♀ (M.C.Z. 52534-5) Songea.	16.vii.51.
40 (I. 1728 ... 3622) Tunduru.	11.i.50-19.iii.52.

In view of the previously published (Loveridge, 1951a, p. 184, Fig. 1) data derived from an even larger Liwale and Tunduru series of this interesting worm-lizard, it scarcely seemed worth while to devote the time necessary to a detailed study of this fresh material. However, one new fact of outstanding interest is that on 16th July a Songea ♀ (M.C.Z. 52535), with a snout to anal length of 130 mm., held two embryos, unpigmented except for their black eyes, measuring 42 and 45 mm. over all. Also on 21st October a Liwale ♀ (M.C.Z. 52542), measuring 202 (180 + 22) mm., held two embryos, unpigmented except for their eyes, measuring 76 and 77 mm. over all. Previous maximum measurements are surpassed by a ♂ (M.C.Z. 52532) of 210 (185 + 25) mm., and ♀ (M.C.Z. 52533) of 212.5 + (190 + 22.5 +) mm., the tail being regenerating. Nematodes (preserved) were present in the intestines of the last named specimen. *Ionides* Worm-Lizards were recovered from the stomachs of *Calamelaps u. unicolor*, *C. u. warreni*, *Amblyodipsas k. ionidesi* *Chilorhinophis c. liwaleensis*.

VARANIDAE

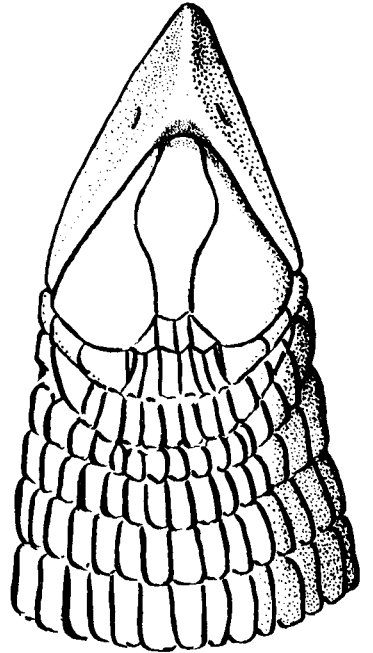
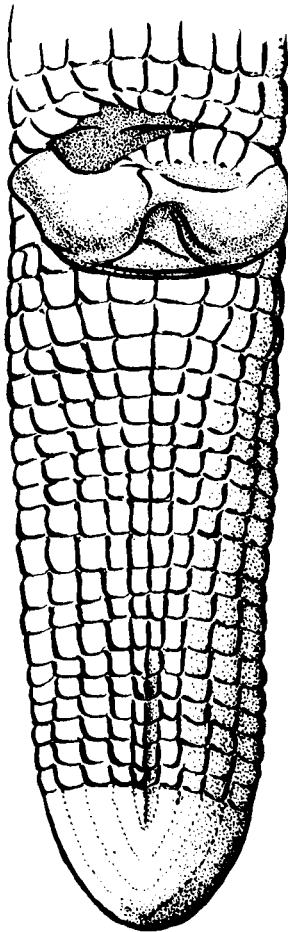
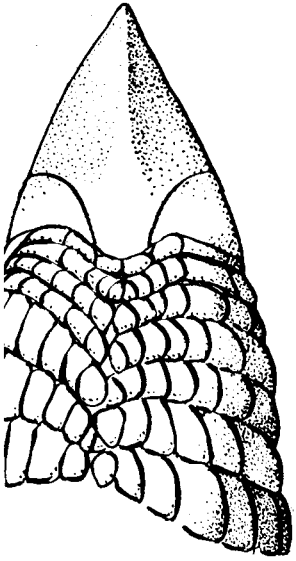
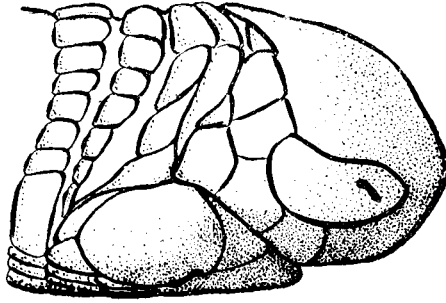
Varanus exanthematicus microstictus BOETTGER

5 (M.C.Z. 52536-9) Liwale. 12.xi.49-19.xi.51.

The following data, like that derived from a series of Savanna Monitors that I (Loveridge, 1942e, p. 330) obtained at Mikindani, extend the ranges given by Mertens (1942e, p. 351) who has shown that *ocellatus* Heyden is a synonym of typical *exanthematicus* (Bosc) of Senegal and the Sudan, and should not be applied to the dry country monitors of Kenya and Tanganyika.

Nape scales (without surrounding disc) distinctly larger than those on occiput and centre of back; midbody scale-rows 137-143; ventrals from collar fold to level of insertion of hind limbs 86-100.

The coloring in alcohol of the nine-inch juvenile is light grey, handsomely variegated with black and white. Most conspicuous is the black line from eye to shoulder, two slightly narrower ones from the occiput converge on nape only to diverge again till they terminate by merging with the black lines encircling the first pair of white ocelli between the forelimbs; in all there are five rows of these black-edged ocelli (2 to 5 in a row) between fore and hind limbs, followed by a sixth on base of tail that is more or less fused and bar-like, forming the first of a dozen light annuli that alternate with grey or black interspaces on the black-tipped tail; the fore limbs are grey variegated with jet black and pure white, the latter forming crossbars on the toes. Below, creamy white, a large blackish patch on the base of the throat; breast, belly, and tail crossed by numerous narrow wavy dark lines arranged in pairs.



♂ Holotype of *Ancylocranium ionidesi* (M.C.Z. 52530). 8 x nat. size.

The ocelli have disappeared entirely from one of the third-grown specimens (M.C.Z. 52538), whose coloring is striking as a result of the black markings showing a tendency to coalesce and form crossbars. The coloring of the massive-headed old ♂ is a nondescript dirty brown or black, relieved by a certain amount of yellow variegations.

This magnificent ♂ (M.C.Z. 52539) has been skinned out and the body removed, but owing to the toughness of the hide its present measurement of 1430 (660 + 770) mm. should be substantially correct. The juvenile (M.C.Z. 52536) described above is only 230 (110 + 120) mm., the smallest I have ever seen.

Mr. Ionides remarks that they had quite a tussle to secure the nearly five-foot male but that it quickly succumbed when given a drop of nicotine. At my request he is endeavouring to ascertain where these dry-country monitors lay their eggs. He wrote (20.xi.51) me that outside a hole at Lihuni, in the northern part of Liwale District and miles from water, he found some undoubted *Varanus* eggs, broken and with indications that they had been swept by a grass fire. As this was in mid-October it appeared certain that the eggs had been lying exposed since the previous rainy season.

The old ♂ harboured many ticks which have been identified as *Aponomma exornatum* Koch by my colleague Dr. J. C. Bequaert.

TYPHLOPIDAE

Typhlops schlegelii mucruso (PETERS)

2 (M.C.Z. 52543-4)	Kilwa.	30.x & 3.xi.50.
153 (M.C.Z. 52545-600)	Liwale.	18.i.50-iv.52.
2 (M.C.Z. 52601-2)	Nachingwea.	4.xi.51.
4 (M.C.Z. 52603-5)	Ruponda.	26.xii.51-7.iv.52.
6 (M.C.Z. 52606-9)	Songea.	16.v.50-ii.52.
26 (M.C.Z. 52610-22)	Tunduru.	26.xii.49-29.ii.52.

I am confident that never before has so fine a series of the Eastern Schlegel's Blind-Snake been brought together. In part this was due to an intensive search for the rare *T. t. tettensis*, only three of which were turned up during the period covered by this report. It would be interesting to know why two species, so similar in appearance, should exist in a ratio of three to 193! *T. t. tettensis* can most readily be distinguished from the lineolate form of *mucruso* by the number of midbody scale-rows, consequently I counted every individual in the above series with the following results.

Midbody scale-rows 30-36, viz. 30 (27 ex.), 31 (3), 32 (99), 33 (13), 34 (42), 35 (1), 36 (8), average for 193 snakes 32.3; midbody diameter included 25 (M.C.Z. 52552) to 46 (M.C.Z. 52596) times in total length, however, only 7 are 40 times or over, and only 10 are under 27 times. Total lengths range from 125 (123 + 2) mm. (I. 3127) to an adult ♀ (M.C.Z. 52581) of 580 (574 + 6) mm., while the largest verified ♂ (M.C.Z. 52596) is 460 (455 + 5) mm. Such large examples are quite exceptional, however; indeed only 15 of the 193 snakes are over 400 mm., while 65 measure less than 200 mm., the average for the entire series being 246 mm.

It is interesting to note that the smallest of all, measuring 125 mm., was taken on 6th December, the next smallest (128 mm.) on 13th November, and that each month thereafter there is a steady increase in average size until April. The average size and monthly incidence of *mucruso* under 200 mm. is: November, 127 mm. (3), December 156 mm. (28), January, 174 mm. (17), February, 178 mm. (3), March, 178 mm. (7), April, 191 mm. (5), May, 150 mm. (2), June, 145 mm. (1), July, 145 mm. (1). From which it seems fair to assume that the usual time for the young to appear, if not hatch, is about the beginning of the rains—mid-November to mid-December.

The coloration is highly variable, but if the material be sorted into the three main types (corresponding to similar color variations in *T. p. punctatus*), the number assigned to each is as follows: blotched (100), checkered (12), lineolate (81).

