

ON SOME COLLECTIONS OF REPTILES AND BATRACHIANS FROM
EAST AFRICA AND THE ADJACENT ISLANDS, RECENTLY RE-
CEIVED FROM DR. W. L. ABBOTT AND MR. WILLIAM ASTOR
CHANLER, WITH DESCRIPTIONS OF NEW SPECIES.

BY

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The collections treated of in the present paper were sent home at various times by the gentlemen mentioned in the title. In addition to these I have enumerated several specimens, chiefly from the Seychelles, collected by the late Col. Nicolas Pike, and presented by him to the Museum, as well as a few others from the same islands obtained from the British Museum, in 1883, and the Paris Museum, through Prof. Léon Vaillant, during the present year.

Dr. W. L. Abbott's collections from the base of the Kilima-Njaro were made during 1888 and 1889, and the specimens mentioned in the following pages were probably taken at altitudes between 5,000 and 8,000 feet above the sea.

He collected twice on the Seychelles, viz, in April and May, 1890, and again in 1892 during the months of July and August. In October, November, and December of the same year he collected in Aldabra. The reptiles obtained in Gloriosa Island were taken during the latter part of January, 1873.

The collection received from Mr. William Astor Chanler was made by him and Lieut. von Hœhnel, of the Imperial Austrian Navy, along the Tana River, en route from the coast to Hameye, about 300 miles inland. His expedition left Mkoumbi, on the coast of Witu, on September 18 and reached Hameye on November 26, 1892, following the left bank of the Tana from Merifano to Subaki, where he crossed over to the right bank. He also presented the Museum with a small, but interesting collection made by Mr. Gustav Denhardt at Wange on the island of Manda, a short distance north of Lamu.

Mr. Chanler's collection is chiefly interesting in furnishing material from a region between that of the Massai land and Somali. Species found hitherto only in the latter country are among Mr. Chanler's treasures, while the range of several southern forms have been extended northward.

The most interesting portion of Dr. Abbott's collections are undoubtedly the specimens obtained in the Seychelles, Aldabra, and Gloriosa. So far as I know no extensive collecting has been done in the last men-

tioned islands.* The herpetological result is only three species of lizards in each island, but it is not supposed that the fauna of these islands is exhausted. The following is a list of the species collected by Dr. Abbott:

Gloriosa.

Hemidactylus mabouia.
Zonosaurus madagascariensis.
Ablepharus gloriosus.

Aldabra.

Phelsuma abbotti.
Hemidactylus mabouia.
Ablepharus poecitopterus.

The Seychelles, on the other hand, are by this time pretty well explored, though it is to be regretted that the collectors so far have neglected to furnish data by which it would have been possible to ascertain the distribution of the species in the various islands composing the group. Nevertheless, Dr. Abbott's collections have added several additions to the fauna of these interesting islands, including two species hitherto undescribed, one of which belongs to a genus hitherto only found in Australia.

The only list of the reptiles and batrachians of the Seychelles, so far as I know, is given in Wallace's *Island Life* (London, 1881, pp. 395-397). He enumerates eleven species as found in the group, five of which he considers peculiar to the islands. Since then it has been learned that two of the species enumerated by him, viz., *Boedon geometricus* and *Cacilia rostrata*, in reality are peculiar, though at that time supposed to occur in other localities as well, making the peculiar species seven. To-day we know fifteen land species as occurring with certainty, ten of which are peculiar, while a number of additional names may be regarded as of doubtful occurrence. The following is a revised list, the full explanation of which will be found further on in this paper, under the head of the various species. The names in brackets are those of Wallace's list:

SEYCHELLES.

* Denotes that the species is considered peculiar to the group.

† Denotes that specimens are in the U. S. National Museum.

REPTILIA.

(*Chelone imbricata*, fide Peters, Monatsb. Berlin, 1866, p. 887.)

1. *Sternotharus nigricans.*
 ? *Sternotharus sinuatus.*
2. *Hemidactylus mabouia.*
 ? *Hemidactylus frenatus.*
3. *Diplodactylus inexpectatus.*
4. *Phelsuma madagascariense* [Ph. cepedianus].

One species of lizard is so far recorded from Gloriosa by Dr. Günther as *Gerrhonotus madagascariensis* (Zool. Coll. 'Alert,' 1884, p. 486) evidently a lapsus for *Zonosaurus madagascariensis*.

- *15. *Ailuronyx seychellensis* [Phelsuma s.].
- 6. *Peropus mutilatus* [Wallace].
- *17. *Mabuya sechellensis* [Enprepes cyanogaster].
- *18. *Chamaeleo tigris* [Wallace].
- *19. *Lycognathophis seychellensis* [Dromicus s.].
- *10. *Boodon geometricus* [Wallace].

