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AT HARVARD COLLEGE
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ON REPTILES AND AMPHIBIANS FROM TANGANYIKA
TERRITORY
COLLECTED BY C. J. P. IONIDES

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CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM

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AND NEIGHBORING TERRITORIES
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No. 4. — *On Reptiles and Amphibians from Tanganyika Territory*
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Mr. Ionides, whose keen interest in the herpetofauna of Tanganyika is well known to residents of that territory, has presented the collections he has made to several museums. One of these collections was the basis of a recent article (1950. *Ann. Mag. Nat. Hist.* (12), 3, pp. 413-417) by Mr. C. J. Battersby of the British Museum (N. H.). The present paper deals with material from the Kilwa-Lindi-Liwale-Tunduru-Songea area in the Southern Province of southeast Tanganyika Territory. Herpetologically this region, more particularly Liwale and Tunduru, are among the least known of Tanganyika's savanna areas, a fact reflected by the number of interesting finds made by Mr. Ionides.

Among these discoveries invitation is drawn to the new amphisbaenid described by Battersby, the new dwarf chameleon (*Brookesia ionidesi*), the first record for Tanganyika of a rare blind snake (*Typhlops tettensis* ? *obtusus*), the new race (*Chilorhinophis carpenteri liwalensis*) of a Mozambique burrowing snake, and the new form of a Congo burrowing snake (*Amblyodipsas katangensis ionidesi*) that I take pleasure in naming after its industrious discoverer, the first to find a member of this genus in Tanganyika. Also included are descriptions of other new snakes collected by the author.

An earlier collection of snakes made by Ionides in the Southern Province, was identified by Professor Augusto Toschi of the Coryndon Memorial Museum, Nairobi, and most unfortunately was published in 1947 (*Game Dept. Tang. Terr. Ann. Report 1945*, pp. 6-8). This list is likely to result in endless confusion if quoted or copied by uninformed compilers of faunal check lists. Not only are the misspellings too numerous to mention, but certain determinations exhibit little understanding of the habitat preferences and possibilities of the reptiles involved.

Through the courtesy of Dr. L. S. B. Leakey, Director of the Coryndon Museum, I was able to examine one of the mambas on which the record of "*Dendroaspis jamesoni kaimosae*" was based. It proved to be quite a typical example of the common green mamba (*Dendroaspis angusticeps*). That Gold's cobra (*Pseudohaje goldii*) occurs near Liwale is almost as astonishing; unfortunately the specimens were not preserved. It may be presumed that the record of the very local "*Elapsoidea sundervalli* (sic) *nigra*" was based on an adult of the low-

land *E. sundevallii decosteri*. I have little doubt that the alleged specimen of "*Thrasops jackson*" (sic) was a common boomslang (*Dispholidus typus*). What the reptile was that is recorded as "*Typhlops graveri* (sic) *gracilis uluguruensis*" it would be idle to speculate but that it is one of the three species mentioned is unlikely.

Subspecific and other allocations are also questionable, so it is to be sincerely hoped that the list will be used with the greatest reserve, and that the Game Department will realize its responsibility in subjecting to careful proof-reading the articles published in their Annual Report.

Unfortunately the first consignment submitted by Mr. Ionides suffered during transit; from its macerated material skulls alone were saved. For their skillful preparation, as also for the figure of the amphisbaenid paratype, I am indebted to Dr. Paulo E. Vanzolini. I am also grateful to Dr. G. F. de Witte for information concerning, and the Directors of the Institut Royal des Sciences Naturelles de Belgique and National Museum of Southern Rhodesia for the loan of *Chilorhinophis* material that has enabled me to complete the description of *Chilorhinophis gerardi tanganyikae* subsp. nov. Specimens of *Chilorhinophis* were also lent by Dr. H. W. Parker and Mr. C. J. Battersby of the British Museum who, as usual, have been most generous in supplying information regarding specimens in their care. For identifying stomach contents I wish to thank my entomological colleagues, Drs. J. C. Bequaert, P. J. Darlington, Jr., and W. L. Brown.

In the following discussion of the material, the lizards are arranged more or less in accordance with Camp's classification of saurian families. In the notes on snakes I have given a few Ngindo names collected by Mr. Ionides, who has also kindly permitted me to include some of his interesting observations on habits as culled from our correspondence.

HEMIDACTYLUS MABOUIA (Jonnés)

♂ (M. C. Z. 50002) Lindi District. 23.xii.47.

6 ♂♂, 4 ♀♀ (M. C. Z. 51262-3) Liwale. 4-8.xi.49.

Preano-femoral pores of males 48-52.

LYGODACTYLUS PICTURATUS PICTURATUS (Peters)

♂ (M. C. Z. 50003) Tunduru, Lindi. 10.x.48.

Snout to vent 41 mm., tailless.

PACHYDACTYLUS BIBRONII TURNERI (Gray)

♀ (M. C. Z. 50004) Ruponda, Lindi District. 9.i.48.

♂, 2 juv. (M. C. Z. 51264) Liwale District. 3-4.xi.49.

The ♂ is a record, its total length being 177 (92 + 85) mm., the ♀ measures 94 mm. from snout to vent, but her tail is regenerating.

AGAMA MOSSAMBICA MOSSAMBICA Peters

11 ♂♂. 23 ♀♀ (M. C. Z. 50005, 51271-85) Liwale. 9.vii.48 & 2.xi-5.xii.49.

skulls of ♂ ♀ (M. C. Z. 50115-6) Lindi District. 30.xi. & 28.xii.47.

♂ ♀ (M. C. Z. 50192-3) N. E. Songea District. 5.viii.49.

♀ (M. C. Z. 50194) Tunduru District. 24.vii.49.

Midbody scale-rows 70-82; the adpressed hind limb reaches to the (♀) shoulder or temporal region (♂); preanal pores in ♂♂, 13-15; when an anterior supernumerary series is present it has been ignored. Many other data have been collected from this fine series for future use. Dusky gular networks are overlaid with pale blue in ♂♂, gray blue in ♀♀; basal gular and antebrachial patches black, rather more conspicuous in males. Largest ♂ (M. C. Z. 51271), 304 (105 + 199); largest ♀ (M. C. Z. 51272), 255 (100 + 155) mm. The females taken in November are almost all gravid, the eggs apparently being laid by mid-December, i.e. towards the end of the rains. On December 5, an obviously full-time ♀ held nine eggs each about 17 x 6 mm., in addition to a second series of developing ova, each approximately 4 mm. in diameter. Mites (*Pterygosoma* sp.) of an orange-red hue are present beneath the ventral scales of almost every lizard of both sexes.

AGAMA CYANOASTER (Rüppell)

♀ skull (M. C. Z. 50117) Liwale. 30.i.48.

♂ ♀ (M. C. Z. 50188-9) Liwale. 9-13.v.49.

juv. ♂ ♀ (M. C. Z. 50190-1) N. E. Songea. 5.viii.49.

The skull was from a dried-out specimen with blue throat, gravid, the 13 ova devoid of embryos averaged about 22 x 14 mm. This is the common arboreal agama long known as *atricollis* A. Smith.

BROOKESIA IONIDESI sp. nov.

Type. Museum of Comparative Zoölogy, No. 51301, a gravid ♀ from Kilwa, Southern Province, Tanganyika Territory. Collected by C. J. P. Ionides, Esq., January, 1949.

Paratypes. Museum of Comparative Zoölogy, Nos. 50100, 51302-3, 51356-63, and five duplicates, being five ♂♂ and 12 ♀♀ from Kilwa, taken in January, 1949, and between February 19 and March 7, 1950. Also M. C. Z. Nos. 51304, 51351-5, and four duplicates, being one ♂ and nine ♀♀ from Liwale, Southern Province, Tanganyika Territory. Collected by Mr. Ionides on October 29, 1949, and between February 19 and March 8, 1950. A selection of the duplicates was presented by Mr. Ionides to the British Museum.

Remarks. Parker (1942, Bull. Mus. Comp. Zoöl., 91, p. 80, fig. 8) prefers to retain *Rhampholeon* for the continental forms of the Malagasy genus *Brookesia* on osteological grounds. Until, however, it has been demonstrated that the skeletal differences he describes are generally characteristic of their respective groups, instead of an individual species selected from each, I continue to refer all pigmy chameleons to the older name *Brookesia*. All except one of the mainland species and races of the genus are well represented in the Museum of Comparative Zoölogy, and a key based on a study of this material is provided below.

Apparently *B. ionidesi* is a lowland form in the Southern Province for a re-examination of M. C. Z. 47300, recovered from the stomach of a *Chlorophis macrops* on the Rondo Plateau, near Lindi, confirms my original identification of it with *brevicaudata* (1942e, Bull. Mus. Comp. Zoöl., 91, p. 371) for it plainly shows the characteristic beard-like tuft of scales on the chin.