One North Zambezi Blind-Snake was recovered from the stomach of a *Calamelaps u. unicolor*.

Typhlops tettensis tettensis (PETERS)

7 (British Museum) Liwale. 27.iii.48-6.iii.49
2 ♂♂, 1 ♀ (M.C.Z. 52523-5) Liwale. 17.ii.51-i.52.

Midbody scale-rows 22; midbody diameter included 32.3 to 46.6 times in total lengths of from 210 (206.5 + 3.5) mm. to 420 (415 + 5) mm.

The single snake (M.C.Z. 50066) that I referred to as "*tettensis?* *obtusus* Peters" in my report (1951a, p. 186) on the first Ionides collection, is, of course, the typical subspecies. Last year I was able to study the seven specimens presented by Mr. Ionides to the British Museum, also the type of *obtusus*, besides a series of the latter I collected in Nyasaland. In ten of the eleven examples of *t. tettensis* that I examined the preocular is in contact with 2nd and 3rd upper labials, in only one snake (R. 1819 in the B.M.) it is in contact with the 2nd only. In this it agrees with Peters' Fig. 1c (of Pl. xv.), while Fig. 1a corresponds to the majority.

As a similar variability occurs in both the other forms it is necessary to abandon this as a key character and present an entirely revised key to this little group. Though there are 22 midbody scales in all 12 *t. tettensis* known, and 24 in all five *rondoensis*, they range from 22 to 24 in the 12 known *obtusus*. The colouring and slender habitus of *obtusus* is such that I now doubt whether its relationship to the other two is really subspecific, but in view of the difficulty in distinguishing them it might be as well to treat them as such until more data has accumulated regarding their variation and distribution.

Typhlops braminus (DAUDIN)

1 (M.C.Z. 52626) Liwale. 11.x.50.

Midbody scale-rows 20; diameter of 3 mm. included 50 times in total length of 150.5 (147 + 3.5) mm. Every additional record of the inland migration of this Indian Worm-Snake—long established on the East African littoral—is of interest.

LEPTOTYPHLOPIDAE

Leptotyphlops conjuncta conjuncta (JAN)

1 (M.C.Z. 52627) Kilwa. 17.x.50.
11 (M.C.Z. 52628-33) Liwale. 17.ii.50-13.iv.52.
1 (M.C.Z. 52634) Manyoni. 24.viii.51.

Midbody scale-rows 14 (but only a few counted); midbody diameters included 48.5 to 80 (M.C.Z. 52634) times in total lengths of from 92 (85 + 7) mm. to 220 (205 + 15) mm. (M.C.Z. 52633). It is the 200 mm. Manyoni snake that extends the previous diameter/length range of from 32 to 72 and which differs from all the rest in being brown above and below with the head somewhat darker and the end of the tail jet black. Otherwise in coloration the series is glossy black, uniform, or below brown; in one almost white along median line of belly.

BOIDAE

Python sebae (GMELIN)

Known as *chatu* in Ngindo according to Ionides, who writes (30.iv.50) that on four separate occasions he has known young pythons to be caught in fish traps; which suggests that they may be partly piscivorous when young.

Twice (8.v.50) he has found them eating birds, viz. "a red-eyed dove" and a "fork-tailed drongo".

On the morning of 19.x.52 Ionides observed a python, slightly over four feet in length, lying along a branch with its head concealed in a long, though narrow, fissure in the trunk. After capturing the python Ionides examined the crevice in which was tightly wedged the body of an adult male ground-squirrel (*Xerus* sp.). Finding no marks on the body, Ionides concluded that the squirrel had died as a result of being seized by the head. Presumably the python had entered the hollow

tree through a second hole, above, and seized the squirrel in its nest which was in the cavity. Then, either unable or unwilling to swallow the body in so confined a space, the python had been endeavouring to drag it through the fissure when disturbed. Whether it would have succeeded is questionable, to judge by the difficulty Ionides experienced when he attempted to extract the corpse with a pair of tongs.

COLUBRIDAE

Natriciteres olivacea uluguruensis (LOVERIDGE)

3 ♀♀ (I. 2344, etc.)	Liwale.	v.50-i.52.
♀ (M.C.Z. 52635)	Mbeya.	x.52.
♀ (M.C.Z. 52636)	Songea.	17.v.50.

Midbody scale-rows 17; ventrals 130-139; subcaudals 70-77, but tails of two others truncated. Smallest, taken early in January, measures only 155 (110 + 45) mm. Mr. Ionides informs me that the snake labelled Songea was actually taken on the Rovuma River a dozen miles from Songea Boma.

The data derived from a much longer series (of which half were sent to the British Museum) contributed by Ionides in 1950 were utilised in a revision of the genus of which a key and synopsis has been published (Loveridge, 1953e, pp. 248-252). These snakes belong to a group that has erroneously been referred to eight different genera, including *Natrix* and *Neusterophis*.

Lycodonomorphus rufulus whytii (BOULENGER)

♀ (M.C.Z. 52637)	Songea Boma.	12.v.50.
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Midbody scale-rows 19; ventrals 159; subcaudals 47. Total length 709 (590 + 119) mm.

This water-snake agrees with the Nyasaland type in sex, midbody scale-rows and subcaudals, but in length surpasses all previously known examples of this race. My reasons for transferring "*Glypholytus whytii* Boulenger" to *Lycodonomorphus* were recently stated (1953e, p. 252, 255). Mr. Ionides is to be congratulated in securing the second known specimen of this race from Tanganyika Territory.

Its stomach contained the hind legs of a frog (*Rana fuscigula*) and the entire digestive tract was riddled with worms. These have been identified by Mr. J. T. Lucker as a ♀ *Oxyuroidea* besides both sexes of a *Kalicephalus*, probably *K. micrurus*. In the mesentery were two ♂ *Dracunculus* sp. and numerous encapsuled larvae of one of the Physalopteridae.

Boaedon lineatus lineatus (DUMERIL & BIBRON)

juv. ♀ (M.C.Z. 52638)	Liwale.	20.iv.50.
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Midbody scale-rows 29; ventrals 213; subcaudals 50; preocular 1 (R) or 2 (L); temporals 1 + 1 (R) or 1 + 2 (L). Beneath the ventral scutes of the preanal region are many mites.

Lycophidion capense capense (A. SMITH)

♂ ♀ (M.C.Z. 52639)	Liwale.	29.iv.50.
♀ (M.C.Z. 52640)	Ruponda.	26.xii.51.

Midbody scale-rows 17; ventrals 180-193; subcaudals 33-43. Chin and throat mostly white.

Lycophidion capense > < *acutirostre* GUNTHER

♀ (M.C.Z. 52641)	Liwale.	7.xii.50.
♀ (M.C.Z. 52642)	Tunduru.	31.xii.51.

Midbody scale-rows 17; ventrals 162-165; subcaudals 22-28. Chin and throat black like the rest of the underside. In both colour and subcaudal counts these snakes agree with *acutirostre*, but because of their intermediate ventral count I continue to treat these eastern snakes as intermediates, besides which it will be noted that quite typical *capense* also occurs at Liwale.

The stomach of the Tunduru snake held the remains of a skink (*Riopa sundevallii*).

Mehelya nyassae (GUNTHER)

juv. ♂ (M.C.Z. 52643) Liwale. 21.iv.52.
♀ (M.C.Z. 52644) Tunduru. 3.ii.52.

Midbody scale-rows 15; ventrals 168-176; subcaudals 64-66. For some reason young Nyasa File-Snakes are extremely scarce and the ♂ measures only 233 (190 + 43) mm. I have taken this reptile in Nyasaland and Kenya, but never in Tanganyika though there is a single record from the Usambara Mountains.

Philothammus hoplogaster (GUNTHER)

♂ (M.C.Z. 52645) Kilwa. 22.viii.50.
7 ♂♂, 20 ♀♀ (M.C.Z. 52646-59) Liwale. 13.iii.50-14.iii.52.
2 ♂♂, 1 ♀ (M.C.Z. 52660-1) Ruponda. 25-28.xii.51.
3 ♀♀ (M.C.Z. 52662-3) Tunduru. 29.xii.51-4.ii.52.

Midbody scale-rows 15, except in three ♀♀ (M.C.Z. 52651-3) which, though possessing 15 anteriorly, at actual midbody have only 13, 12, and 11 respectively; in this character, therefore, they agree with *macrops* though outside the range of that species in the number of their ventrals and subcaudals. Ventrals of ♂♂, 144-154; of ♀♀, 148-164; subcaudals of ♂♂ 87-101, of ♀♀ 73-89, thus achieving a slight extension in the ranges stated in my revisionary key (1951c, p. 4). One ♂ (M.C.Z. 52661) has 81 subcaudals, but a close examination of its tail convinces me that the point has been regenerated.

In life the napes of several Liwale snakes evidently displayed handsome black crossbarring or paired spots. Largest ♂ (M.C.Z. 52647), 645 (445 + 200) mm.; largest ♀ (M.C.Z. 52651), 720 (530 + 190) mm., both below the verified records. 15 ♀♀, taken in November (3), December (7), and January (5), are distended with large ova. The stomach of one ♂ (M.C.Z. 52650) contains many eggs that appear to me to be those of the burrow-laying frog (*Arthroleptis s. stenodactylus*). On the throat of another snake is a tick.

Philothammus semivariiegatus semivariiegatus (A. SMITH)

5 ♂♂, 2 ♀♀ (M.C.Z. 51383-5, 52664) Kilwa. 13.viii.50-6.ix.51.
4 ♂♂, 4 ♀♀ (M.C.Z. 51379-82) Liwale 4.v.49-5.iv.50.
2 ♂♂, 4 ♀♀ (M.C.Z. 55665-7) Tunduru. 26.viii.48-26.ii.52.