BATRACHIA.

- *11. *Megalixalus seychellensis* [M. infrarufus].
- *12. *Rana mascareniensis* [R. mascariensis].
? *Urwytyphlus oxyurus* [Caecilia oxyura].
- *13. *Cryptopsophis multiplicatus*.
- *14. *Hypogeophis rostratus* [Caecilia rostrata].
- *15. *Hypogeophis alternans*.

I. REPTILIA.

LORICATA.

Crocodylus niloticus LAUR.

Mr. Chanler sends a small specimen from the Tana River (No. 20071), and Dr. Abbott a nearly grown one; exact locality not given (No. 16027).

TESTUDINES.

Sternothærus nigricans (DONND.).

There are four *Sternothæri* in the collections sent home by Dr. Abbott, three from La Digue Island, Seychelles (U. S. National Museum, Nos. 19802-19804) and one dried specimen from Gloriosa Island (No. 29347, Dept. Comp. Anat.).

The determination of this species (for most certainly all four specimens are strictly conspecific) has caused me considerable doubt from the fact that Boulenger, among the British Museum specimens, enumerates one specimen from La Digue under *S. sinuatus* (Cat. Chel. Br. Mus., p. 195). I have no undoubted specimen of the latter species to compare with, and consequently have to rely on the literature. Now, *S. nigricans* is said by Boulenger (*op. cit.*, p. 195) to have the upper jaw neither hooked nor bicuspid, and it is very certain that our specimens can not fairly be called "bicuspid," though there is an indication of a notch with the faintest possible swelling on both sides. Then again he states that in this species "the frontal suture [is] not or but slightly exceeding the width of the interorbital space," while in *S. sinuatus* "the interorbital width [is] considerably less than the longitudinal suture between the frontal shields." This would most certainly make our specimens *S. nigricans*, as in all of them the interorbital space is at least as wide as the length of the frontal suture.

In addition to this our specimens agree exactly with the characters given by Peters (Reise Mossamb., Zool. Amph., p. 8) as characteristic of *S. nigricans* in as much as the posterior margin of the carapace is not serrated, the median marginals are not keeled and hardly visible when the carapace is viewed from above. I may also mention that Peters has identified another specimen from the Seychelles (Mahé Island) as *S. nigricans* (Monatsber. Akad. Wiss. Berlin, 1877, p. 455).

Finally, if Smith's plate representing *S. sinuatus* (Ill. Zoöl. S. Afr. Rept., pl. i) is only approximately correct, our specimens can not well belong to that species.

The largest specimen (No. 29347) has a shell 160 mm. long.

SAURI.

Hemidactylus mabouia (MOREAU).

Of this widely distributed species our collectors have brought specimens from nearly all the localities visited.

Mr. Chanler has one from the Tana River (U. S. National Museum, No. 20087).

Dr. Abbott sends two large specimens labeled Kilima-Njaro (Nos. 16748-16750). He has also two specimens from the Seychelles (Nos. 20454-20455) in pretty poor condition. I am not aware that this species has been collected in these islands before.* It would be interesting to know in which particular island they were obtained.

Three more specimens from Gloriosa Island (Nos. 20459-20461), also collected by Dr. Abbott, have apparently been taken from the stomach of some bird, as they appear to be half digested. I have no doubt about the correctness of the identification, though the tubercles on the back are rather large.

The same gentleman, finally, has three specimens from Aldabra Island, one of them quite young (Nos. 20470-20472). I can discover no other difference from typical specimens than the separation of the second chin-shield from the second infralabial by two small scales, identical in both the grown specimens, while in all the other specimens of *H. mabouia* before me the second chin-shield is in contact with the second infralabial.

Diplodactylus inexpectatus, sp. nov.

DIAGNOSIS.—Back covered with uniform granular scales; digits with regular transverse lamellæ inferiorly; rostral and first labial entering nostril; digital expansion considerably wider than digit, two-thirds the

*Boettger (Abh. Senckenb. Ges., XII, 1881, p. 531) records *Hemidactylus frenatus* as occurring in the Seychelles, but upon what authority I do not know. It may perhaps not be unnecessary, in view of this record, to state emphatically that the specimens collected by Dr. Abbott are true *H. mabouia*, with well-developed inner digits and tubercles on the postocular portion of the upper surface of the head.

diameter of the eye; 12 entire lamellæ under the fourth toe; ear-opening small, one-third the diameter of the eye.

HABITAT.—Île Mahé, Seychelles.

Type.—U. S. National Museum, No. 20433; Dr. W. L. Abbott coll.