Diagnosis. *B. ionidesi* is a pigmy chameleon intermediate between *brevicaudata* of Tanganyika Territory and *brachyura* of Nyasaland. Having been compared with near topotypes of both it is found to differ from *brevicaudata* in lacking the characteristic beard-like tuft or tufts of scales on the chin, and in possessing a higher supraciliary process. From *brachyura* it differs in the absence of a flexible rostral appendage, and in possessing longer and more slender claws. In this latter character as well as in possessing axillary pits *ionidesi* approaches *platyceps* but comparison with a topotype of this species reveals that *ionidesi* lacks an inguinal pit and differs in other ways.

Description. Holotype ♀. Snout without a dermal appendage; upper lip directed downwards; a strong canthal ridge continuous with the high supraciliary crest that is extended posteriorly around the orbit as a series of large, well-spaced granules, which are united with another series of granules that form a prominent horizontal line across the temporal region; on the occipital region are a few scattered granules, some aligned so as to suggest a low parietal crest; vertebral line indistinctly crenulate but its component granules not, or but slightly, enlarged and undifferentiated, resembling those on the flanks; chin without tufts of enlarged scales, all granules on the lower surface being

substantially homogeneous; a deep axillary but no inguinal pit; limbs exhibit a few, scattered, enlarged and rather spine-like granules; scales on soles spinose but no long isolated spines at the base of the digits; claws relatively long, slender, and bicuspid (occasionally somewhat indistinctly); tail short, being included 6.2 (4.5–5.6 in paratype ♂♂, 6–8, possibly 9 if tail intact in M. C. Z. 51353, in paratype ♀♀) times in the total length.

Color. The drab brown tones (rarely white in preserved specimens), common to members of this genus, are frequently varied by a series of darker, longitudinal, lateral bands, sometimes light-edged, extending from head to tail, the broadest passing through the eye; between these bands regular series of well-defined, well-spaced, conspicuous, black spots are often displayed by adult females.

Size. Total length of holotype ♀ (M. C. Z. 51301), 58 (50 + 8) mm., of paratype ♂ (M. C. Z. 51356), 43 (33.5 + 9.5) mm. This species is much the smallest of all known mainland *Brookesia*.

Breeding. The type, taken in January, holds fully developed eggs about 9.5 x 4.5 mm. in size. All ♀♀ taken between mid-February and early March, both at Kilwa and Liwale, are gravid, but their ova exhibit wide variation in the degree of development as will be seen by the following figures.

Date collected	Number of eggs	Approximate size	Locality	Ionides No.
February 20	10	8 x 5 mm.	Liwale	1915
" 22	10	5 x 4 mm.	"	1929
" 25	10	8 x 4.5 mm.	Kilwa	1994
March 1	11	8 x 4 mm.	"	1997
" 1	14	3.5 x 3.5 mm.	"	1999
" 8	12	8.5 x 5 mm.	Liwale	2005

Diet. Stomach contents, as determined by Dr. P. J. Darlington, Jr., consisted of tiny wings of ants or flies; orthoptera, some cricket-like; two spiders; two sowbugs; and a small snail (*Pseudoglessula* sp.) identified by Dr. J. C. Bequaert.

Key to the African Species of the Genus BROOKESIA

1. No dermal appendage on snout; no long isolated spines on palms at base of digits.....2.
- A small (sometimes almost minute) flexible rostral appendage; vertebral line and dorsal surface of tail weakly crenulate.....5.

2. No pit beneath forearm; vertebral line and dorsal surface of tail smoothly rounded. 3.
 A small axillary pit present; vertebral line and dorsal surface of tail weakly crenulate; claws of hand usually with faintly indicated secondary cusp. 4.
3. Claws of hand simple, without even an indication of a secondary cusp; bony supraciliary process about equal to two-thirds the orbital diameter in males, half or less in females; range: British and Italian Somaliland. . . .
k. robecchii (Boulenger)
 Claws of hand with strong secondary cusp; bony supraciliary process about equal to half the orbital diameter in both sexes; range: Kenya Colony and Tanganyika Territory. *k. kerstenii* (Peters)
4. One or two beard-like tufts of scales on chin; bony supraciliary process very low; range: Tanganyika Territory. *brevicaudata* (Matschie)
 No beard-like tufts of scales on chin; bony supraciliary process higher; range: Tanganyika Territory. *ionidesi* sp. n.
5. Long isolated spines on palms at base of digits; a small axillary pit present. 7.
 No long isolated spines on palms at base of digits; a small axillary pit present or absent. 6.
6. No pit beneath forearm nor in groin; at regularly spaced intervals along vertebral line are but slightly enlarged granules; claws shorter and stouter than in *platyceps*; range: Tanganyika Territory; Mozambique; Nyasaland. *brachyura* (Günther)
 A small pit beneath forearm and another in groin; at regularly spaced intervals along vertebral line are groups of enlarged spine-like granules; claws longer and more slender than in *brachyura*; range: Nyasaland.
*platyceps*¹ (Günther)
7. Claws of hand with faintly indicated secondary cusp; bony supraciliary crest very low; no beard-like tufts of scales on chin; range: Tanganyika Territory. *temporalis* (Matschie)
 Claws of hand with strong secondary cusp; supraciliary crest prominent with anteriorly-directed dermal process. 8.
8. Adult males under 65 mm., gravid females under 61 mm.; a race intermediate in development between *brachyura* and the other forms of *spectrum*; range: western Uganda and eastern Belgian Congo.
s. boulengeri (Werner)
- Adult males over 75 mm., gravid females over 69 mm. 9.
9. Rostral process less than 2 mm. in length; tail of male 4 to 4½ times in total length, that of the female 4⅓ to 5⅓ times; range: Belgian Congo.
s. affinis (Steindachner)
 Rostral process 2 mm. or more in length; tail of male 3 to 3½ times in total length, that of the female 3¾ to 4¼ times; range: French Congo; Cameroons; Fernando Po *s. spectrum* (Buchholz)

¹Here also would fall *Chamaeleo marshalli* of Southern Rhodesia, which, though originally described as a *Rhampholeon* on account of its bicuspid claws, possesses the prehensile tail and other characters of *Chamaeleo*.

MABUYA MACULILABRIS MACULILABRIS (Gray)

♀ (M. C. Z. 50006) Lindi District. 30.xii.47.

Supraciliaries 5-5. Dried. Total length 183 (73 + 110) mm.

MABUYA MACULILABRIS BOULENGERI Sternfeld

♂ (M. C. Z. 50007) Liwale. 7.vii.48.

Supraciliaries 4-4. Total length 215 (74 + 141) mm.

MABUYA PLANIFRONS (Peters)

♂ (M. C. Z. 51268) Liwale District. 4.xi.49.

Supraciliaries 6-6. Total length 312 (120 + 192) mm.

MABUYA VARIA VARIA (Peters)

3 ♂♂, 3 ♀♀ (M. C. Z. 50008, 51270) Liwale. 14.vii.48 & 5-28.xi.49.

Total length of one ♂, 136 (48 + 88) mm., and a ♀, 129 (51 + 78), the latter gravid with large ova on November 5.

MABUYA STRIATA (Peters)

4 ♂♂, 3 ♀♀ (M. C. Z. 51269) Liwale District. 4-8.xi & 2.xii.49.

None of the series is of exceptional size, all rather poorly preserved.

RIOPA SUNDEVALLII (A. Smith)

♀ (M. C. Z. 50009) Liwale District. 12.vii.48.

skull (M. C. Z. 50119) Ruponda, Lindi District. 8.i.45.

The latter from one of a pair of dried-out specimens.

MELANOSEPS ATER RONDOENSIS Loveridge

juv. (M. C. Z. 50010) Liwale. 15.v.48.

Midbody scale-rows 18. Snout to vent 85 mm. As the tail is regenerated this limbless lizard cannot be subspecifically identified, but a perfect adult, later taken at Liwale by Ionides, is unquestionably *rondoensis*. Rather surprisingly, an adult (81 + 24 mm.) and four

young (ranging from $30.5 + 12.5$ to $34 + 12$ mm.), recently collected by Dr. F. X. Williams at Diani Beach, 20 miles south of Mombasa, Kenya Colony, are referable to this short-tailed race.

GERRHOSAURUS NIGROLINEATUS NIGROLINEATUS Hallowell

♀ (M. C. Z. 50014) Lindi District. 30.xii.47.