Midbody scale-rows 15; ventrals 174-194; subcaudals 136-159. The Tunduru series are all heavily spotted. Other data obtained from this series has been used for a generic revision now in manuscript. To the Ngindo this bush-snake, like the last, is known as *njoka mahamba* (green snake), or simply *namahamba* (the green one), a name that cannot be considered specific.

Meizodon semiornata (PETERS)

♂ ♀ (M.C.Z. 52668-9) Kilwa. 25.ix. & 7.xi.50.
22 ♂♂, 22 ♀♀ (M.C.Z. 52670-98) Liwale. 8.xi.50-25.iii.53.
3 ♂♂, 3 ♀♀ (M.C.Z. 52699-702) Tunduru. 31.xii.51-23.ii.52.

Midbody scale-rows 21; ventrals 159-198 (♂♂ 159-182; ♀♀ 182-198); subcaudals 76-88 (♂♂ 76-85; ♀♀ 76-88); lower labials 9-10, the first 4 or 5 in contact with the anterior sublinguals; preocular 1 (95 sides) or 2 (9); postoculars 2 (103) or 3 (1); temporals 2 + 1 (1), 2 + 2 (81) or 2 + 3 (22). Largest ♂ (M.C.Z. 52668), 590 (455 + 135) mm.; ♀ (M.C.Z. 52685), 767 + (600 + 167 +) mm. The majority are of small size, however, the youngest ♂ being 209 (160 + 49) mm. and ♀ only 218 (165 + 53) mm. with unhealed umbilical scutes.

With a single exception (March), the ten youngest snakes were taken in November or December. Seasonal incidence of capture for the entire series was Sept. (1); Nov. (4); Dec. (15); Jan. (1); Feb. (5); March (13); April (5); unspecified (6). Unquestionably these 50 snakes constitute the finest series of Semiornate Smooth-Snakes ever assembled. I have always regarded the species as scarce, having taken only ten examples in as many years collecting. However, it is a savanna species and my investigations were chiefly in montane-forest country.

Ionides remarks that a ♂ (M.C.Z. 52674) had a newborn rat in its stomach.

Prosymna pitmani BATTERSBY

2 ♂♂, 2 ♀♀ (M.C.Z. 52703-5) Liwale. 25.xii.51-v.53.

Midbody scale-rows 19; ventrals 141-157; subcaudals 17-27; preocular 1, rarely 2 (on right side of M.C.Z. 52704 only). Length of larger ♂, 255 (225 + 30) mm., of larger ♀, 308 (285 + 23) mm.

As this recent discovery of Mr. Ionides was based on two ♂♂ from Kilwa, the above series naturally provide some extension of its known variation as well as of its range. Judging by a revisionary study of the genus which I hope to publish in due course, *pitmani*—the only member of the genus with 19 scale-rows—is probably ancestral to *a. stuhlmanni*.

Ionides suggests (5.i.53) that as all three Kilwa specimens were taken within a somewhat restricted area, their distribution may be localised.

Prosymna ambigua stuhlmanni (PFEFFER)

3 ♂♂, 3 ♀♀ (M.C.Z. 51399-400, 52706-7) Kilwa. 2.iii.50-9.xii.51.
23 ♂♂, 26 ♀♀ (M.C.Z. 51388-97) Liwale. 17.i.50-27.iv.50.
3 ♂♂, 1 ♀ (M.C.Z. 51398, 52708-10) Tunduru. 11.i.50-31.xii.51.

Midbody scale-rows 15; ventrals 130-155 (♂♂ 130-142; ♀♀ 145-155); subcaudals 20-33 (♂♂ 30-34; ♀♀ 19-28); postoculars 2 (108 sides), rarely 1 (9), or absent (1); temporals 1 + 1 (1), 1 + 2 (110), 1 + 3 (6) or 2 + 2 (1). Largest ♂ (M.C.Z. 52709), 232 (193 + 39) mm.; ♀ (I. 3536), 274 (250 + 24) mm. On 5th January and 23rd February ♀♀ were gravid with large eggs.

Dasypeltis scaber scaber (LINNE)

4 ♂♂, 2 ♀♀ (Brit. Mus.) Liwale. V.D. (Ionides coll.)
1 ♂, 4 ♀♀ (M.C.Z. 52722-4) Liwale. 13.xi.-15.xii.51.
♀ (M.C.Z. 52725) Nachingwea 4.xi.51.
♀ (M.C.Z. 52726) Kilwa. 29.x.50.

Midbody scale-rows 23-27; ventrals 197-243; subcaudals 54-68. Other data derived from this series of egg-eaters will be utilized in a revisionary study of the genus by Gans. On 26th April, 1952, when about to pack a pair of these snakes for dispatch, Mr. Ionides found them in coitu.

Dasypeltis scaber medici (BIANCONI)

♀ (M.C.Z. 52721) Liwale. 28.viii.50.

Midbody scale-rows 25; ventrals 247; subcaudals 72. The repeated recurrence of this "race" in the same localities where typical *scaber* is found, will receive attention in the forthcoming paper to which reference is made above.

Telescopus semiannulatus semiannulatus (A. SMITH)

2 ♀♀ (M.C.Z. 52727-8) Kilwa. 27.viii-29.x.50.
7 ♂♂, 7 ♀♀ (M.C.Z. 52730-9) Liwale. 10.ii.50-15.iii.52.
♂ (M.C.Z. 52729) Nachingwea. 4.xi.51.
♂ ♀ (M.C.Z. 52740-1) Tunduru. 29.i.50-31.xii.51.

Midbody scale-rows 19; ventrals 202-232 (♂♂ 202-216; ♀♀ 216-232); subcaudals 58-75 (♂♂ 66-75; ♀♀ 58-71); temporals 2 + 2 (16 sides), 2 + 3 (20), or 3 + 3 (2). The number of dark, saddle-shaped blotches on body and tail are highly variable, ranging from 22-33 on the body, 6 to 15 on the tail. Largest ♂ (M.C.Z. 52735), 588 (480 + 108) mm.; largest ♀ (M.C.Z. 52741), 765 (650 + 115) mm. In the stomachs of each of the two smallest, both under a foot in length, was a gecko, viz. *Lygodactylus g. grotei* and *L. p. picturatus* respectively, while Ionides informs me (8.v.50) he recovered a ♀ *Agama m. mossambica* from one adult, a swallow-like bird from another.

Trinomials are used on account of *T. s. beetzi* (BARBOUR) of Southwest Africa, which is distinguished by having 21 midbody scale-rows and an entire anal. It appears to have more blotches (31-39 + 18), possibly fewer ventrals (♂ 202; ♀ 218), and fewer subcaudals (♂ 50; ♀ 46).

Crotaphopeltis hotamboeia hotamboeia (LAURENTI)

♀ (M.C.Z. 52742) Liwale. 25.iv.50.

Midbody scale-rows 19; ventrals 147; subcaudals 38; preocular 1; postoculars 2. On 11th December, 1951, a ♀ laid an egg on Ionides' verandah.

Chamaetortus aulicus aulicus GUNTHER

♀ (M.C.Z. 52743) Liwale. 27.vii.50.

♀ (M.C.Z. 52744) Ruponda. 13.vii.50.

Midbody scale-rows 17; ventrals 190-196; subcaudals 95, the tail being truncate in the other specimen. The stomach of the Liwale snake held two juvenile *Hyperolius*, the Ruponda reptile the remains of an *Arthroleptis s. stenodactylus*.

Ionides informs me (14 & 28.vii.50) that the Ruponda snake was in a bamboo, the Liwale specimen among bamboos by the river, but that two others taken by him were in miwale palms at Liwale Boma. He suggests that secretive habits may be responsible for the scarcity of *aulicus* in collections.

Hemirhagerrhis nototaenia nototaenia (GUNTHER)

♀ (M.C.Z. 52745) Kilimarondo. 10.xii.51.

1 ♂, 7 ♀♀ (M.C.Z. 52746-50) Kilwa. 4.iii.48-2.xi.50.

9 ♂♂, 30 ♀♀ (M.C.Z. 52751-81) Liwale. 17.i.48-29.iv.53.

Midbody scale-rows 17; ventrals 156-170 (♂♂ 157-166; ♀♀ 156-170), average 159.3; subcaudals 69-80 (♂♂ 70-80; ♀♀ 69-80), average 73.6; upper labials 8; preocular 1; postoculars 2 rarely 1 (on right side of M.C.Z. 52751 only); temporals 1 + 2. Largest ♂ (M.C.Z. 52746), 330 (250 + 80) mm.; largest ♀ (M.C.Z. 52747), 359 (270 + 89) mm. On October 16 a ♀ held two elongate eggs measuring 15 × 3.5 and 20 × 3 mm. respectively; on 27th October another ♀ held two eggs measuring 18 × 4 mm. and 20 × 4 mm.; on 29th May a third snake held four eggs approximately 24 × 6 mm. Stomachs of two snakes examined held geckos, viz. *Hemidactylus mercatorius* and *Lygodactylus p. picturatus*.

It will be noted that there are no sexual differences reflected in the scale-counts. Counts were made on all but four of the entire series and the averages go far towards reducing the alleged disparity in ventral and subcaudal counts as between *nototaenia* and its western form *viperina*. I am inclined to question the old record of 98 subcaudals. However, so far as these 47 snakes are concerned, the difference in dorsal pattern (cf. Bogert, 1940, p. 76, fig. 12) still holds good.