Description.—Snout considerably longer than the distance between the eye and the ear-opening; ear-opening small, rounded; digits rather long, slender, feebly depressed, inferiorly with large, undivided, transverse lamellæ, 12 under the fourth toe, which are broken up into small tubercles some distance before the distal expansion; the latter cordiform, considerably wider than digit, two-thirds the diameter of the eye; digits above, including the upper surface of the expansion covered with small granules like those on the back; upper surface of body and limbs, as well as tail above and below covered with small uniform granular scales, somewhat larger on snout and tail; rostral four-sided, fully twice as wide as high, without cleft above; nostril pierced just above the suture of the rostral with first labial, between both the latter and three small scales; three scales along the upper border of the rostral between the anterior supero-nasals; eleven supralabials, first largest; ten infra-labials; mental trapezoid, not larger than the adjacent labials; no chin-shields, but small polygonal scales passing gradually into the minute granules of the gular region; abdominal scales small, about the size of the caudal granules, but smooth, roundish hexagonal, slightly imbricate; tail cylindrical, tapering, with uniform granulation; two enlarged granules close together on each side of the base of tail; no preanal pores.

Color (in alcohol) above dark brownish gray, with indistinct darker marbling on head and sides; traces of dark cross bands on lower back; below whitish; labials white; a pale stripe from nostril through upper part of eye to above ear-opening bordered below by a dark line; digits cross-banded with dusky.

Dimensions.—Total length, 75 mm.; tip of snout to ear-opening, 9 mm.; width of head at ear-opening, 7 mm.; fore limb, 11 mm.; hind limb, 17 mm.; tail, 35 mm.

Remarks.—The discovery of a new gecko of the phyllodactyl group in the principal island of the Seychelles is not so very surprising, because in the first place the reptile fauna of these islands is probably not yet thoroughly explored, while in the second place other species of the same group, as for instance *Phyllodactylus oriceps*, *Ph. sancti-johannis*, *Ph. stumpfi*, *Ph. porphyreus*, *Ph. pictus*, and the two species of *Ebenavia*, inhabit either Madagascar or some of the surrounding islands. The surprise is, however, that the new species belongs to the genus *Diplodactylus*, as now understood by Boulenger, all the hitherto known species of which are confined to Australia. That the present species really is a *Diplodactylus* can not be doubted, for the digits are "not dilated at the base, clawed, the distal expansion covered above with small tubercular scales similar to those on the basal part," the sub-digital transverse lamellæ are undivided, and there is no penul-

imate expansion. However, in view of the fact that the genus *Phyllodactylus*, which unquestionably is closely allied, has a similar and even wider distribution, the present extension of the range of *Diplodactylus* can not be considered particularly abnormal, while the discovery of a species of the nearly related Australian genus *Oedura* in southwestern Africa a few years ago (*Oedura africana* Boulenger, Ann. Mag. N. H. (6) 11, Aug. 1888, p. 138) is even more startling.

Phelsuma abbotti, sp. nov.

DIAGNOSIS.—Nostrils pierced above the first upper labial only; ventral scales smooth; snout not twice as long as the distance between orbit and ear-opening; chin shields much larger than adjoining gular scales; tail not much depressed, narrower than the body; 33 femoro-preanal pores altogether; segments of tail not very distinct, composed of six transverse rows of scales on the side as well as on the upper surface.

HABITAT.—Aldabra Island.

Type.—U. S. National Museum No. 20467; Dr. W. L. Abbott coll.

Description.—Snout once and two-thirds as long as the distance between the eye and the ear-opening, twice the diameter of the orbit; upper part of rostral with a median cleft; nostril pierced above and bordered beneath by the first supralabial; supralabials seven to eight; infralabials seven; chin shields four on each side, gradually decreasing in size, inner pair about four times as large as outer; one to three scales between the naso-rostrals; ear-opening small, its vertical diameter not half that of the orbit; dorsal scales small, keeled from the head; ventral scales smooth; femoral pores thirty-three altogether; tail not very much depressed, narrower than the body; segments of tail rather indistinct, composed each of six transverse rows of rather large, flat scales both on sides and upper surface; lower surface of tail (when intact) with a median series of transversely dilated scales, two narrower ones alternating with a wider one. Color (in alcohol) dark olive slate above, on the sides gradually passing into the whitish of the under surface; a black line from nostrils through eye to neck; supralabials and a broad band backward to over the ear-opening whitish; sides and upper surface of limbs coarsely marbled with blackish.

Measurements (in millimeters).