At Ruponda, Lindi District, another of these large lizards had been swallowed by an adult Cape File Snake (*Mehelya c. capensis*).

HOLASPIS GUENTHERI Gray

3 (M. C. Z. 50011-3) Liwale District. 11.vii.-4.viii.48.

Midbody scale-rows 80-90, of which 6 are ventrals. Total length of largest, a ♀ (M. C. Z. 50013), 111 ($47 + 64$) mm.

These arboreal lizards, of which Mr. Ionides says he has collected about ten, constitute a southward extension of the range within Tanganyika of about two hundred miles. One was taken six miles west of Liwale Boma in the valley of the Liwale, others in the western part of the district on the upper reaches of Mangi River. Yet another near Nahata River just across the border in Tunduru District. Both these rivers are tributaries of the Njenje. The country they inhabit is of the ordinary Myombo savanna type where they live on trees in crevices of whose bark they seek refuge when disturbed. The solitary exception was one taken on the ground in Mr. Ionides' tent. The records help to bridge the gap between those from Tanganyika's montane forests and the isolated ones from Zomba and the Zambezi.

AMPHISBAENA IONIDESII Battersby

Amphisbaena ionidesii Battersby, 1950, Ann. Mag. Nat. Hist. (12), 3, p. 413: Liwale, Southern Province, Tanganyika Territory. The Lat. and Long. given as "10° N. + 3° 8' W." are actually 9° 45' S., 37° 55' E.

25 (M. C. Z. 50015-39) Tunduru. 7.xii.48.

147 (M. C. Z. 50040-64) Liwale District. 2.iv-13.v.48.

2 skulls (M. C. Z. 50120) Liwale District. iv.48.

Native name. *Luhakwe* (Ngindo).

There is little to add to Mr. Battersby's excellent and detailed description of this well-differentiated form. In our series the prefrontals are in contact with the first labials in 142 specimens, excluded in 20, and excluded from the ocular in about a dozen instances; there are a

pair (fused into a single scale in 3 cases, viz. M. C. Z. 50015; 50028; and one uncatalogued; or two pairs in M. C. Z. 50030 only) of small, scarcely-differentiated parietals; annuli on the body 224–252, on the tail 22–27, while segments in a midbody annulus range from 24–30 (10–14 + 14–16), these statistics being based on counts made on the 50 catalogued lizards (25 Tunduru; 25 Liwale) of which the Liwale ones only are paratypes. The largest (M. C. Z. 50062) measures 194 (171 + 23) mm.

In my "Revision of the African Lizards of the Family Amphisbaenidae" (1941, Bull. Mus. Comp. Zoöl., 87, p. 406) I commented on the fact that when an amphisbaenid discards its tail the truncated stump, in healing, becomes rounded off so as to leave little evidence of autotomy. There are a number of specimens with such truncated tails in the magnificent series collected by Mr. Ionides, and it is of interest to observe that the division invariably occurs at the ninth or tenth annulus posterior to the anus. Were this fact overlooked such a series of specimens with abbreviated tails might lead one to postulate a short-tailed race.

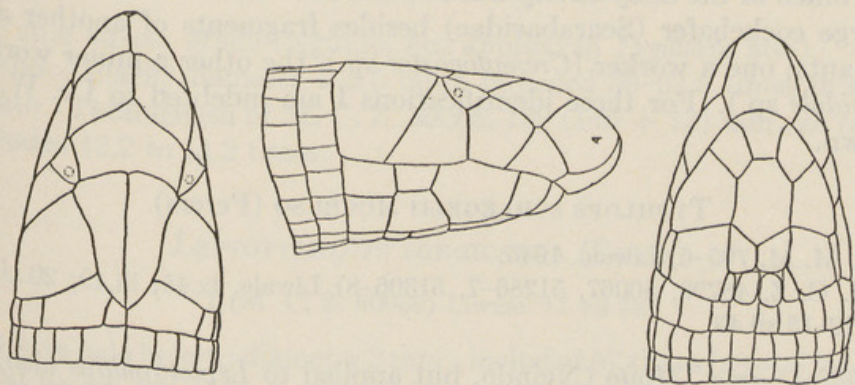


Fig. 1. *Amphisbaena ionidesii* Battersby (Paratype ♀ M. C. Z. 50040).

An example of this is furnished by *Amphisbaena albissima* Amaral of Brasil, and in drawing attention to it Dr. P. E. Vanzolini (1948, Rev. Brasil Biol., 8 (3), p. 389, figs. 7–9) publishes figures of truncated tails, observing that in *A. mertensii* Strauch, with which he synonymizes *albissima*, fissuring occurs always between the seventh and tenth caudal annuli.

FitzSimons (1943, Transvaal Mus. Mem. No. 1, p. 380) is doubtless correct in reviving *vandami* as a race of *violacea*, to whose synonymy I had relegated it. In this connection I examined the post-temporal scales of the entire series of *ionidesii* listed above, and observed that

in a random sample of 65 Liwale lizards the posterior margin of the temporal bordered on 3, 4, or 5 scales in the proportion of 25-35-5.

Ionides informs me that he obtained many of these worm-like lizards through digging where they had betrayed their presence by pushing up little heaps of still damp black cotton soil in areas from which the river had recently receded. One amphisbaenid was recovered from the stomach of a snake (*Chilorhinophis carpenteri liwalensis* — M. C. Z. 50077) and another from a burrowing viper (*Atractaspis bibronii* — M. C. Z. 50096).

CORDYLUS CORDYLUS TROPIDOSTERNUM (Cope)

♂♂, ♀ (M. C. Z. 50065, 51265-7) Liwale District. 8.vii.48 & 5.xi.49.

Sexing by collector prior to removal of viscera. Femoral pores 7 + 7, but 2-4 apertures present on some of the scales. Total length of larger ♂, 171 (92 + 79) mm., of gravid ♀, 153⁺ (95 + 58⁺) mm. This ♀, taken on November 5, holds a single embryo (M. C. Z. 51267), fully scaled and measuring 73 (40 + 33) mm. Consequently it occupied much of the body cavity but still the stomach was distended with a large cockchafer (Scarabaeidae) besides fragments of another and two ants; one a worker (*Crematogaster* sp.), the other a minor worker (*Pheidole* sp.). For these identifications I am indebted to Dr. W. L. Brown.

TYPHLOPS SCHLEGELII MUCRUSO (Peters)

2 (C. M. M. 795-6) Liwale. 1945.

7 (M. C. Z. 48799, 50067, 51286-7, 51306-8) Liwale. ix.45; iii.49; 20.xi.49; 12-15.xii.49.

Native name. *Mbito* (Ngindo, but applied to *Leptotyphlops* also).

Midbody scale-rows 30-34; midbody diameters 4.25-19 mm. being included 25.5 to 41 times in total length. It is interesting to note that of the two very young ones taken on November 20, one is of the lineolate, the other of the blotched form. The total length of the smallest (M. C. Z. 41286) is 120 (118 + 2) mm., of the largest (M. C. Z. 50067), 486 (480 + 6) mm. The head of this large blind snake was in the mouth of a "thirty-two-and-a-half-inch" *Calamelaps unicolor warreni*, while from the stomach of another *warreni* a younger *Typhlops* was recovered.

TYPHLOPS TETTENSIS ? OBTUSUS Peters

Typhlops (Onychocephalus) obtusus Peters, 1865, Monatsb. Akad. Wiss. Berlin, p. 260, pl. —, fig. 2: Shire River, Mozambique.

1 (M. C. Z. 50066) Liwale. 24.i.48.

Preocular in contact with second and third labials, ocular with third and fourth; midbody scale-rows 22; midbody diameter 6 mm. is included 44.5 times in total length. Total length 266 (262 + 4) mm.

This snake, unless representing an undescribed form, the first example of the race I have seen and the first to be taken in Tanganyika Territory, agrees with the form as defined in my key (1942. Bull. Mus. Comp. Zool., 91, p. 257) except that the rostral *does* extend back to an imaginary line level with the anterior borders of the eyes, which *are* distinguishable, and the underside is bluish-gray like the back, but lacking the dusky edging of the dorsal scales.

Most unfortunately on page 256 of this key is an error where it should read: "Preocular in contact with the second labial only". It is the ocular that is in contact with the second, third and fourth labials, both in *t. tettensis* and *t. rondoensis*.

LEPTOTYPHLOPS CONJUNCTA CONJUNCTA (Jan)

1 (M. C. Z. 50068) Ruponda, Lindi District. 10.i.48.

1 (M. C. Z. 51305) Liwale District. 11.xi.49.

Native name. *Mbito* (Ngindo, but applied to *Typhlops* also).