Known to the Ngindo as *kitandamba*, i.e. one found among "ndamdamba" beans, but loosely applied to *Psammophis angolensis*, *Chilorhinophis* and *Aparallactus* sp.

Rhamphiophis oxyrhynchus rostratus (PETERS)

Ionides kindly sent me the following note regarding breeding. Writing on 20.xi.49, he remarks that a scarcely halfgrown Eastern Beaked-Snake had just laid three large cylindrical eggs. On 27.x.50 he says that on the night of 16th October a ♀ laid four eggs, on the night of the 17th six more, on the night of the 18th two, at midday on the 20th two, at night on the 21st one, and appeared to be still carrying two eggs when he wrote. Known to the Ngindo as *njoka uhono*, i.e. sesame snake, from the resemblance of its scales to sesame.

Psammophylax tritaeniatus tritaeniatus GUNTHER

- 18 (M.C.Z. 52812-23) Liwale. 26.iii.50-12.iii.52.
 3 (M.C.Z. 52824-5) Songea. x.50-ii.52.
 2 (M.C.Z. 52826-7) Tunduru. 9.vi.50 & 3.iii.52.

Midbody scale-rows 17; ventrals 139-154; subcaudals 50-59; rostral as broad as (15 examples), or broader than (8) deep; upper labials 7 (right side only of M.C.Z. 52812) or 8, the fourth and fifth entering the orbit, or fifth only (right side only of M.C.Z. 52815); lower labials 9-11, the first 4 or 5 in contact with the anterior sublinguals; preocular 1, rarely 2 (on 5 sides only); postoculars 2; temporals 2 + 2 (2 sides), 2 + 3 (35), or 2 + 4 (9). Largest ♂ (M.C.Z. 52812), 574 (460 + 114) mm.; largest ♀ (M.C.Z. 52813), 629 (510 + 119) mm.

In December, 1948, Ionides collected three hatchlings, apparently just emerged, all together. On 13th, 15th and 17th December, 1951, he obtained three more in the same general locality. Two of these measured 140 + 33 mm. and 140 + 39 mm. respectively. Another juvenile, taken in February, 1952, is 170 + 41 mm. The largest ♀ (*vide supra*) had a Black-lined Plated-Lizard (*Gerrhosaurus n. nigrolineatus*) in her stomach.

In April and December, 1948, Mr. Ionides obtained half-a-dozen of these White-bellied Grass-Snakes at Mbwemkuru, in southern Liwale District, at altitudes under 2,000 feet. This discovery of which he wrote me (19.v.49), was largely instrumental in my realization that the dark-bellied montane form (*T. v. variabilis*) occurring above 5,000 feet in the mountains of southern Tanganyika was a recognizable race to which I had consistently misapplied the name *T. t. tritaeniatus*.

Psammophis angolensis BOCAGE

- | | | | | |
|--------|-------|--------------------|------------------|---------------------|
| | ♀ | (M.C.Z. 53114) | Gahama. | 9.vi.53. |
| 2 ♂♂, | 1 ♀ | (M.C.Z. 52782-4) | Kilwa. | 12.x.50-21.viii.52. |
| 1 ♂, | 1 ♀ | (M.C.Z. 52785-6) | Lipumba, Songea. | 30-31.v.50. |
| 12 ♂♂, | 14 ♀♀ | (M.C.Z. 52787-806) | Liwale. | 11.iv.50-27.iii.53. |
| | 1 ♀ | (M.C.Z. 52807) | Msuega. | 6.ix.52. |
| 1 ♂, | 1 ♀ | (M.C.Z. 52808-9) | Ruponda. | 26-28.xii.52. |
| | 2 ♀♀ | (M.C.Z. 52810-1) | Tunduru. | 5-8.i.52. |

Midbody scale-rows 11; ventrals 135-153 (too many of the snakes in the Liwale series are immature to permit of sexing with confidence; if a sexual difference in ventrals does occur it is probably ♂♂? 135-141 and ♀♀? 141-153); subcaudals 56-68 (no sexual difference); upper labials 8, fourth and fifth entering the orbit, except on one side of 5 snakes where it is 7, with the third and fourth entering; lower labials 8, the first 4 in contact with the anterior sublinguals, or 9 (on 3 sides only) with 5 in contact; preocular 1, possibly 2 (in M.C.Z. 52784); postoculars 2; temporals 1 + 2, rarely 1 + 1 (on 6 sides only out of a total of 72). Largest ♂ (M.C.Z. 52809), 368 (277 + 91) mm.; largest ♀ (M.C.Z. 53114), 430 (315 + 115) mm., the smallest (M.C.Z. 52796), 133 (100 + 33) mm., taken in January as were four of the five measuring less than 200 mm. in length.

On 6th September, at Msuega, a ♀ held 4 elongate eggs ranging from 15-18 × 5 mm. Stomachs of 8 snakes held remains of skinks, in 5 instances identifiable as *Ablepharus wahlbergii*, and an egg of the latter. Possibly this dwarf form of *Psammophis* largely confines its diet to *wahlbergii*, as its gape would scarcely permit of its taking most adult skinks. A young *P. angolensis* was recovered by Ionides from the stomach of a Burrowing-Adder (*Atractaspis b. rostrata*).

Thelotornis kirtlandii capensis A. SMITH

Ionides states (13.x.50) that he placed an average-sized Cape Vine-Snake, about a yard long, in a box with a fair-sized *Chamaeleo d. dilepis*. Though the snake had been caught only a few hours before, it promptly seized the chameleon by the back and for several minutes held it, head downwards, clear of the ground. After the initial struggle which followed its seizure, the chameleon offered little resistance. Eventually the snake worked its jaws along to the head of the chameleon and then swallowed it. Immediately afterwards this same vine-snake struck at a House Gecko (*Hemidactylus mabouia*) but, missing, did not follow up the attack.

Ionides was intrigued by the fact that Boomslangs (*Dispholidus typus*), though habitually preying on chameleons, rarely manage to master so large an example at the first attempt. He had supposed that the potent venom of a boomslang was necessary to overcome the resistance offered by a large chameleon. Yet the vine-snake had managed to gain control very quickly, though apparently the venom of a vine-snake is less toxic. At least Ionides supposes so, for he has frequently been bitten by vine-snakes without noticing any after effects, even on occasions when he has allowed them to hang on and chew. One should not overlook the possibility that the rear, venom-conducting teeth may not have come into play if the gape of the particular snake did not permit it.

Dispholidus typus (A. SMITH)

♂ (M.C.Z. 52828) Songea. 22.xii.52.

Midbody scale-rows 19; ventrals 179; subcaudals 120. Total length 1115 (800 + 315) mm. Colour green, the usual livery for males in this general region. On 4th July, 1949, Ionides observed a pair of Boomslangs in a tree, intertwined and apparently mated; one was green, the other brown. Females are usually brown, but an examination of the *Dispholidus* material from all over Africa preserved in the Museum of Comparative Zoology, reveals that this is not a hard and fast rule. Ionides writes (20.ix.52) that black Boomslangs, apparently of both sexes, occur at Liwale in addition to the green and brown adults. Besides which there is the juvenile livery, somewhat similar to that of the Vine-Snake, of grey spotted with pale blue on the nape and back, especially anteriorly. Older juveniles lose the blue spots. One young male, reports Ionides, was just assuming the adult colouring, being green with black between the scales anteriorly, while posteriorly it was a lighter green.

In December, 1948, Ionides wrote that a captive Boomslang, gentle but rather nervous, refused to look at lizards though readily tackling fair-sized chameleons (*Chamaeleo d. dilepis*). On 20.i.50 he wrote of a nearly six-foot long, dark-olive snake that seized the largest chameleons unhesitatingly.

Occasionally disputes arose over the possession of a chameleon, resulting in the contestants embedding their poison fangs in each other and holding on, sometimes for considerable periods. In one instance a larger Boomslang engorged, together with a chameleon, the head and fully six inches of its adversary before the latter managed to extricate itself and withdraw. Apparently no ill-effects were suffered by the vanquished snake for Ionides continued to keep it in health for some time afterwards. Occasionally, following fights between Boomslangs, there is a certain amount of haemorrhage but Ionides concludes these snakes have developed some degree of immunity to the venom of their own species.

On 30.vii.52 he wrote that he understands one of the attendants at Durban Snake Park had succumbed to the bite of a Boomslang, though there was some possibility of hypersensitivity having developed after immunization by antivenene.

Calamelaps unicolor unicolor (REINHARDT)

3 ♂♂ (M.C.Z. 52835-6) Liwale. 19.ii-25.iv.52.

Midbody scale-rows 17; ventrals 159-167; subcaudals 25-26.

Ionides informs me that he sent a third snake with 17 and a fourth with 21 midbody scale-rows to C. R. S. Pitman, who carefully verified the counts. The four races of *unicolor* differ apparently only in the number of midbody rows, being 15, 17, 19 or 21 as one proceeds from Portuguese Guinea east to Tanganyika where three of the races are present. It seems absurd that three races should occur at Liwale, unless geographically it is their meeting place and an area of intermediates. Nevertheless, until more light can be shed on the ranges of the respective forms, it seems advisable to assign these three Purple-glossed Snakes to the typical race. In many colubrid snakes the number of midbody scale-rows varies in a species within restricted limits, in others—like *Chilorhinophis* and *Aparallactus* which are closely related to *Calamelaps*—it remains static for the entire genus.

The stomach of one snake held a worm-lizard (*Amphisbaena ionidesii*), another a young blind-snake (*Typhlops s. mucruso*).