U. S. National Museum number.....	20467	20468	20469
Sex.....	♂	♂	♀
Total length.....	mm. 127.0	mm. 115	mm. 86
Tip of snout to ear.....	15.0	13	12
Width of head at ears.....	11.5	11	9
Fore limb to tip of longest finger.....	20.0	18	14
Hind limb to tip of longest toe.....	23.0	21	18
Tail (intact).....	70.0	64	.....

Remarks.—The present species, in its general features, resembles *Ph. madagascariense*, having the same arrangement of the scales surrounding the nostrils, but it has a considerably shorter and somewhat broader snout, and the supralabials are higher. It is probably also a much smaller animal, as the specimens before me have every appearance of being full grown. The coloration is also very different when compared with individuals of the same size from the Seychelles, the lateral stripes of the head being quite characteristic.

In some respects, especially the length of the head, *Ph. abbotti* approaches *Ph. laticauda*, but the shape of the tail of the latter seems to be quite different, while in the former it is exactly like that of *Ph. madagascariense*. From both of these species, as well as from *Ph. cepedianum*, from Mauritius, our new species differs in the much greater size of the scales which cover the upper and lateral surfaces of the tail, these scales being regularly hexagonal and flat. Boettger's description of these scales in *Ph. dubium*, from Nossi Bé, as quoted by Boulenger, Cat. Liz. Br. Mus., I, p. 215, is not explicit enough, but it would seem as if they may be similar to those in *Ph. abbotti*. From Boettger's species the latter seems easily distinguishable by its large chin shields which are fully as well developed as in *Ph. madagascariense*, while in *Ph. dubium* they appear to be more like those of *Ph. cepedianum*.

Agama colonorum DABD.

Six specimens (U. S. National Museum, Nos. 20081–20086) collected by Mr. Chanler at the Tana River are so much alike typical western specimens that I am unable to separate them. The eastern ones have possibly the nuchal crest on the average consisting of fewer (10–12) and slightly larger spines than in specimens from the West Coast (12–15).

It will be noticed that Peters records *A. congica*, which Boulenger unites with *A. colonorum*, as having been collected by Hildebrandt at Ukamba (Monatsber. Ak. Wiss. Berlin, 1878, p. 202).

Varanus saurus (LACR.).

By recording the two young specimens collected by Mr. Chanler on the Tana River (Nos. 20072–20073) as above I wish to express the fact that they have the scales on the nape larger than the dorsal scales, as Peters asserts that the reverse obtains in true *V. niloticus* from Northern Africa.

Latastia spinalis (PETERS).

A single specimen of this species, hitherto found only in Abyssinia, was collected by Mr. Chanler on the Tana River (U. S. National Museum, No. 20076). This discovery is the more interesting since Boettger has recently described a nearly related new *Latastia* from Lafarug, Somaliland, but this species, *L. heterolepis*, is distinguished by having

the supraoculars entirely surrounded by granules (Zool. Anz., XVI, April 10, 1893, p. 115).

From Boulenger's description (Cat. Liz. Br. Mus., III, p. 57) our specimen differs only in having all the gular granules of the same size, the four posterior rows, including the edge of the collar, suddenly appearing as flat, subequal scales, while Boulenger says: "Gular scales moderate, gradually increasing in size toward the collar."

From Peters' original description and figure (Monatsber. Akad. Berlin, 1874, p. 369, pl. — fig. 2) our specimen differs chiefly in having a narrow but elongate interparietal; in having the frenal divided off anteriorly; in having the subocular between fifth and sixth supralabials; and in having only one series of very wide brachial plates covering the outer aspect of the humerus.

In our specimen the average number of scales across the body is 38; ventral shields in 27 transverse rows; two enlarged median preanals surrounded anteriorly and laterally by a row of smaller scales; femoral pores 11 on each side.

In coloration our specimen agrees very well with Peters' description of the type.

Eremias sextæniata, sp. nov.

DIAGNOSIS.—Ventral plates in six straight subequal longitudinal series; lower nasal undivided, resting on first labial only; supraoculars entirely surrounded by granules; upper head-shields strongly striated; subocular excluded from lip by one or two supralabials; back with six pale longitudinal bands, including five darker clay-colored bands, which contain each a series of numerous black spots.

HABITAT.—Tana River, East Africa.

Type.—U. S. National Museum, No. 20080; W. A. Chanler coll.

Remarks.—Differs from *E. spekii* chiefly in the exclusion of the subocular from the lip and in the coloration.

Two specimens were collected by Mr. Chanler (Nos. 20079–20080), both having the subocular excluded from the lip by well-developed supralabials, two on both sides of No. 20080, while two on one side and one long one on the other side in No. 20079.

On the other hand it appears that the types of *E. spekii* (two specimens in British Museum) as well as the types of *E. rugiceps* Peters (how many? Boulenger, Cat. Liz. Br. Mus., III, p. 84, footnote, says "Types (Mus. Berol. 9287) examined") all have the subocular bordering the lip.