Above black; diameter 2–2.5 mm., included 50–63.5 times in total length. Total length of M. C. Z. 50068, 159 (146 + 13) mm., so tail is included 12.2 to 14.2 times.

LEPTOTYPHLOPS LONGICAUDA (Peters)

1 (M. C. Z. 50069) Liwale. 11.vii.48.

Above pale brown; diameter 2 mm., included 57 times in total length. Total length 114 (101 + 13) mm., so tail is included 8.7 times.

NEUSTEROPHIS OLIVACEUS ULUGURUENSIS (Loveridge)

5 ♂♂, 4 ♀♀, & skull (M. C. Z. 50243–8) Liwale. 16–17.x.49.

♀ (M. C. Z. 51288) Songea. vii–x.49.

Midbody scale-rows 17, except for two (M. C. Z. 50245, 51288) with 15; ventrals 132–140; subcaudals 69–84; labials 7–8, the third, fourth and fifth, or fourth and fifth, entering the orbit; preocular 1; postoculars 2 (left side of M. C. Z. 51288 only) or 3; temporals 1 + 1, 1 + 2, or 2 + 1. Both sexes are represented by gray and by pinkish-brown individuals. None is of outstanding size, five having lost the end of their tails as is so frequently the case with this marshland species.

This series includes the second and third mainland specimens to be recorded with 15 midbody scale-rows, characteristic of the insular race *pembana* (cf. Loveridge, 1942e, Bull. Mus. Comp. Zoöl., **91**, pp. 261-2).

BOAEDON LINEATUS LINEATUS Duméril & Bibron

♂ (M. C. Z. 51289) Songea. vii-x.49.

Midbody scale-rows 27; ventrals 200; subcaudals 62; labials 8, the fourth and fifth entering the orbit. Total length 354 (296 + 58) mm.

LYCOPHIDION CAPENSE CAPENSE (A. Smith)

♂ (M. C. Z. 50249) Liwale. 16.x.49.

Midbody scale rows 17; ventrals 188; subcaudals 46; labials 7-8, the third, fourth and fifth entering the orbit; throat white. Total length 238 (187 + 51) mm.

Parker, in "The Snakes of Somaliland and the Sokotra Islands" (1949, Zoolog. Verhand., No. 6, p. 55) has recently protested at my practice of designating certain coastal *capense* as intermediates between *capense* and *acutirostre*. It does, however, serve to draw attention to the presence of a coastal population (extending inland as far as Kibwezi in Kenya, Morogoro and Ugano in Tanganyika) characterized by dark throat coupled with low ventral and subcaudal counts. The alternative would be to designate them subspecifically which I am loth to do until we know more about them. Recently I caught our eighteenth example of this kind, viz:

♂ (M. C. Z. 50289) Mgulani near Dar es Salaam. 13.vii.48.

It has midbody scale rows 17; ventrals 165; subcaudals 34; labials 8, the third, fourth and fifth entering the orbit; throat plumbeous. Total length 329 (283 + 46) mm.

Parker (1949, p. 55, footnote) points out there are good reasons for doubting that the type of *acutirostre* Günther, which Sir John Kirk sent from Zanzibar, ever came from the island. He apparently thinks it came from the mainland, may be from Mozambique. Mozambique, in the *restricted* sense used by Kirk may, I think, be ruled out for I know of no record of its having been taken there before or since. I found none during the five months I spent at Lumbo on the mainland directly opposite Mozambique Island, where *L. semiannulus* was the only wolf snake encountered. The few records from Mozambique in its modern sense of Portuguese East Africa are all from much further south.

Of sixty *capense* examined by Parker the only one approaching the low ventral and subcaudal count of the type of *acutirostre* came from Kosi Bay, Zululand.

MEHELYA CAPENSIS CAPENSIS (A. Smith)

1 (M. C. Z. 50070) Ruponda, Lindi District. 8.ii.48.

Ventrals 220; tail truncated. The stomach held a large lizard (*Gerrhosaurus n. nigrolineatus*).

CHLOROPHIS is a synonym of PHILOTHAMNUS

Ever since Flower (1933) pointed out that keels might be present or absent on the ventrals of *irregularis*, data have been accumulating to show that this is also the case with other members of the genus *Chlorophis* as recognized by Boulenger (1894). A genus that — since Bogert's (1940, Bull. Am. Mus. Nat. Hist., 77, pp. 51-57) studies showed there was no essential difference in dentition or hemipeneal characters — was allegedly separable from *Philothamnus* only by the presence or absence of keels on the subcaudals.

Comprehensive revisionary studies, which cannot be published at present, reveal that the subcaudals in both *irregularis* and *heterolepidotus* may be so sharply angular, and occasionally sufficiently notched, to have misled workers from before Boulenger¹ to the present day into referring them to *semivariegatus*, type of the genus *Philothamnus*. Conversely, in at least one race of *semivariegatus* (*dorsalis*) the subcaudals may be no more keeled than in certain *irregularis*. Though they are so sharply keeled in typical *semivariegatus* it seems advisable to relegate *Chlorophis* to the synonymy of *Philothamnus*, an action with which Mr. C. M. Bogert concurs.

Bogert (1940, p. 54) commenced clarifying the situation so far as eastern Africa was concerned, by pointing out that *neglectus* (Peters, 1866) was a straight synonym of *hoplogaster* (Günther, 1863). Not only were both species recognized by Boulenger (1894, Cat. Snakes Brit. Mus., 2, p. 92) — on whose key all subsequent ones have been based — but his descriptions of *both* were composites of *hoplogaster* plus a more northerly unnamed form.

That two species or races were involved I felt sure, for in size the Uganda-Kenya reptiles far surpassed the central and southern Tanganyika snakes with which I was also familiar. Decision on the matter

¹ The Ugogo snake referred to *Chlorophis irregularis* by Boulenger (1894, p. 97) proves to be a *Philothamnus semivariegatus* with a single anterior temporal, so Parker and Battersby inform me.

had to be deferred until such time as I could thoroughly revise the entire genus. Meanwhile, attaching importance to the common character of two labials entering the eye, I assumed we should find a southern and northern form separable only by subcaudal counts of the respective sexes.

This supposition received a setback when Parker (1949, Zool. Verhand. Rijksmuseum Natuur. Hist. Leiden, No. 6, p. 61) suggested that the northeasterly snake was nothing but a race of *irregularis*. A generic study, based on the abundant material in the Museum of Comparative Zoölogy and elsewhere, proves Parker to be correct, for in range of ventrals and subcaudals *irregularis* and the northeasterly snake are indistinguishable, being separable only on the labial character as set forth in the diagnosis below.

Unfortunately Parker applied the name "*hoplogaster*" to this northeasterly form, from which *hoplogaster* is undoubtedly an offshoot. That *hoplogaster* cannot be regarded as yet another race of *irregularis* is clear, for in Nyasaland I found both occurring together in many places, yet readily separable by differences in subcaudal counts which were constantly correlated with the labial differences mentioned in the diagnosis.

In seeking a name for this northeasterly population, which in the matter of its labials is almost 100% pure (for the allegedly Ethiopian *irregularis* mentioned by Parker, though sent me in 1930 as having been taken at "Metemma, Ethiopia," was more probably purchased from an itinerant snake vendor at Metemma on the Nile during Dr. W. H. Osgood's homeward journey), I had to reject *angolensis* (Bocage, 1882), subsequently synonymized with *irregularis* by its author. For though indistinguishable from snakes of the northeasterly population, it was based on an aberrant *irregularis* within whose western range such aberrant individuals occasionally occur, though so infrequently as not to form more than 5% of the population.

The opportunity is taken of thanking Mr. C. J. Battersby (after whom I take pleasure in naming the new form) for his kindness in checking the sex, scale counts, or history of much *Chlorophis* material in the British Museum. I am also indebted to Dr. D. Cochran (United States National Museum) and Mr. C. H. Pope (Chicago Natural History Museum) for the loan of specimens designated as paratypes below.

PHILOTHAMNUS IRREGULARIS BATTERSBYI subsp. nov.

Type. Museum of Comparative Zoölogy, No. 40155, an adult ♀ from Sipi Forest at 6,000 feet, Mount Elgon, eastern Uganda. One of 22 collected there by Arthur Loveridge between December 12-23, 1933.

Paratypes. Thirty-nine ♂♂ and seventy-seven ♀♀, viz.: C.N.H.M. Nos. 2256-7, 2260, 2263, 2265-6, 2270. M.C.Z. Nos. 13661, 23220-32, 23251, 29425, 30131, 34918-9, 40151-4, 40156-71, 40484-509, 40515-21, 48277. U.S.N.M. Nos. 40766-7, 40953-8, 40984-5, 40988, 40999, 41135, 41512-3, 41693, 41701, 41970, 41978, 42048, 42063-4, 42256, 42935-6, 48588, 49003, 49007, 49012, 49021, and 120814.