Calamelaps unicolor warreni BOULENGER

3 ♂♂, 10 ♀♀ (M.C.Z. 52837-42)	Liwale.	26.ii.50-26.iv.53.
♂ (M.C.Z. 52843)	Ruponda.	28.xii.51.
♀ (M.C.Z. 52844)	Tunduru.	14.i.50.

Midbody scale-rows 19; ventrals 162-204 (♂♂ 162-170; ♀♀ 191-204); subcaudals 17-27 (♂♂ 24-27; ♀♀ 17-21). An unfortunate misprint—showing ♀ subcaudals as 17-32, instead of 17-22, occurs in the synopsis of scale-counts accompanying my (1944q, pp. 159-169) revision of this genus. Largest ♀ (M.C.Z. 52844), 632 (600 + 32) mm. The stomach of one Liwale snake held a worm-lizard (*Amphisbaena ionidesii*). See also remarks under *u. unicolor*.

Amblyodipsas katangensis ionidesi LOVERIDGE

♂ (M.C.Z. 52849)	Kilwa.	16.vii.51.
10 ♂♂, 13 ♀♀ (M.C.Z. 52850-67)	Liwale.	2.vi.50-19.xi.52.
1 ♂, 3 ♀♀ (M.C.Z. 52845-8)	Tunduru.	30.xii.51-21.iii.53.

Midbody scale-rows 15; ventrals 165-205 (♂♂ 165-184; ♀♀ 178-205); subcaudals 15-25 (♂♂ 22-25; ♀♀ 15-20); postocular one (39 sides) or absent (17). Underside of nine snakes are more or less checkered, of 17 wholly black. Otherwise in substantial agreement with the original description (Loveridge, 1951a, p. 193) except that the maximum measurements are now surpassed by a ♂ (M.C.Z. 52850), of 320 (291 + 29) mm., and a ♀ (M.C.Z. 52851), of 370 (346 + 24) mm. The stomachs of two *A. k. ionidesi* held worm-lizards (*Amphisbaena ionidesii*).

Chilorhinophis carpenteri liwaleensis LOVERIDGE

4 ♂♂, 9 ♀♀ (M.C.Z. 52829-34)	Liwale.	23.iii.50-20.i.52.
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Midbody scale-rows 15; ventrals 218-256 (♂♂ 218-230; ♀♀ 241-256); subcaudals 19-29 (♂♂ 27-29; ♀♀ 19-23); tail included in total length 10.5-19.1 times (♂♂ 10.5-12.9; ♀♀ 16.6-19.1); in this instance sexing is based not on dissection but on the characters set forth in the generic key and original description (cf. Loveridge, 1951a, pp. 194, 196). Largest ♀ (M.C.Z. 52832), exceeds previous records by measuring 360 (339 + 21) mm. Two of the series had recently swallowed limbless lizards of a species (*Amphisbaena ionidesii*) also discovered by Mr. Ionides. Known to the Ngindo as *kitandamba*, a name applied also to *Hemirhagerrhis*, etc., which see.

Aparallactus sp.

In 1948 Mr. Ionides sent me a pair of centipede-eaters from Liwale that were superficially so similar it was difficult to believe they represented two distinct species. However, though with a query, I (1951a, pp. 199-200) correctly assigned them to *A. wernerii* and *A. c. capensis*. Subsequently I wrote to Mr. Ionides soliciting his co-operation in securing a good series of each in order that I might elucidate relationships and more conclusively establish the scope of variation within each species. Mr. Ionides responded magnificently, and the following notes—based on a critical examination of over 200 snakes that involved several weeks of study—reveal the distinctness of the two species in question.

In my revision (1944q, pp. 181-213) of these little black-headed snakes, I treated *lumulatus* (then ranging from the Transvaal north to the Belgian Congo and Tanganyika Territory) and *concolor* (then ranging from Tanganyika Territory north to Eritrea and the Anglo-Egyptian Sudan) as full species. However, Witte and Laurent (1947, p. 110) synonymized *concolor* with *lumulatus* though stating (p. 113) that such synonymizing was only provisional and that possibly *concolor* should be recognized as a race of *lumulatus*. Unfortunately they figured a typical *concolor* as *lumulatus*. In the east the subspecific suggestion appears to reflect the situation, but in the southern Sudan the position remains confused for we have typical *lumulatus* at Torit (6 ex.), Terangore (3 ex.) and Nimule (2 ex.), but *concolor* also at Nimule (4 ex.) and Magwe (1 ex.) which is about 36 miles south-west of Torit.

Until more material from Uganda and northern Kenya is available the area of intergradation cannot be plotted satisfactorily.

The Ionides material has effectually cleared up a potential problem, however, for he wrote me saying that the snakes I was calling *uluguruensis* (which was based on a series of all-black adults) appeared to be the same as what the British Museum determined as *guentheri* (based on a white-collared juvenile). The fine series, representing all ages, obtained by Ionides, enabled me (1953e, p. 150) to synonymize *uluguruensis* with *guentheri*, which I had to recuscitate from the synonymy of *capensis*. Nor can *guentheri*, though so closely related to *capensis* except in colour (*vide infra*), be regarded as a race of the Cape Centipede-eater for both occur together at Liwale in miombo savannah. Previously I had supposed that *guentheri* (as *uluguruensis*) was the montane-forest representative of the savannah-dwelling *capensis*, a view which Ionides points out (4.vii.50) is untenable. He was pleased to learn that his suspicions were confirmed, and the white-collared blackish juveniles eventually turn into uniformly black adults.

It is surprising to find four members of the one genus occurring at Liwale, especially seeing that the diet of all appears to be restricted to centipedes. At least one centipede being recovered from one of each of the four species. As *Aparallactus* species invariably have 15 midbody scale-rows this character has not been checked except in a relatively few individuals.

It is hoped that the accompanying synopsis and table of variation will prove useful in aiding others to identify their material with greater ease.

Synopsis of *Aparallactus* occurring at Liwale

1. Postoculars 2 (rarely 1); parietal separated from upper labials by temporals; first lower labial in contact with its fellow behind the mental; head black; nape with a light-edged six-scale-wide, black collar; back and tail pinkish buff to reddish brown; below white; size up to 390 mm. (a ♀ cotype from the Usambara mountains) . . . *wernerii*.

Postocular 1; parietal in contact with¹ fifth, rarely fourth, upper labial . . . 2.

2. First lower labial in contact with its fellow behind the mental; color varying from those with head black, nape with a light-edged black collar; back and tail reticulated pale brown above; below white; to those that are uniform black above and plumbeous below; size up to 525 mm (a ♀ topotype from Tete, Mozambique *l. humulatus*).

First lower labial separated from its fellow behind the mental . . . 3.

3. Young are black above with two light-edged collars separated by five to seven scales; back and tail uniform plumbeous or steely blue; below throat white, and body basically so but heavily infuscated with grey. Adults uniformly black above, black or grey below; size up to 400 mm. (an Amani paratype of the syn. *uluguruensis*) . . . *guentheri*.

Both young and adults coloured much the same as *wernerii*; size at Liwale up to 315 mm. (410 mm., in Cape Province of the Union of South Africa) . . . *c. capensis*.

DATA DERIVED SOLELY FROM THE IONIDES MATERIAL

Species of <i>Aparallactus</i>	Post-oculars	Parietal and 5th labial	First lower labials in	Ventrals in ♂♂	Ventrals in ♀♀	Caudals in ♂♂	Caudals in ♀♀
<i>wernerii</i>	2	separated	contact	139-150	147-162	38-45	33-41
<i>l. humulatus</i>	1	contact	contact	146-155	153-175	52-60	49-55
<i>guentheri</i>	1	contact	separated	137-150	152-163	44-52	42-48
<i>c. capensis</i>	1	contact	separated	129-140 ²	132-158	38-46	36-46

¹ Separated in only one of the 129 snakes examined.

² 152 in a solitary, but unquestionable, ♂ (M.C.Z. 52007) which in this one respect seems to have a feminine characteristic.

Aparallactus werneri BOULENGER

27 ♂♂, 49 ♀♀ (M.C.Z. 51701-19, 52868-74) Liwale. 21.xii.49-26.i.52.

Ventrals 139-162 (♂♂ 139-150; ♀♀ 147-162); subcaudals 33-45 (♂♂ 38-45; ♀♀ 33-41); preocular 1; postoculars 2, rarely 1 (on 12 sides only); temporals 1 + 1; upper labials 5, the second and third entering the orbit; lower labials 5, the first pair in contact behind the mental, the first 3 in contact with the anterior sublinguals. Largest ♂ (M.C.Z. 52868), 271 (230 + 41) mm.; largest ♀ (M.C.Z. 52871), 269 (230 + 39) mm.; smallest ♂ and ♀ (M.C.Z. 52870, etc.), 113 (96 + 17) mm.

In the report on Ionides' earlier collection I (1951a, p. 199) queried the identification of the solitary *werneri* (M.C.Z. 50093) partly because of its colour (buff like *capensis*, whereas the extensive series of topotypical *werneri* that I collected in the Usambara Mountains was distinctly olive), partly on size (the cotype was 120 mm., longer than the largest Liwale specimen), and its postoculars (the normal two on the right but only one on the left). This condition occurs in 4 of the 76 snakes, but 4 others have a single postocular on both sides. The slight difference in size does not furnish reasonable grounds for recognizing a savannah race; the olive hue of the forest-edge reptiles is fugitive, after almost 30 years in alcohol, and the Amani snakes are now as buff as the Liwale reptiles.