This character might be supposed to be subject to individual variation, and I have no material at hand that will throw any light upon this subject, but I find that Boulenger (*tom. cit.*) when describing species of which British Museum contains very large series (for instance, *E. guttulata*, pp. 88–89, 28 specimens; *E. arguta*, p. 102, 28 specimens) does not mention any variation in this character, although he always notes the irregularities in the numbers of the adjoining supralabials.

The coloration, moreover, seems to offer another tangible difference. Boulenger describes *E. speikii* as being "brownish above, with three longitudinal paler lines, and a more indistinct one along each flank; small black cross bars between the light streaks" (Cat. Liz. Br. Mus., III, p. 84), and Peters also describes the synonymous *E. rugiceps* as having five longitudinal pale lines, of which the middle one bifurcates anteriorly, (Monatsber. Akad. Berlin, 1878, p. 203). Our specimens, on the contrary, have 6 distinct pale lines, the median line, like the other dark interspaces being marked with a series of black spots. The number of these spots averages in each row eighteen to twenty.

Eremias brenneri PETERS.

The specimen (No. 20078) collected by Mr. Chanler on the Tana River agrees in all essential points with the characters given by Boulenger in the description of *E. brenneri*, as distinguished from *E. mucronata* (BLANFORD) (Ann. Mus. Genova (2), XII, 1892, p. 8). It has the upper head-shields strongly striated, and the upper caudal scales strongly keeled.

This specimen seems, in fact, to be perfectly typical, except that it has the anterior three chin-shields in contact, a difference evidently within the individual variation. The subocular is excluded from the lip, being wedged in between the sixth and seventh supralabials on the right side, but between the seventh and eighth on the left side. There are, moreover, five elongate infralabials on each side, followed by two or three rows of small hexagonal scales. The top of the head is also normal, but the interparietal is quite minute. With these exceptions, in addition to the strong striation of the upper head-shields, the figures of the head of *E. erythrostickta* given by Boulenger (Ann. Mus. Genova (2), XII, 1892, pl. i., figs. 2a and 2b) would answer for our specimen; that one representing the side of the head is particularly an exact reproduction of No. 20078.

Eremias hoehneli, sp. nov.

DIAGNOSIS.—Ventral plates in eight straight longitudinal series; occipital shield present; lower nasal divided, resting on first and second supralabial; supraoculars entirely surrounded by granules; scales on upper surface of tibia much larger than dorsals; upper head shields strongly striated; subocular reaching the lip; posterior chin shields reaching the lip; first pair of infralabials in contact behind the mental.

HABITAT.—Tana River, East Africa.

Type.—U. S. National Museum, No. 20077; W. A. Chanler coll.

Remarks.—This species is very closely allied to *E. brenneri*, with which it shares the strong striation of the upper head shields, the strong carination of the upper scales of the tail, the granules surrounding the supraoculars, and the divided subnasal. It differs, however, in having eight longitudinal series of ventrals, instead of six, in the sub-

ocular reaching the lips, and in the very remarkable scutellation of the lower jaw. *E. bremeri* has five to six elongate, narrow infralabials, none of which are in contact with those on the other side, the last one followed by two or three rows of small hexagonal scales; it has, moreover, four pairs of chin shields, two or three anterior pairs in contact. In our present species, on the other hand, there are only two or three anterior infralabials, the first pair in contact on the median line behind the mental. Thus there are but three pairs of chin shields, only the anterior pair being in contact, while the last pair form the edge of the lip. At the posterior end of the last chin shield there is a long and narrow infralabial, while in the corresponding place in *E. bremeri* there are two rows of small scales.

In addition to these differences the type specimen, the only one collected, shows several divergencies from the only specimen of *E. bremeri* which we have for comparison, viz, the frontoparietal is longer in proportion to its width and is deeply grooved mesially; the two parietals form a straight line behind, while in *E. bremeri* they form a concave angle; gular scales as well as those forming the edge of the collar apparently smaller in the former than in the latter; there is no elongate shield along the outer edge of the parietals. There are probably still other differences between the two specimens, which, however, are somewhat damaged.

In the arrangement of the mandibular shields the specimen upon which I have ventured to base a new species certainly seems somewhat abnormal, and it is possible that the characters adduced from it may prove not to be diagnostic. Nevertheless, the two additional ventral rows and the admission of the subocular to the lip appear of sufficient importance to justify the separation.

I have named the species in honor of Mr. Chanler's traveling companion, Lieut. von Hoehnel, of the Imperial Austrian Navy, who has also done part of the collecting.