These are from: UGANDA: Mt. Debasien; Mt. Elgon — Butandiga — Sipi; Mubango, Mabira Forest. KENYA COLONY: Athi River; Fort Hall; Juja Farm; Kaimosi; Kau; Kenya Province; Kijabe; Kirui's Village; Lake Elementeita; Lake Naivasha; Lake Peccatoni; Mkonumbi; Mtito Andei; Nairobi; Ngatana; Voi; Wambugu. TANGANYIKA TERRITORY: Korogwe; Lake Victoria — Ukerewe Id.; Usambara Mts. — Amani — Bumbuli — Mlalo.

Diagnosis. From typical *irregularis* separable only on upper labials, viz.:

Two labials (rarely the 3rd and 4th, normally the 4th and 5th, occasionally the 5th and 6th) entering the orbit in all northeasterly material. . . . *i. battersbyi*
Usually three labials (rarely 3rd, 4th and 5th, normally 4th, 5th and 6th, rarely 5th, 6th and 7th) but occasionally (chiefly among Angolan snakes and not more than 5% of the West African population) only two labials (the 4th and 5th, or 5th and 6th) entering the orbit. *i. irregularis*

From *hoplogaster*, with which it has heretofore been confused, by

Subcaudals in ♀♀ 77-90, in ♂♂ 88-106; range: East Africa from the Usambara Mountains south through the Rhodesias to Natal. . . *hoplogaster*
Subcaudals in ♀♀ 90-111, in ♂♂ 100-120; range: East Africa in the Usambara Mountains north through Kenya to Ethiopia, west to the Nile and Uganda where it merges with typical *irregularis*. *i. battersbyi*

Description. (Paratype variations in parentheses). Preocular 1 (rarely 2); postoculars 2 (rarely 3); temporals 1 + 1 (right) and 1 + 2 (left; 2 + 2 on one side of a Butandiga snake only); upper labials 8 (7-9), the fourth and fifth (rarely third and fourth or fifth and sixth) entering the orbit; lower labials 11 (8-11), the first 5 (4-6) in contact with the anterior sublinguals; midbody scale rows 15; ventrals 173 (♂♂ 147-169; ♀♀ 156-177); anal divided (rarely entire; in a Naivasha snake: U.S.N.M. 41701 only); subcaudals 98 (♂♂ 100-120; ♀♀ 90-111).

Size. Length of holotype ♀ (M.C.Z. 40155), 1045 (762 + 283) mm.; of paratype ♂ (M.C.Z. 40172), 841 (588 + 253) mm.; both from Sipi.

PHILOTHAMNUS SEMIVARIEGATUS SEMIVARIEGATUS (A. Smith)

♀ (M. C. Z. 51290) Liwale. 27.xi.49.

Midbody scale-rows 15; ventrals 187; subcaudals 148; labials 9, the fourth, fifth and sixth entering the orbit; temporals 2 + 2. Total length 707 (454 + 253) mm.

PROSYMNA AMBIGUA STUHLMANNI (Pfeffer)

♂ ♀ (M. C. Z. 51310-1) Liwale. 15-30.x.49.

Midbody scale-rows 15; ventrals 137-147; subcaudals 23-32; postoculars in ♂, 2 on either side, in ♀, 0 and 1, having on the right side been completely fused with the supraocular. Both are of average length.

TARBOPHIS SEMIANNULATUS SEMIANNULATUS (A. Smith)

♀ (M.C.Z. 51293) Liwale. 20.xi.49.

Midbody scale-rows 19; ventrals 229; subcaudals 169; labials 8-9, the third, fourth and fifth (left), or fourth and fifth (right), entering the orbit. Total length 850 (715 + 135) mm.

CROTAPHOPELTIS HOTAMBOEIA HOTAMBOEIA (Laurenti)

♂ ♂ ♂ (M. C. Z. 50250) Liwale. 17.x; 20.xi; 13.xii.49.

Midbody scale-rows 19; ventrals 150-157; subcaudals 41-43; preocular 1; postoculars 2. Total length of largest ♂, 482 (411 + 71) mm.

HEMIRHAGERRHIS NOTOTAENIA NOTOTAENIA (Günther)

♀ ♀ (M. C. Z. 51291-2) Liwale. 24-27.xi.49.

Midbody scale-rows 17; ventrals 173-177; subcaudals 73 (both); temporals 1 + 2. Neither large.

PSAMMOPHIS SUBTAENIATUS SUDANENSIS Werner

♀ (Ionides 1644) Liwale. 27.xi.49.

Midbody scale-rows 19; ventrals 229; tail incomplete, but undoubtedly referable to this northern race as defined on pp. 50-55 of the generic revision (Loveridge, 1940d, Bull. Mus. Comp. Zoöl., 87, pp. 1-70).

AMBLYODIPSAS KATANGENSIS IONIDESI subsp. nov.

Type. Museum of Comparative Zoölogy, No. 51364, a gravid ♀ from Tunduru, Southern Province, Tanganyika Territory. Collected by C. J. P. Ionides, Esq., January 21, 1950.

Paratypes. Museum of Comparative Zoölogy, Nos. 50072-4, 51365-7, consisting of two adult ♂♂, an adult and an immature ♀, and two skulls (removed from shrivelled ♀♀, discarded after data had been removed from them) all from Liwale, Southern Province, and taken on 3.v.49, 2.iv.50, 19.iv.50 and 1.v.50. Also three specimens in the British Museum (bearing Ionides numbers 60, 194, 387, and taken by him on 20.iii.48, 27.vi.48, and 23.iv.49 respectively), being a ♀ and ♂ from Liwale and a ♀ from Tunduru District, Southern Province, Tanganyika Territory.

Diagnosis. These ten snakes differ from the typical form described by Witte and Laurent from a single pair taken at Katanga, Congo Belge (ca. 700 miles due west of Liwale), in possessing a smaller supraocular that is one-fifth (instead of one-fourth) the width of the frontal; in the smaller eye which is included 2 or 3 (instead of $1\frac{3}{4}$) times in its distance from the labial border; in possessing only 4 labials (the scale called a fifth by Witte and Laurent being fused with the large temporal); and in the lower range of ventrals (166-198 instead of 179-207) and subcaudals (14-24 instead of 19-26).

Description. (Paratype variations in parentheses). Snout rounded, projecting far beyond the lower jaw; rostral twice as broad as deep, concave below, the portion visible from above much more than half its distance from the frontal; prefrontal $1\frac{1}{4}$ ($1\frac{1}{3}$ to $1\frac{3}{4}$) times as long as broad; frontal large, slightly longer than broad, 5 times as broad as a supraocular, $1\frac{1}{3}$ ($1\frac{1}{8}$ to $1\frac{1}{2}$) times its distance from end of snout, scarcely shorter than the parietals; supraocular very small; eye very small, its diameter included 3 times in its distance from the mouth; postocular absent (absent on 9 sides, present on 9 sides); temporal 1; upper labials 4, second in contact with the prefrontal, second and third entering the orbit, fourth largest and in contact with the parietal; lower labials 5, the first pair in contact behind the mental, anterior three in contact with the sublinguals; no posterior sublinguals. Mid-body scales in 15 rows; ventrals 196 (♂♂ 166-172, ♀♀ 182-198); anal divided; subcaudals 18 pairs (♂♂ 22-24, ♀♀ 14-17).

Color. Above and below iridescent plumbeous black, uniform (M. C. Z. 50072-4) or chin and/or circumanal area white (Ionides Nos. 60, 387), or chin to anus mottled with ivory white, the patches sometimes covering three or four ventrals (Ionides No. 194) suggesting sexual dichromatism as present in two of the three males.

Size. Total length of holotype ♀ (M. C. Z. 51364), 298 (280 + 18) mm.; largest adult paratype ♂ (B. M. 1948.1.8.12), 304 (278 + 26) mm.; a larger adult ♀ (B. M. 1948.1.8.13), 320 (302 + 18) mm. An even larger ♀ (M. C. Z. 50074, now a skull) measured 346 (326 + 20) mm., dimensions that compare well with those of the paratype ♀ of *A. k. katangensis* recorded by Witte and Laurent as being 344 (323 + 21) mm.

Remarks. Named after its discoverer, C. J. P. Ionides, Esq., who is to be congratulated on being the first to find this genus in Tanganyika Territory. The sixteen specimens he has found to date have been donated by him to four different museums.