Aparallactus lumulatus lumulatus (PETERS)

2 ♂♂ (M.C.Z. 51750) Kilwa. 19.vii-2.xi.50.
 5 ♂♂, 11 ♀♀ (M.C.Z. 51745-9, 52875-9) Liwale. 13.iii.50-15.iii.52.
 ♂ (M.C.Z. 52904) Masasi. 19.vi.51.
 ♂ (M.C.Z. 52880) Nachingwea. 3.xi.51.
 ♂ (M.C.Z. 52881) Ruponda. 26.xii.51.
 4 ♂♂, 2 ♀♀ (M.C.Z. 52882-6, 52903) Tunduru. 29.xii.51-12.i.52.

M.C.Z. 52903 is the only one of the series which agrees with the northern *A. l. concolor* in having the nasal well separated from the preocular, though in two or three others these scales meet in a point. See also remarks under *Aparallactus* (*vide supra*).

Ventrals 146-175 (♂♂ 146-155; ♀♀ 153-175); subcaudals 49-60 (♂♂ 53-60; ♀♀ 49-55); preocular 1; postocular 1; temporals 1 + 1; upper labials 6, the third and fourth entering the orbit; lower labials 6, rarely 7, the first 4 (3 on right side of I. 3685) in contact with the anterior sublinguals. Largest perfect ♂ (M.C.Z. 52875), 407 (320 + 87) mm.; largest perfect ♀ (M.C.Z. 52906), 459 (370 + 89) mm., but both sexes exceeded in head and body length by specimens of 390 and 340 mm. respectively, with truncated tails. Truncated tails are present in only 6 (4 of which are ♀♀) of the 27 specimens listed above.

In colour these snakes range from a typically reticulated, pale brown ♀ (M.C.Z. 51749) of 370 mm., with traces of about 30 dusky crossbars on the dorsum and uniform white below; or a young 220-mm. ♂ (M.C.Z. 51750) that is plumbeous above with a black, posteriorly light-edged, nuchal collar; below uniform white becoming greyish posteriorly, to specimens that are uniformly black above and white-throated below with each ventral white-edged (♀ M.C.Z. 51748) or wholly plumbeous (♀ M.C.Z. 51749).

Aparallactus guentheri (BOULENGER)

Aparallactus guentheri, Boulenger (part), 1895, Ann. Mag. Nat. Hist. (6), 16, p. 172: Zanzibar (possibly coast opposite. Omit Angola. Based on a faded juvenile displaying a nuchal collar).

Aparallactus uluguruensis, Barbour & Loveridge, 1928, Mem. Mus. Comp. Zool., 50, p. 132; Nyange, Uluguru Mountains, Tanganyika Territory (based on ten collarless and almost uniformly black adults).

18 ♂♂, 22 ♀♀ (M.C.Z. 51730-44, 52887-900) Liwale. 4.i.50-5.i.52.
 2 ♀♀ (M.C.Z. 52901-2) Tunduru. 18.i. & 4.ii.52.

Ventrals 137-163 (♂♂ 137-150; ♀♀ 152-163); subcaudals 42-52 (♂♂ 44-52; ♀♀ 42-48); preocular 1; postocular 1; temporals 0 + 1 + 1; upper labials usually 6, the third and fourth entering the orbit, rarely 5, with the second and third entering (on right side only of M.C.Z. 51739 and 52891); lower labials either 5, with the first 3 (73 sides) in contact with the anterior sublinguals, or 6, with the first 4 (8 sides) in contact. Largest perfect ♂ (M.C.Z. 51736), 375 (300 + 75) mm.; largest ♀ (M.C.Z. 52893), 392 (320 + 72) mm.

Colour. Above, black, except in young which have *two* white collars, the anterior about one scale in width (but expanding on the sides) immediately behind the parietals, separated by 6 or 7 (4 or 5 on Mbololo and Mlalo snakes) black scales from the posterior collar which is about 2 scales wide (but expanding on the sides). Below, black, uniform except in young which exhibit a variable amount of white from mental to a point below the posterior nuchal collar with which it merges. The Liwale series displays every stage in the disappearance of the white collar and gular markings as throat and neck become suffused with darker.

Ionides (4.vii.50) points out that this species which, as *uluguruensis*, I had assumed was the montane-forest representative of *c. capensis*, occurs alongside *capensis* in miombo savannah. He noted with pleasure that his suspicions regarding the white-collared juvenile becoming the uniformly black adults, had proved correct.

Aparallactus capensis capensis A. SMITH

- 3 ♀♀ (M.C.Z. 51751-2) Kilwa. 16.x.50-9.xii.51.
 25 ♂♂, 25 ♀♀ (M.C.Z. 50094, 51720-9, 52907-54) Liwale. 21.ii.50-7.xi.53.
 ♀ (M.C.Z. 52936) Nachingwea. 4.xi.51.
 2 ♀♀ (M.C.Z. 52901-2) Tunduru. 31.xii.51 & 25.i.52.

Ventrals 129-158 (♂♂ 129-140 and one, M.C.Z. 52007, with 152; ♀♀ 135-158); subcaudals 36-46 (♂♂ 38-46; ♀♀ 36-46); nasal in contact with preocular except in two specimens (M.C.Z. 50094; 52911); preocular 1; postocular 1; temporals 0 + 1 + 1 except in M.C.Z. 52009 where the parietal is separated from the fourth upper labial (as in *wernerii*, which species it is not, as the first lower labial is well separated from its fellow behind the mental); upper labials 6, the third and fourth entering the orbit, except on one side of two snakes where it is the second and third of 5 or 6 labials respectively; lower labials 5 or 6, the first 3, rarely 4 (three sides) or 5 (one side), in contact with the anterior sublinguals. Largest ♂ (M.C.Z. 52910), 271 (215 + 56) mm.; largest ♀ (M.C.Z. 51729), 315 (257 + 58) mm. Smallest ♂ (M.C.Z. 52908), 121 (97 + 24) mm., and ♀ (M.C.Z. 52925), 113 (95 + 18) mm., both being taken on 2nd April, 1951.

ELAPIDAE

Elapsoidea sundevallii decosteri BOULENGER

- juv. ♂ (M.C.Z. 48951) Ruangwa River. 1941-2.
 3 ♂♂, 1 ♀ (M.C.Z. 52937-9) Liwale. viii.45-20.i.52.
 2 ♂♂, 3 ♀♀ (M.C.Z. 52940-3) Tunduru. 30.i-26.ii.52.

Midbody scale-rows 13; ventrals 145-157 (♂♂ 149-157; ♀♀ 145-147); subcaudals 16-23 (♂♂ 20-23; ♀♀ 16-17); nasal in contact with (in 7 snakes) or separated from (in 3) the preocular. While one 168 mm. ♂ (M.C.Z. 48951) displays 11 white crossbands on the dorsum, plus 2 on the tail, their width being about half that of the chocolate-brown interspaces, another ♂ (M.C.Z. 52938) of 252 mm., shows almost as little white as the eight adults. Largest ♂ (M.C.Z. 52937), 576 (540 + 36) mm., largest ♀ (M.C.Z. 52942), 490 (462 + 28) mm., but neither are records for this race. On 30th January the smallest ♀ held 4 eggs measuring from 21-23 × 8 mm.; on 26th February the largest ♀ held eight eggs from 20-21 × 7 mm. The stomach of one Tunduru snake held the forepart of a frog, apparently *Hemisis m. marmoratum*.

I have included the Ruangwa River specimen, presented to the museum by Mr. R. de la B. Barker, as it is the first record of this race occurring in Tanganyika Territory.

Naja nigricollis nigricollis REINHARDT

juv. ♂ (M.C.Z. 52944) Tunduru. 5.i.52.

Midbody scale-rows 19; ventrals 174; subcaudals 62.

Ionides writes (20.i.50) that a four-and-three-quarter-foot ♀ captured in a fowlhouse promptly disgorged five hen's eggs. For seven weeks he fed her on rats, which she took readily, and periodically milked her of venom. At the end of that time she died. [Possibly from loss of venom which is a potent factor in a snake's digestion. A.L.] On 30.vi.52 Ionides saw the corpse of a cobra that had swallowed an adult Great Girdled-Lizard (*Gerrhosaurus m. grandis*).

Writing on 16.xi.52 Ionides tells of an incident which had occurred that morning at Luhuu Juu in Liwale District. On the previous day a fish trap (*ngonyo*), having been removed about a hundred yards from the water, was left on open sand where it filled with grasshoppers (*panzi*) that could not possibly escape. In the morning the surrounding sand revealed the tracks of a ♀ *nigricollis* which had circled about the trap before entering it. The distended stomach of the reptile, which was about four and a half feet long, showed she had recently fed well and there was not a single grasshopper left in the trap. If the cobra did not swallow them, the sole alternative would seem to be that some other creature had entered the trap, eaten the orthoptera, and then itself been swallowed by the snake. However, there were no tracks on the sand to substantiate this theory, besides which the bulge in the cobra was long and gradual—instead of abrupt as would have been the case if the swelling was caused by the presence of a toad, bird, or rodent.

Dendroaspis polylepis polylepis (GUNTHER)

juv. ♀ (M.C.Z. 52945) Liwale. 1-15.iii.52.

juv. ♂ (M.C.Z. 52946) Tunduru. 20.i.53.

Living examples of this mamba from Kilwa and Masasi have been sent to the London Zoological Gardens by Mr. Ionides.

Midbody scale-rows 21-23; ventrals 257-259; subcaudals 108-116; colour olive; mouth membranes black. ♂ measures 620 (500 + 120) mm.; the ♀ is only 3 mm. longer.