Mabuya sechellensis (DUM. & BIBR.).

With 19 specimens from the Seychelles before me, 10 of which were collected by Dr. Abbott, I am unable to recognize *M. wrightii* (Cat. Liz. Br. Mus., III, 1887, p. 162, pl. viii) as a valid species.

From the appended table it is evident that the number of scales round the body varies from 34 to 42, entirely irrespective of the shape of the frontonasal or its relation to the rostral. As to the comparative width and length of the frontonasal, I have only to remark that the difference either way is usually so trifling, and the cases of equality between the two dimensions so frequent, that one is often doubtful as to the location of the specimens. In two cases only, viz, two very large specimens, is the frontonasal completely excluded from the rostral by the supranasals being in contact with each other; in most of the specimens the anterior angle of the frontonasal just touches the rostral, and

only in a few, mostly small specimens, does the frontonasal broadly join the rostral.

List of specimens examined.

U. S. National Museum number.	Whence obtained.	Scales round body.	Frontonasal		Frontonasal and rostral	
			longer than broad.	broader than long.	in con- tact.	not in con- tact.
16718.....	Abbott.....	36	—	×	×	—
16719.....	do.....	38	—	×	×	—
16720.....	do.....	36	—	×	×	—
16721.....	do.....	34	×	—	×	—
16722.....	do.....	36	—	×	×	—
16726.....	do.....	42	—	×	×	—
16730.....	do.....	42	—	×	×	—
16731.....	do.....	40	—	×	×	—
20456.....	do.....	38	—	×	×	—
20457.....	do.....	38	—	×	×	—
8281*.....	Pike.....	40	—	×	×	—
8282.....	do.....	38	—	×	×	—
20407.....	Paris Museum.....	36	—	×	×	—
20408.....	do.....	36	—	×	×	—
19223.....	British Museum.....	42	—	×	—	×
19223.....	do.....	40	—	×	×	—
19224.....	do.....	40	—	×	—	×
19225.....	do.....	38	—	×	×	—
19226.....	do.....	38	—	×	×	—

* Frigate Island.

Mabuya chanleri, sp. nov.

DIAGNOSIS.—Lower eyelid with a large, undivided, transparent disk; scales on the soles spinose; the adpressed hind limb reaches beyond the elbow of the adpressed fore limb, but not to the axilla; frontoparietals two; thirty-two scale rows round the body; dorsals feebly tricarinate; subocular not narrowed below; distance from snout to ear-opening greater than from ear-opening to axilla and more than one-half the distance from axilla to groin; color above blackish with large white rounded spots.

HABITAT.—Tana River, East Africa.

Type.—United States National Museum, No. 20104; W. A. Chanler coll.

Description.—Lower eyelid with a medium-sized transparent disk; nostril behind the vertical of the suture between the rostral and the first labial; a small triangular postnasal; anterior loreal large, pentagonal, in contact with first and third labials; rostral rather prominent; supranasals not in contact behind the rostral; frontonasal as wide as long, in contact with the frontal; latter equals in length the frontoparietals and interparietal together, in contact with first, second, and third supraoculars; four supraoculars, first comparatively large, second largest, but not much larger than fourth; five supraciliaries, second as large as fifth; frontoparietals distinct, as large as the interparietal; parietals not meeting behind; a pair of narrow nuchals; five supralabials anterior to the subocular, which is not narrowed inferiorly; eight infralabials; ear-opening oval, fully as large as the transparent palpebral disk, with three small obtuse lobules anteriorly;

dorsal and lateral scales very feebly tricarinate; first pair of nuchals entirely smooth; thirty-two scale rows round the middle of the body; the hind limb reaches beyond the elbow of the adpressed fore limb half way to the axilla; scales on the soles sharply keeled, spinose; subdigital lamellæ sharply uncarinate, spinose; tail very slender.

Color of upper side of back, tail, and limbs brownish black, with large rounded whitish spots, each spot usually covering the adjoining portions of three scales, the point of contact between the three scales in the center; the spots are arranged in pretty regular transverse and longitudinal series, about twelve of the former between head and tail, and about ten of the latter, the lower row on each side confluent with the whitish color of the under surface; head lighter brownish, most of the sutures emphasized by darker, with about five more or less interrupted transverse bands of whitish; supralabials as well as sublabials whitish, with broad vertical dark brown bars in continuation of the brown of the top of the head; lower surface whitish, with a few dusky spots on the chin.

Measurements.

[In millimeters.]

Snout to end of interparietal.....	11.5
Snout to ear-opening.....	13
Snout to fore limb.....	21
Snout to anal opening.....	50
Axilla to groin.....	23
Fore limb.....	17
Hind limb.....	21
Tail (tip broken off).....	48

Remarks.—Only one specimen of this well-marked species was sent home by Mr. Chanler, for whom it is named.