Key to the Species of the Genus CHILORHINOPHIS

1. Nasal shield distinct from first labial; prefrontal separated from orbit by preocular; frontal about $1\frac{1}{2}$ times as long as broad.....2.
 Nasal shield fused with first labial to form a single nasolabial shield¹; prefrontal either entering orbit or separated from it by preocular; frontal only slightly longer than broad.....3.
2. Ventrals in ♂♂ 308–310, in ♀ 375; subcaudals in ♂♂ 25–26, in ♀ 23; tail included 17.8–18.6 times in total length of ♂♂, 23.6 times in ♀; maximum recorded length of ♂ 486 mm., of ♀ 569 mm.; range: western Tanganyika Territory (Ujiji) south to Northern Rhodesia (Nyamkolo), west to southern Belgian Congo (Lukonzolwa, Lake Mweru).....
 g. tanganyikae subsp. nov.
 Ventrals in ♂♂ 263–294, in ♀♀ 274–348; subcaudals in ♂♂ 27–31, in ♀♀ 20–26; tail included 12.3–15.2 times in total length of ♂♂, 16.2–21.2 times in ♀♀; maximum recorded length of ♂ 424 mm., of ♀ 513 mm.; southern Belgian Congo south to Southern Rhodesia.....
 g. gerardi (Boulenger)
3. One pair of sublinguals; ventrals in supposed ♀ holotype 256; subcaudals 33; tail included 15.7 times in total length of ♀; length of only known and unsexed specimen 315 mm.; range: Anglo-Egyptian Sudan (Mongalla)..
 butleri Werner
 Two pairs of sublinguals; ventrals in ♂♂ (unknown for *c. carpenteri*) 210–238, in ♀♀ 216–288; tail included 10.6–12.7 times in *c. liwalensis* ♂♂, 14.4–19.6 in ♀♀ (both races); maximum recorded length in *c. liwalensis* ♂♂ 300 mm., of ♀♀ 335 mm.....4.
4. Three longitudinal dark stripes on back and sides; range: southeastern Tanganyika Territory (3 or 4 localities).....*c. liwalensis* subsp. nov.
 Five longitudinal dark stripes on back and sides; range: eastern Mozambique (Ancuabe, about 30 miles west of Porto Amelia).....
 c. carpenteri (Parker)

¹ Not fused on right side only of M. C. Z. 51328, a ♀ from Liwale but the only one of about fifty paratypes to show such a reversion to the ancestral arrangement.

CHILORHINOPHIS GERARDI TANGANYIKAE subsp. nov.

Chilorhinophis gerardi Loveridge (part), 1933, Bull. Mus. Comp. Zoöl., 74, p. 262: Nyamkolo, Northern Rhodesia.

Type. Museum of Comparative Zoölogy, No. 30402, an adult ♂ with extruded hemipenes from Nyamkolo, Lake Tanganyika, Northern Rhodesia. Collected by Arthur Loveridge, May 9th, 1930.

Paratypes. Museum of Comparative Zoölogy, No. 48434, an adult ♂ with extruded hemipenes from Ujiji, Lake Tanganyika, Tanganyika Territory. Collected by Arthur Loveridge, March 11th, 1939. Also Inst. Royal Sci. Nat. Belgique, No. I. G. 15824, an adult ♀ from Lukonzolwa, Lake Mweru, Belgian Congo. Collected by Ach. Rév. Père Cornet in 1940.

Diagnosis. Differs only from the typical western form in having more numerous ventrals (308–310 instead of 263–294 in ♂♂; 375 instead of 274–348 in ♀♀); fewer subcaudals (25–26 instead of 27–31 in ♂♂); relatively shorter tails (17.8–18.6 instead of 12.3–15.2 times in total length of ♂♂; 23.6 instead of 16.2–21.2 times in total length of ♀♀). In fact these unquestionable ♂♂ of *tanganyikae*, instead of presenting the characters and proportions of the seven known ♂♂ of typical *gerardi*, possess those of *gerardi* ♀♀.

Description. (Paratype variations in parentheses). Rostral twice as broad as deep, the portion visible from above as long as one third its distance from the frontal; nostril in a single nasal that is *not* fused with the first labial; prefrontals longer than broad, not entering the orbit; frontal longer than its distance from the rostral, $1\frac{1}{2}$ ($-1\frac{1}{3}$) times as long as broad, $1\frac{1}{4}$ ($1\frac{4}{5}-2$) times as broad as a supraocular, its length included $1\frac{1}{2}$ ($-1\frac{3}{4}$) times in that of a parietal; preocular 1, moderate; eye small, its diameter two-thirds its distance from the lip; postocular 1, moderate; a large (or moderate) posterior temporal in contact with the posterior border of the parietal; upper labials 4, second in contact with the prefrontal, third entering the orbit, fourth largest and in contact with the parietal; lower labials 5, the first broadly in contact with its fellow behind the mental, 3 labials in contact with the anterior sublinguals, which are divergent and longer than the posterior. Midbody scales in 15 rows, smooth; ventrals 308 (-310) in ♂♂ (375 in ♀); anal divided; subcaudals (25—) 26 in ♂♂ (23 in ♀).

Color in alcohol. Above, head and neck black, the black descending on the sides of the neck suggesting a collar; labials yellow with black spots on rostral, beneath eye, and near gape; prefrontals, parietals and nape each bearing two small white spots; back yellowish-white with a dark-brown vertebral stripe flanked by a dark-brown dorso-

lateral stripe on the fifth, and adjacent halves of the fourth and sixth, scale-rows, the three stripes extending almost to the tip of the tail; the three lower lateral scale-rows uniform white; posterior third of tail black with light flecking. Below, throat and belly immaculate yellowish-white, a black crossband on posterior third of tail whose tip is also black. (For color in life *cf. cit. supra*).

Size. Length of holotype ♂ (M. C. Z. 30402), 445 (420 + 25) mm., surpassed by that of the paratype ♂ which is 486 (460 + 26) mm., and paratype ♀ (I. G. 15.824) of 569 (545 + 24) mm. Diameters of ♂♂ 4.5–5 mm., of ♀ about 3.5 mm. For relative proportions see *Diagnosis* above.

Remarks. The Ujiji paratype, the first *authentic* example of a *Chilorhinophis* to be taken in Tanganyika Territory, was inadvertently omitted from the report of the reptiles collected during my 1938–1939 expedition (1942e, Bull. Mus. Comp. Zoöl., **91**, pp. 235–436). For, noting the differences between it and all recorded Congo males, I put it aside intending to make further enquiries of Dr. Gaston de Witte respecting the sexing of Congo material. Events occurring at that time made it necessary to postpone the matter and only recently has it been possible for Dr. de Witte to supply me with additional data (in litt.), embodied in the accompanying key to members of the genus, and very generously place at my disposal the only known female of the new race.

I repeat that this is the first authentic taking of a Tanganyika *Chilorhinophis*, for Sternfeld's (1910) listing of the Sudanese *butleri* as occurring at Amani in the Usambara Mountains may well be based on a carelessly identified *Aparallactus werner*, to which species it bears a superficial resemblance. However that may be, the specimen has been missing from the Berlin Museum for a quarter-century. Pitman's not unnatural conclusion (1937, Uganda Journal, p. 329) that this Amani snake formed the basis of Sternfeld's description and dimensions, is incorrect, for it is a synopsis of Werner's original account with the measurements in round figures. Most of Sternfeld's descriptions in this and other contributions to the series are brief German translations of the longer ones in Boulenger's catalogues, with Boulenger's measurements changed to centimetres — later given in inches by Pitman under the impression that they represented original measurements made by Sternfeld.

CHILORHINOPHIS CARPENTERI LIWALENSIS subsp. nov.

Type. Museum of Comparative Zoölogy, No. 50076, an adult ♀ from Liwale, 2,100 feet, 9° 45' S., 37° 55' E., Southern Province, Tan-

ganyika Territory. Collected by C. J. P. Ionides, Esq., March 30th, 1948.

Paratypes. Museum of Comparative Zoölogy, Nos. 50077-89, 51327-8, together with twenty-two Liwale specimens in the British Museum (N. H.) and sixteen uncatalogued duplicates in the M. C. Z. taken between March 30, 1948 and March 13, 1950. Also M. C. Z. 50075 from Masasi District, and M. C. Z. 50090 from Ruponda, Lindi District; all in the Southern Province of Tanganyika Territory, and collected by Mr. C. J. P. Ionides.