Ionides states (5.i.53) that in October, 1952, he suddenly came upon a large *polylepis* at close quarters. The mamba raised its head with about a foot of its body clear of the ground as it spread a hood so large that Ionides took a good look to be sure it was not a cobra. Meanwhile Ionides retreated to gain possession of his snake-stick which was being carried by a man behind; before he got it, however, the snake made off. Again on 5th January, 1953, Ionides surprised a female which started away but, on finding herself followed, turned about as she spread a quite pronounced hood, though smaller than that of a cobra. The mamba reared up about two feet from the ground. After remaining motionless for a while she slowly advanced towards a small patch of grass that lay between them. For a short time she continued to stare at Ionides over the grass, then made for a termite hill. Ionides gave chase, caught her, and later sent her to the Regent's Park Zoo.

VIPERIDAE

Atractaspis bibronii rostrata GUNTHER

♂ (M.C.Z. 52950) Kilwa. 23.viii.50.

34 ♂♂, 37 ♀♀ (M.C.Z. 52951-53000) Liwale. 10.i.50-10.iv.52.

♂ (M.C.Z. 53001) Mbwera near Madaba. 24.ix.52.

2 ♀♀ (M.C.Z. 53002) Ruponda. 5.iii.50-26.xii.51.

11 ♂♂, 10 ♀♀ (M.C.Z. 53003-19) Tunduru. 26.i.50-9.iii.52.

In the report on Ionides' earlier collection I (1951a, p. 202) used the name *bibronii* for Tanganyika snakes as the then available information regarding South African *bibronii* did not justify separation. After the paper was in galley a belated reply arrived from Dr. V. FitzSimons of the Transvaal Museum, furnishing the midbody scale counts for their material of *bibronii* from south of the Zambezi. Of 17 snakes from Southern Rhodesia; Bechuanaland; Transvaal and Natal, all but three had 21 midbody scale-rows. Consequently I follow Laurent (1945, p. 335) who revived *rostrata* for the snakes north of the Zambezi where it will be noted that specimens with 23 scale-rows predominate.

Midbody scale-rows 21 (3 specimens), 22 (1) or 23 (92); ventrals 220-251 (♂♂ 228-248; ♀♀ 220-251); subcaudals 18-28 (♂♂ 21-28; ♀♀ 18-23; unquestionably overlapping as both sexing and extreme counts have been double checked); preocular 1, except in M.C.Z. 52980 where it is fused with the supraocular on the right side, and M.C.Z. 53000, 53016 on both sides; postocular 1; temporals 1 + 2, except on right side of M.C.Z. 52989 where it is 1 + 3, and M.C.Z. 53009, 53013, where the anterior temporal is fused with the fifth labial, making it the largest, otherwise upper labials 5, rarely 6, the third and fourth entering the orbit, the fourth largest; lower labials 5, rarely 6, the first pair in contact (except in M.C.Z. 52999, where they are separated) behind the mental, the first 3 in contact with the anterior sublinguals, third lower labial much the largest. Largest ♂ (M.C.Z. 52951), 600 (562 + 38) mm.; largest ♀ (M.C.Z. 52976), 677 (645 + 32) mm.

While the overwhelming majority are uniformly black above and plumbeous below, three Liwale ♂♂ and four ♀♀ have pure white anals, and several others are more or less white about the lower jaws and throat. The Mbwera ♂ is blackish grey above and entirely china white on the upper labials, lower flanks and undersurface, the two being separated by a scale-wide, dusky, lateral line. One 547 mm. ♀ (M.C.Z. 52980), is an ivory white *albino*.

The albino *Atractaspis* was concealed in a piece of dry and rotting wood that was being split for fuel. The parti-coloured Mbwera male was also taken from a hollow log.

The stomach of one adder held the remains of a lizard, apparently *Latastia johnstoni*. Ionides reports removing a young *Psammodphis angolensis* from another.

Writing on 27.iii.50, Ionides states that a few days previously one of his porters was jabbed in a finger by a small *Atractaspis*. Ionides opened the puncture with a razor blade and rubbed in permanganate. Except for a rather swollen hand the man, who was possibly more frightened than hurt, seemed all right at time of writing. On 17.xii.51 Ionides wrote: "Yesterday a porter was struck by one fang of a large *Atractaspis*. I injected him with 10 c.c. of FitzSimon's serum and, except for a swollen hand, he seems to be alright." Ionides reports that on 30th December 1951 he was struck on the finger by an *Atractaspis* (I. 2390). For 24 hours no treatment was adopted but pain at the site of the punctures was severe enough to prevent Ionides getting much sleep the first night. Next day hot fomentations were applied to the site of the bite, but without opening the punctures. The hand had swollen to above the wrist and there was pain and swelling in the armpit. Next day these symptoms began subsiding and by the fourth day had receded to the first joint of the affected digit. By the eighth day—7th January, on which he wrote me—the discoloration surrounding the punctures had almost disappeared.

Causus rhombeatus (LICHTENSTEIN)

2 ♂♂, 2 ♀♀ (M.C.Z. 53105-6) Songea. 28.viii.48-ii.52.

Midbody scale-rows 17-18; ventrals 140-148; subcaudals 23-29. Almost uniform brown or grey above, a variation that crops up in other parts of the range of this widespread Rhombic Night-Adder. Larger ♂ (M.C.Z. 53105), 554 (495 + 59); larger ♀ (M.C.Z. 53106), 613 (555 + 58) mm.

Causus defilippii (JAN)

♀ (M.C.Z. 53020)	Kilimarondo.	10.xii.51.
2 ♂♂, 3 ♀♀ (M.C.Z. 53021-2)	Kilwa.	3.viii.50-9.xii.51.
62 ♂♂, 74 ♀♀ (M.C.Z. 53023-100)	Liwale.	24.iii.50-28.xii.52.
2 ♂♂, 4 ♀♀ (M.C.Z. 53101-2)	Ruponda.	25-26.xii.51.
2 ♂♂ (M.C.Z. 53103-4)	Tunduru.	7.iii.52.

As this series contains more than three times the total number of *defilippii* recorded in the literature since Jan first described the species in 1862, it presents so many variations that I have dealt with them in more than usual detail. Hitherto, for example, the number of midbody scale-rows was thought to be only 17!

Midbody scale-rows 13-17 (13 in M.C.Z. 53021 only; 15 in 10 Liwale snakes; 16 in 40; 17 in 99); ventrals 109-130 (♂♂ 109-121; ♀♀ 117-130; however, as only 10 ♂♂ have as many as 117 or over, and only 4 ♀♀ have as low as 117 or under, it might be said that ♂♂ usually range from

109-116 and ♀♀ from 118-130); subcaudals 13-18 (♂♂ 13-17; ♀♀ 11-17); preoculars 1 to 2 (though 1, through fusion, on 8 sides only); suboculars 1 to 2, rarely 0 or 3 (18 sides with 0; 94 with 1; 80 with 2; and 8 with 3); postoculars 1 to 2 (though 1, through fusion, on 7 sides only); temporals 1 + 2 (3 sides), 1 + 3 (2), 2 + 2 (2), 2 + 3 (251), 2 + 4 (37), 3 + 3 (2), 3 + 4 (2), 3 + 5 (1); upper labials 5 to 7 (but 6 on all but 12 of the 300 sides) excluded from orbit, except on 5 sides; lower labials 8 to 10, usually 9, the first 3-5, usually 4, in contact with the anterior sublinguals.

Largest ♂ (M.C.Z. 53104), 348 (320 + 28) mm.; largest ♀ (M.C.Z. 53051), 406 (380 + 26) mm., the latter surpassed by one of 412 mm. in Chicago Natural History Museum. Smallest ♂ (I. 3706), 113 (105 + 8) mm.; smallest ♀ (M.C.Z. 53100), 139 (130 + 9) mm.

As to hatching, these vipers being oviparous, the eight youngest snakes, their total lengths being under 128 mm., were all taken in March.

On 1-15th Mar. at Liwale, a ♀ held	5 eggs measuring from about	15 × 11 to 18 × 10mm.
„ 14th Dec. „ „ „ „ „	6 „ „ „ „ „	14 × 7 „ 16 × 7 „
„ 19th „ „ „ „ „ „	6 „ „ „ „ „	15 × 9 „ 17 × 9 „
„ 20th „ „ „ „ „ „	6 „ „ „ „ „	15 × 7 „ 16 × 9 „
„ 23rd „ „ „ „ „ „	3 „ „ „ „ „	16 × 8 „ 17 × 7 „
„ 25th „ „ „ „ „ „	8 „ „ „ „ „	15 × 8 „ 16 × 8 „
„ 26th „ „ Ruponda „ „ „	8 „ „ „ „ „	15 × 8 „ 16 × 8 „
„ 26th „ „ „ „ „ „	6 „ „ „ „ „	about 15 × 7 „
„ 26th „ „ „ „ „ „	6 „ „ „ „ „	24 × 9 „

The intestines were frequently choked with the hard parts of insects (heads of ants, beetles, etc.), but presumably these had been liberated by the digestive juices from the stomachs of amphibia swallowed by the adder. One large millipede, however, may well have been swallowed by the snake. Amphibians were usually too digested for identification, but I was able to recognise the following species: *Bufo r. regularis*; *Arthroleptis s. stenodactylus*; *Phrynobatrachus* (?) *acridoides* and *Spelaephryne methneri*.

A tick (*Amblyomma* sp.), at present unidentifiable as to species, was attached to the throat of one Liwale viper. Defilippi's Night-Adder is known as *kihambi* to the Ngindo (*vide* Ionides).

Bitis arietans arietans (MERREM)

6 foetuses (M.C.Z. 52947-9) Tunduru. 2 & 10.i.52.