Lygosoma kilimensis STEJN.

Proc. U. S. Nat. Mus., xiv (No. 862), 1892, p. 405.

The description of this novelty was based on the specimen collected by Dr. Abbott at the foot of Kilima-Njaro (No. 16749).

Riopa sundevallii (SMITH).

One specimen from the Tana River by Mr. Chanler (No. 20109).

Ablepharus boutonii pœcilopleurus (WIEGM.).

The various subspecies, or forms, by which *A. boutonii* is represented in various localities seems as yet but imperfectly worked out, and the problems concerning its geographical distribution are therefore but imperfectly understood. The material at my command is, however, too scanty to allow me to take the question up in full, but, small as it is, it seems interesting enough to warrant the publication of a few observations.

The specimens before me from the same locality show a remarkable uniformity of color pattern, especially if we consider the great variability of the species. On the other hand, the structural characters—for instance, the relations between frontal and prefrontals, number of scale rows around the body, relative length of limbs, etc.—are subject to great differences in series of specimens from the identical locality.

This will account for my adopting the above name for three specimens from Aldabra Island (Nos. 20473–20475, collected by Dr. Abbott), notwithstanding the fact that they have only 24 scale rows round the body. In coloration, however, they agree perfectly with specimens from the Hawaiian Islands (Nos. 5706 and 12260, U. S. Exploring Expedition) as well as with Wiegmann's colored figure of, *A pacilopleurus*, from Peru (Nov. Acta Ac. Leop.-Carol., XVII, 1835, pl. viii, fig. 1). They possess the dark lateral band spotted with whitish; a rather well-defined light band above this, and an olive back with black dots which are most numerous in a line bordering the light band.

On Gloriosa Island we find another form which looks entirely different, the status of which will be set forth under the next heading, as I am obliged to give it a new name in order to discuss it intelligently.

Ablepharus gloriosus, subsp. nov.

DIAGNOSIS.—Similar to *A. boutonii*, but with two white and three blackish very distinct and straight-edged lateral bands; four supralabials anterior to the subocular; 20 to 22 scale rows round the body.

HABITAT.—Gloriosa Island.

Type.—U. S. National Museum, No. 20463; Dr. W. L. Abbott coll.

Color description.—Top of head and inner half of the two median dorsal scale rows olive brown; a well-defined brownish black band on either side occupies the outer half of these scales and the inner half of the next scale row, commencing at the outer edge of the supraoculars, the two black bands joining a little back of the anus and continuing as a median dark band down the upper surface of the tail; below this band on either side an equally well defined white band occupies the next two half scales commencing somewhat indistinctly above the nostrils, proceeding backwards over the superciliaries and scales of upper eyelids, whence the band is well defined, and continuing down the tail; below this white band, on either side, another brownish black band occupying on the sides of the body one whole and two half scales, on the neck two whole and two half scales, originating at the nostrils, proceeding backwards through the eye and across the temporal region, and finally continuing down the sides of the tail; the two next half scales are marked with a well-defined white band which involves the supralabials, passes through the ear-opening and above the fore limb, but stops upon meeting the hind limb; finally, below this there is a dusky band, well defined but not of so deep a color as the others, occupying a half and a whole scale row, starting below the

ear-opening, passing through the axilla, and stopping in the groin; limbs above blackish brown with white dots; entire under surface white; palms and soles blackish.

Remarks.—I have given so detailed a color description for the reason that specimens from such a small island may not always be accessible to my brother herpetologists. The description is the more to be relied upon as there are four specimens in the collection, all perfectly alike and all characterized by the same distinctness and straightness of the outlines of the lateral bands.

These specimens are of the same size as those from Aldabra, alongside of which they present a totally different aspect. One of the Gloriosa specimens has only 20 scale rows (No. 20464), the others have 22, while in the three Aldabra specimens there are 24 scale rows. There is, however, another structural difference which seems to me to be of more importance, as I find the nuchal shields of all the four Gloriosa specimens to be wider and with more arched outlines, against the straighter outlines of the same shields in those from Aldabra.

Dr. Boettger (Zool. Anz., 1881, p. 359) has described a specimen from Nossi Bé as variety *A. cognatus*. This specimen also has 22 scales round the body, but only three supralabials in front of the subocular; moreover, and I think this the chief difference from my *A. gloriosus*, it is colored like *A. peronii*, that is, without the lower two bands so characteristic of the former.

Judging from Dr. Peters's remarks (Reise Mossamb., Amph., p. 77), the *Ablepharus* occurring in the Comoro Islands is identical with our Aldabra specimens.