Diagnosis. Distinguished from the typical form as follows:

Three longitudinal stripes on back and sides; ventrals in females 216-270¹, in males 210-238; range: southeastern Tanganyika Territory... *c. liwalensis*
 Five longitudinal stripes on back and sides; ventrals in female 269, male unknown; range: northeastern Mozambique (known only from Ancuabe, 13° 02' S., 39° 55' E.)..... *c. carpenteri*

Description. (Paratype variations in parentheses). Rostral nearly twice as broad as deep, the portion visible from above as long as half its distance from the frontal; nostril in a single nasal that is fused with the first labial (except on right side only of M. C. Z. 51328) and so reaches the lip; prefrontals longer than broad, not entering the orbit (not entering in 21 paratypes, entering in 30 paratypes, both conditions in 4); frontal shorter than its distance from the rostral, slightly longer than broad, about twice as broad as a supraocular, much shorter than a parietal; preocular 1, moderate (or minute in specimens where the prefrontal enters orbit); eye small, its diameter about two-thirds its distance from the mouth; postocular 1; a large upper temporal bordering the parietal; upper labials 4 (reckoning the nasolabial as the first), second in contact with the prefrontal, third entering the orbit, fourth largest and broadly in contact with the parietal; lower labials 5, the first broadly in contact with its fellow behind the mental, 3 (4 on right side of M. C. Z. 50081) labials in contact with the anterior sublinguals, which are divergent and longer than the posterior. Midbody scales in 15 rows, smooth; ventrals 253 (217-238 in male paratypes, 216-270 in female paratypes); anal divided; subcaudals 20 (25-30 in males, 18-24 in females).

Color in alcohol. Above, head and neck black, the latter descending on the sides of the neck suggesting a collar; labials yellow; (the temporal scale exhibits a white spot in some paratypes); back yellowish-

¹ If the coastal specimen (B. M. coll.) from Kilwa, 125 miles northeast of Liwale, be included, this figure should be raised to 288 (count checked by me) which would give a ventral range of 73 for female *liwalensis*, comparable to the 74 displayed by female *g. gerardi*. On the other hand additional Kilwa material may demonstrate the presence of a coastal form averaging a higher number of ventrals.

white with a broad brown vertebral stripe on the vertebral scale and adjacent half-scales; a dark dorsolateral stripe on the adjacent halves of the fifth and sixth scale-rows (in M. C. Z. 50090 only the lower lateral scales are faintly edged with brown); posterior half of tail black except for some blue-gray mottling about the tip. Below, chin with (or without) dusky markings; otherwise throat and belly immaculate yellowish-white; basal half of tail white, separated by a black bar from a blue-gray area near the tip. Ionides writes: "Colour in life varies from light yellow to khaki."

Size. Total length of holotype ♀ (M. C. Z. 50076), 335 (315 + 20) mm., of a paratype ♂ (M. C. Z. 51327), 300 (274 + 26) mm. For the entire series the tail length is included in the total length 10.6 to 12.7 times in ♂♂, 14.4 to 19.6 times in ♀♀. Midbody diameter of ♀ type, 3.5 mm.

Remarks. Battersby (1950, pp. 416-417) considers these Liwale specimens should be referred to *C. butleri* Werner, of Mongalla, Anglo-Egyptian Sudan (1,500 miles distant from Liwale by arrow-flight), suggesting that the single pair of chin shields of the unsexed holotype might be the result of fusion. With this action I cannot concur, for every one of the more than 50 Liwale specimens exhibit two pairs; moreover, if the type of *butleri* is a male it differs from 25 Liwale males in its more numerous ventrals and subcaudals and shorter tail; if on the other hand it is a ♀, as I suspect, it differs from 25 Liwale females in having 33 instead of 18-24 subcaudals.

Similarly, as three well-defined dark lines are present on the back and sides of *butleri* and all Tanganyika material, the synonymizing of the Mozambique holotype of *carpenteri* (Parker), which has five such lines, should be postponed until more material of the extreme southeasterly form is available for study.

Native name. *Kitandamba* (Ngindo) i.e. the one found among *ndandamba* beans, loosely applied to snakes of related genera such as *Aparallactus*, etc.

Habits. Ionides informs me that: "*Chilorhinophis*, like adult *Typhlops*, apparently remains underground except after heavy rain."

Diet. From the stomach of one I recovered an adult *Amphisbaena ionidesii* Battersby.

CALAMELAPS UNICOLOR WARRENI Boulenger

♂♂ (M. C. Z. 50071, 51309) Liwale. 30.i.48; 15-30.x.49.

Midbody scale-rows 19; ventrals 167-168; subcaudals 27-28, of which the first six are single in M. C. Z. 50071. Total length of larger

♂, 388 (374 + 14) mm. In its stomach is a juvenile blind snake (*Typhlops s. mucruso*); an exceptionally large blind snake of the same species was in process of being swallowed by another *warreni* which Mr. Ionides reports as measuring "thirty-two-and-a-half inches."

APARALLACTUS LUNULATUS LUNULATUS (Peters)

♀ (M. C. Z. 50091) Masasi District. 15.i.48.

juv. ♂ (M. C. Z. 50092) Liwale. 4.v.49.

Midbody scale-rows 15; ventrals 157-164; anal 1; subcaudals 51-55; labials 6, the third and fourth entering the orbit; nasal in contact with preocular. Total length of ♀, 420 (343 + 77) mm. Her stomach held a huge centipede.

Color of juvenile ♂. Above, crown black; nuchal collar five scales in width, black, edged with white before and behind; anterior part of back with a series of white-edged black spots diminishing in size posteriorly, the posterior part of back and tail purplish-black. Below, throat and anterior portion of body white, posteriorly grayish.

Color of adult ♀. Above, uniform purplish-black. Below, throat, posterior edges of ventrals and much of tail whitish, otherwise black. To what extent this melanism is an indication of maturity, as in *Elapsoidea*, is worth investigating.

Witte & Laurent (1947, Mem. Mus. Royal Hist. Nat. Belgique (2), No. 29, p. 110) synonymize *concolor* with *lunulatus* but later (p. 113) state that this is only provisional and proceed to use trinomials. There is abundant material to justify the retention of *concolor* as a northern race characterized by a nasal that is not in contact with the preocular.

APARALLACTUS ? WERNERI Boulenger

♂ (M. C. Z. 50093) Liwale. ix.48.

Midbody scale-rows 15; ventrals 144; anal 1; subcaudals 40; labials 5, second and third entering orbit, fourth and fifth separated from parietal; first lower labial broadly in contact with its fellow behind the mental. Total length 189 (157 + 32) mm.

Though this snake exhibits all the characters of *weneri*, in coloring and size it resembles *capensis* from the same locality so closely that one wonders if there is not a closer relationship.

APARALLACTUS CAPENSIS CAPENSIS A. Smith

♀ (M. C. Z. 50094) Liwale. 16.ix.48.

Midbody scale-rows 15; ventrals 153; anal 1; subcaudals 42; labials 6, third and fourth entering orbit, fifth in contact with parietal; first lower labial widely separated from its fellow behind the mental. Total length 210 (174 + 36) mm. See note under *wernerii* above.

ELAPSOIDEA SUNDEVALLII DECASTERI Boulenger

Native name. *Njoka ishanga* (Ngindo) i.e. 'necklace snake.'

Mr. Ionides comments on the almost entire absence of white on adults of *decasteri*, as is known to be the case with other races of this garter snake. It appears possible that *Aparallactus l. lunulatus* also tends to darken and lose its markings with age.

NAJA NIGRICOLLIS NIGRICOLLIS Reinhardt

Native name. *Nachiku* (Ngindo).

Mr. Ionides, who is familiar with *N. melanoleuca*, reports catching a "♀ *nigricollis*, 6 feet $5\frac{3}{4}$ inches in length. She was about to cross a main road but on seeing me, stopped, turned her head slightly in my direction and, without further movement, allowed me to walk slowly up to her and slip a noose over her slightly raised head. Even after being noosed she scarcely struggled. She appeared to have sloughed recently and was very thick and heavy, being full of fat though her stomach was empty." The incident apparently occurred in March as Mr. Ionides wrote me on 2.iv.1948. He found another of these spitting cobras about to eat "a freshly killed *Rhamphiophis o. rostratus*."

DENDROASPIS ANGUSTICEPS (A. Smith)

♀ (M. C. Z. 51313) Liwale. 15-30.x.49.

Native name. *Namahamba* (Ngindo) i.e. 'green one,' but applied also to *Chlorophis*, *Philothamnus* & *Dispholidus*.

Midbody scale-rows 19; ventrals 223; subcaudals 124. Total length only 716 (545 + 171) mm. At Mr. Ionides' request, the Director of the Coryndon Memorial Museum kindly forwarded me one of the "brilliant emerald green" mambas from Liwale that were identified as *D. jamesonii* by Professor Toschi. As suspected, it proved to be a common mamba.