Five, dated 2nd January, are still in the foetal membranes, a ♂ (M.C.Z. 52948) measuring 205 (180 + 25) mm.; the ♀ (M.C.Z. 52949), dated 10th January, measures 206 (190 + 16) mm. All are from a brood of 57 reported by Ionides as present in a single ♀. Ionides, writing on 8.v.50, says that a Puff Adder killed at Mandera, British Somaliland, "which must have measured over four feet," held the horns of an adult ♂ dikdik whose partially digested remains filled the stomach. *Lipili* or *lipiri* is the Mwera, not the Ngindo, name writes Mr. Ionides.

AMPHIBIA

CAECILIIDAE

Schistometopum gregorii (BOULENGER)

♂ (M.C.Z. 27901) Ruvu Ferry. 25.v.51.

As Ruvu Ferry is only a few miles north of Bagamoyo, in the Eastern Province of Tanganyika Territory, this record constitutes a noteworthy southward extension of the range for a species heretofore known only from north of the Tana River in Kenya Colony.

Body annuli 117 (primaries only; 137 with secondaries); midbody diameter 8.5 mm., contained 35.3 times in the total length of 300 mm. Both stomach and intestines appeared to contain only mud.

BUFONIDAE

Bufo carens A. SMITH

4 ♀♀ (M.C.Z. 27902-3)	Kilwa.	10-21.viii.50.
♂ (M.C.Z. 27904)	Liwale.	12.iii.49.
♀ (M.C.Z. 27905)	Songea.	15.v.50.

The customary pair of dark lumbar spots of the Red Toad are absent in this ♂, which measures 78 mm. from snout to anus.

Bufo regularis regularis REUSS

♀ (M.C.Z. 27906)	Kilwa.	12.viii.50.
♀ (I. 2339)	Liwale.	16.iv.50.

This is the widespread Square-marked Toad originally described from Cairo. A young one was recovered from the stomach of a night-adder (*Causus defilippii*).

Bufo anotis BOULENGER

♀ (M.C.Z. 27907)	Kilwa.	25.viii.50.
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This Earless Toad, taken during dry weather at the edge of a small lake, is new to Tanganyika Territory; for the toads from western Tanganyika that, in 1925, I erroneously referred to as *anotis* I subsequently described as a new species (*ushoranus*). The Kilwa specimen, 35 mm. in length, has been compared with nine topotypes of *anotis* from Chirinda Forest, Southern Rhodesia. It differs only in that its rich gamboge yellow undersurface lacks the markings which are present in all Chirinda toads, though in two of them the markings are reduced to one or two brown flecks in the pectoral region.

RHACOPHORIDAE

Chiromantis xerampelina PETERS

4 (M.C.Z. 27908)	Kilwa.	11-21.viii.50.
1 (I. 2432)	Liwale.	17.vii.50.
2 (M.C.Z. 27909)	Tunduru.	8.i.50.

The two largest ♀♀ (M.C.Z. 27908-9) are only 68 and 70 mm. long.

Afrixalus fornasinii fornasinii (BIANCONI)

13 (M.C.Z. 27910-1)	Kilwa.	12-25.viii.50.
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Ten are typical, having an anteriorly acuminate, broad, brown, vertebral stripe; the backs of the other three are uniform, thus agreeing with *Megalixalus fornasinii* var. *unicolor* Boettger (1913) which Noble (1924) referred to the synonymy. This disposition I have consistently supported, for such variants occur in most large series. Consequently I disagree with Laurent's (1951c, p. 24) recent revival of *unicolor* subspecifically for a ♀ from Gazi, Kenya Colony, whose vertebral stripe was reduced to an oblong spot. Nor can I concur with Laurent's action in resuscitating *loveridgei* Procter (1920) as a subspecies of *fornasinii* to whose synonymy I referred it. Length of largest, a ♀, 36 mm.

Hyperolius concolor tuberilinguis A. SMITH

♀ (M.C.Z. 27912)	Tunduru.	8.i.50.
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Length 29 mm. Recently I (1953f, p. 354) have discussed this race at considerable length, stating that I regard Zambezi examples of *citrinus* Günther, and *H. sansibaricus loveridgei* (Laurent), 1947, from Kitaya, Ruvuma River, Tanganyika Territory, as synonyms.

Hyperolius puncticulatus subsp.

♀ (M.C.Z. 27913) Tunduru. 8.i.50.

From posterior border of eye to the anus the light lateral band is edged above by a very narrow brown line, while below, from groin to eye, by a very broad brown band which is continued from front of eye to nostril as a relatively narrow stripe. Gravid. Length 28 mm.

Hyperolius parkeri rovumae LOVERIDGE

♀ (M.C.Z. 27914) Kilwa. 25.viii.50.

Length of adult, snout to anus, 23 mm.

RANIDAE

Rana galamensis bravana PETERS

3 juv. (M.C.Z. 27915) Kilwa. 25.viii.50.

Lengths are from 35 to 38 mm.

Rana oxyrhynchus oxyrhynchus A. SMITH

7 (M.C.Z. 27916) Kilwa. 11.viii.50.

♂ ♀ (M.C.Z. 27917) Tunduru. 9.vi.50.

Largest ♀♀ from above localities are 52 and 48 mm. respectively. Each frog has been individually tested and found to conform to the typical (lowland) race as defined in my (1953f, p. 369) key to the amphibia of Nyasaland.

Rana mascareniensis mascareniensis D. ET B.

3 juv. (M.C.Z. 27918) Kilwa. 11.viii.50.

Only 23-29 mm. As with the preceding and following species of *Rana* these frogs have been tested by the aforementioned key.

Rana mascareniensis uzungwensis LOVERIDGE

♀ (M.C.Z. 27919) Liwale. 18.vii.50.

Length 41 mm.

Rana ansorgei BOULENGER

♀ (M.C.Z. 27920) Kilwa. 21.viii.50.

♂, 3 ♀♀ (M.C.Z. 27921-2) Tunduru. 6-8.i.50.

The above records reveal the distribution of this species as trans-African (Benguela to Kilwa) in these latitudes. Tibio-tarsal articulation of the adpressed hind limb reaches eye (Kilwa), end of snout or just beyond (Tunduru); length of tibia more or less than half the length from snout to anus; first, second, third and fifth toes with two phlanges free of web, fourth toe with three phlanges free. Length of ♂ (M.C.Z. 27921), 45 mm., of gravid ♀ (M.C.Z. 27922), 48 mm.

Rana ornata ornata (PETERS)

♀ (M.C.Z. 27923) Kilwa. 1.iii.50.

The type of this handsome frog came from Taita, in Kenya, and I am anxious to obtain examples from there, even more so of the very similar *Rana macrotympanum* from west of the Juba River, Gallaland. No one has obtained any of the latter since it was described over 40 years ago and

I very much doubt whether frogs from the Northern Frontier District are really distinct. Unfortunately these frogs, characterized by two longitudinal white lines on an otherwise black throat, being burrowers, appear only for a brief period at the onset of the rains.

Rana adspersa edulis (PETERS)

♂ ♀ (M.C.Z. 27924) Tunduru. 8.i.50.

Lengths of 140 and 145 mm. respectively, but the sexing of the deviscerated ♀ was done by the collector. Mr. Ionides also informs me that these bullfrogs are called *bumi* (pl. *mabumi*) by the Ngindo in distinction to the Swahili *chura* which is applied to frogs in general by the Ngindo.

In their eagerness to feed, these voracious bullfrogs will gulp down almost anything. The stomach of one held a piece of bark measuring 29 × 23 mm., a stout leaf 35 × 12 mm., and numerous twigs of which the largest was 23 × 1.5 mm. In addition to the usual mass of indeterminate insect remains, my colleague Dr. P. J. Darlington recognized the 45 mm. antennae of a cerambycid, a longicorn, and a hard-shelled tenebrionid.

Phrynobatrachus acridoides (COPE)

1 (I. 1716) Tunduru. 8.i.50.

The state of preservation of this 25 mm. frog leaves its specific determination slightly conjectural. Stomach distended by ants, one of which was apparently a driver (*Dorylus* sp.). One *Phrynobatrachus* was recovered from the stomach of a night-adder (*Causus defilippii*).

Hemisis marmoratum marmoratum (PETERS)

3 (I. 2281-2, 2300) Liwale. 25-28.iv.50.

Lengths are from 21-33 mm.

BREVICIPITIDAE

Spelaeophryne methneri AHL

♂, ♀, juv. (M.C.Z. 27925-6) Litumba. 30-31.v.50.

♀ (I. 2299) Liwale. 28.iv.50.

A young one was present in the stomach of a night-adder (*Causus defilippii*).

Litumba is at 3,900 feet in the Matengo Highlands of Songea District, so that the capture of these Scarlet-snouted Frogs by Mr. Ionides extends the known range considerably to the southwest. One stomach held small beetles in addition to numerous ants' heads. The fat bodies were very distended as if in preparation for aestivation. Length of ♂, 48 mm., of ♀, 55 mm. Diameter of largest ova in the ♀ almost 2 mm.

Phrynomerus bifasciatus bifasciatus (A. SMITH)

♂ ♀ (M.C.Z. 27927-8) Kilwa. 12.viii.50.

♂ ♂ (I. 2266, 2241) Liwale. 15-16.iv.50.

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1 Where a date is followed by a letter of the alphabet, it indicates a particular paper listed in a comprehensive (1880-1955) bibliography of African herpetology which it is hoped to publish in due course. Where no letter follows the date it implies that the author in question published only a single article on African herpetology during the year in question.