Mr. Ionides informs me that he has taken several young of what he

believes to be this species, of a lightish, sometimes faintly barred, rather dull green. The adults appear to be always a bright emerald hue, he says, resembling the green phase of the boomslang. Snakes of this type he has seen in the Liwale, Lindi, and Kilwa Districts, none of them exceeding six and a half feet in length.

DENDROASPIS POLYLEPIS Günther

♂ (Brit. Mus.) Liwale Boma. 11.iv.49.

Native name. *Ndemalunyayo* (Ngindo), i.e. 'grass cutter' from its alleged habit of clipping grass.

Mr. Ionides writes that this snake, sent alive by him to the London Zoological Gardens, was subsequently identified as *polylepis* by Dr. H. W. Parker, who reported it as having: Ventrals 258; subcaudals 108. Colour brown. Length 6 feet, 9 inches. Ionides adds that he presumes juvenile mambas of a dull olive shade are the young of the "black mamba." Two slender, six-foot specimens were almost a "bluish tinge, darker on the back," while the biggest examples were usually "darkish olive, chocolate brown, or gunmetal color". Snakes of this type he believes he has seen in the Kilwa, Liwale, Lindi, Masasi, and Tunduru Districts. In some instances he noted that the lining of the mouth was black but, not realizing its diagnostic significance, did not examine every specimen.

However, none of the mambas he caught displayed the aggressive disposition with which this species is credited further south. In illustration of this Mr. Ionides wrote on July 3, 1949, of dislodging one large mamba from the thatch of a granary by hooking the grass, and finally the snake, off with a pole. The reptile was then pinned to the ground and picked up to be sent to the London Zoo. After other means had failed to dislodge her, a second snake was pelted with small sticks until she came down from a mango tree. She too was then held down by a stick until seized. A third mamba, between six and seven feet in length, entered a fish trap that had been hung in a tree. Some very small fish, called by the natives *dagaa*, had been left in the trap, but whether they exerted any attraction for the snake was uncertain.

BITIS ARIETANS (Merrem)

Native name. *Boma, liboma, lipiri, kipiri* (Ngindo for color phases or size differences).

Writing on July 15, 1948, Mr. Ionides remarks that he had recently witnessed a pair of puff adders courting; so far as he could see no copu-

lation took place. With heads close together and raised very high, the two vipers turned from side to side, the supposed male occasionally intertwining his body with that of the female; from time to time he slid his head over her neck in a caressing manner. The courtship was interrupted after ten minutes by the reptiles realizing *Ionides*' presence. After subjecting him to prolonged scrutiny, they made off at a rate much faster than is normal for these heavy bodied snakes. Both seemed to have sloughed recently and appeared very alert and active.

ATRACTASPIS BIBRONII A. Smith

♀ (M. C. Z. 50095) Ruponda, Lindi District. 9.i.48.

7 ♂ ♂ 8 ♀ ♀ (M. C. Z. 50096-9, 50251-60, 51312) Liwale District. 1948-9.

1 ♂ 3 ♀ ♀ (M. C. Z. 50261-4) Lindi District. 1948-1949.

1 ♂ 4 ♀ ♀ (M. C. Z. 50265-9) Kilwa District. 1948-1949.

Midbody scale-rows 21-25; ventrals 210-238; anal entire; subcaudals 19-25; labials 5, third and fourth entering the orbit; first lower labial broadly or narrowly in contact with its fellow behind the mental. Total length of largest ♂ (M. C. Z. 51312), 601 (563 + 38) mm., and ♀ (M. C. Z. 50263), 598 (569 + 29) mm.

A. katangae Boulenger, which I (1942e. Bull. Mus. Comp. Zoöl., 91, p. 316) synonymized with *bibronii*, was revived as a race of that species by Laurent (1945. Revue Zool. Bot. Afr., 38, p. 335), who now agrees that it is untenable. In the same paper he suggests that *rostrata* Günther, synonymized with *bibronii* by Peters in 1882, should also be revived as a race of *bibronii* for tropical African snakes. While this may have to be done, such action at the present time appears premature in the absence of statistical evidence that a preponderating majority of South African snakes have only 21 midbody scale-rows. So far as Tanganyika snakes are concerned the proportion with 23 rows is below the 75% required by Dunn's law. Of the forty-one Tanganyika snakes I have counted, seven have 21 rows, four have 22 rows, twenty-nine have 23 rows, and one has 25 rows. The type locality of *rostrata* was given as Zanzibar.

In one large ♀ is a full-grown *Amphisbaena ionidesii*, and *Ionides* tells me that a 14⁵/₈-inch ♀ not only had an entirely undigested 9³/₄-inch *Crotaphopeltis h. hotambovia* in its stomach, but a 7¹/₈-inch *Causus defilippi* in its gullet with the night adder's tail protruding from the mouth of its captor.

BUFO CARENS A. Smith

Skull (M. C. Z. 26649) Southern Province. 1947.

BUFO REGULARIS REGULARIS Reuss

- ♂ (M. C. Z. 26627) Liwale. 13.vii.48.
Skull (M. C. Z. 26650) Southern Province.

CHIROMANTIS XERAMPELINA Peters

- ♀ (M. C. Z. 26628) Lindi District. 20.xii.47.
♀ (M. C. Z. 26629) Liwale. 12.vii.48.

LEPTOPELIS ARGENTEUS (Pfeffer)

Hylambates argenteus Pfeffer, 1892, Jahrb. Hamburg Wiss. Anst., 10, p. 100, pl. ii, fig. 3: Marsh south of Bagamoyo, Tanganyika Territory.

- 1 (M. C. Z. 26632) Ruponda, Lindi District. 8.i.48.

On seeing this shrivelled, 38 mm.-long frog with a dorso-lateral and lateral stripe on either side, I was immediately reminded of Pfeffer's figure of the similarly dried out type of *argenteus*. A species that Ernst Ahl (1931, Das Tierreich, No. 55, p. 217, fig. 117) correctly referred to *Leptopelis* where it would appear to be related to *L. concolor* and *L. johnstoni*.

HYLAMBATES MACULATUS Duméril

- 2 (M. C. Z. 26630-1) Liwale. 13.vii.48.

KASSINA SENEGALENSIS (Duméril & Bibron)

- ♀ (M. C. Z. 26633) Lindi District. 28.xii.47.

A gravid, but shrivelled specimen of 37 mm. Several races of *senegalensis* have been described.

MEGALIXALUS FORNASINII FORNASINII (Bianconi)

- ♂ (M. C. Z. 26634) Liwale District. 24.i.48.

MEGALIXALUS BRACHYCNEMIS Boulenger

- ♀ (M. C. Z. 26635) Liwale District. 24.i.48.

HYPEROLIUS sp.

- ♂ ♀ (M. C. Z. 26636-7) Liwale District. 24.i.48.

RANA ADSPERSA EDULIS (Peters)

1 & skull (M. C. Z. 26638-9) Lindi District. 5 & 19.xii.47.

RANA ORNATA ORNATA (Peters)

1 (M. C. Z. 26640) Lindi District. xii.47.

After comparison of this 56 mm. frog with three others of the species from Tanganyika Territory and the Belgian Congo, trinomials are used as *ruddi* Boulenger (1907, Proc. Zool. Soc. London, pp. 480-481, pl. xxii, figs. 1-1b) of Beira, is undoubtedly a subspecies, apparently differing only in the less extensive webbing between its toes.

RANA OXYRHYNCHUS OXYRHYNCHUS A. Smith

2 (M. C. Z. 26641) Lindi District. 23.xii.47.

RANA MASCARENIENSIS MASCARENIENSIS Duméril & Bibron

2 (M. C. Z. 26642) Liwale. 8.vii.48.

ARTHROLEPTIS STENODACTYLUS STENODACTYLUS Pfeffer

1 (M. C. Z. 26643) Liwale. 8.vii.48.

1 (M. C. Z. 26644) Masasi District. 20.i.48.

Some doubt attaches to the data of this Masasi frog for the label with it read: "Tree frog No. 35."

HEMISUS MARMORATUM MARMORATUM (Peters)

♂ ♀ (M. C. Z. 26645-6) Liwale. 7.vii.49.

Presumably a breeding pair measuring 25 and 28 mm. respectively.

PHRYNOMERUS BIFASCIATUS (A. Smith)

Skull & 1 (M. C. Z. 26647-8) Liwale. 13.vii.48.

A gravid ♀ was taken on 21.i.48.



1951. "On reptiles and amphibians for Tanganyika Territory collected by C.J. P. Ionides." *Bulletin of the Museum of Comparative Zoology at Harvard College* 106, 175–204.

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