Looking at the map, it can not be denied that the *Ablephari* inhabiting the four islands, or island groups, here mentioned have a rather peculiar distribution, and it will at once be clear how necessary it is to treat these closely allied forms carefully and in detail.

Chamæleo ropei BOUL.

Four specimens (Nos. 16741-16742; 16745-16746) were collected by Dr. Abbott at the foot of Kilima-Njaro, and two by Mr. Chanler on the Tana River (Nos. 20103, 20108).

Chamæleo dilepis LEACH.

Mr. Chanler sends home two specimens from the Tana River (Nos. 20074-20075).

Chamæleo tigris KUHL.

Numerous specimens from the Seychelles by Dr. Abbott. Nos. 16715-16716; 20458. The exact locality of Nos. 20434-20439 is specified as ile Mahé.

Chamæleo taitensis STEIND.

Three specimens collected by Dr. Abbott at the foot of Kilima-Njaro were described by me, in 1891, as *Ch. abbotti*. Dr. Steindachner's

name, however, seems to have the priority by a few months. I would state, however, that the number of the Wiener Sitzungsberichte containing the description (Math. Nat. Cl., Vol. C., v-vii heft, May-July, 1891) did not reach the library of the Smithsonian Institution until June 30, 1892, while the "Anzeiger" was never received at all.

SERPENTES.

Typhlops schlegelii BIANC.

Two specimens, a large one (U. S. National Museum, No. 20123) and one half-grown (No. 20124) were collected by Mr. Denhardt on the Island of Manda, both alike in all essential points. Color above, dark olive; below, yellow; the outline between the two colors irregular, and the four lowest olive scale rows on each side with a yellow spot in the middle forming four narrow yellow longitudinal lines.

No. 20123 is 430mm long; diameter, 15mm; scale rows, about 36.

No. 20124, 200mm long; diameter, 7mm; scale rows, about 36.

Typhlops mandensis, sp. nov.

DIAGNOSIS.—Nasal large, semidivided, nasal cleft proceeding from the first labial; four supralabials; preocular present, narrower than the nasal or the ocular; no subocular; eye not distinguishable; rostral large; snout not hooked, with obtusely angular horizontal edge; nostrils inferior, just below the edge; prefrontal, frontal, and interparietal of equal size, much larger than the scales on the body; supraoculars and one pair of parietals still larger; diameter of body 23 times in the total length; tail exceedingly short, much wider than long; 34 scale rows round the middle of the body, the median dorsal row not enlarged. Color above, uniform pale greenish gray; below, pale buff.

Total length 135 mm.

HABITAT.—Wange, Island of Manda, north of Lamu, East Africa.

Type.—U. S. National Museum, No. 20125; Gustav Denhardt coll.

Remarks.—This new species is apparently nearly related to *T. hallowelli* Jan, which, however, has only 3 supralabials and 28 scales round the body. The scutellation of the head is very much as figured by Sordelli (Jan, Icon. Ophid., livr. 4, 1864, pl. v, fig. 6) except that in *T. hallowelli* the prefrontal, frontal and interparietal decrease in size backwards, the latter being scarcely larger than the scales of the body, while in the present species these three shields are of equal size and much larger than the scales of the body. The supraoculars and parietals are also proportionally larger in the latter.

The only specimen collected has a small abnormal scale on the right side at the junction of the sutures between the preocular and ocular on the one hand, and the second and third supralabials on the other.

Lycognathophis seychellensis (SCHLEGEL).

The Museum possesses 18 specimens of this species from the Seychelles, of which 2 were collected by Col. Pike (No. 8284) and 16 by Dr. Abbott (Nos. 16723-16724; 16732; 20419-20431) the last 13 being from the Island of Mahé.

This large series demonstrates, probably, the extremes of individual variation. It may therefore be useful to enumerate individually the exceptions from the normal scutellation which may be expressed thus: Anal, $\frac{1}{2}$; supralabials, 9; loreal, 0; postoculars, 3; temporals, 1+2.

All the specimens have the normal number of temporals and supralabials (No. 20422 has the sixth supralabial on the left side divided horizontally). The greatest variation is in the number of postoculars, Nos. 20426 and 16723 having only two postoculars on both sides, while No. 20429 has two on one and three on the other. More interesting is the fact that one specimen has an undivided anal (No. 16732), but most so is No. 20419, which has a well-developed loreal on both sides.

The coloration varies greatly, as there are specimens nearly uniformly colored from a light yellowish to nearly black, while others have dark or light spots.

Simocephalus chanleri, sp. nov.

DIAGNOSIS.—Frontal much shorter than the parietals; three postoculars; two labials entering the eye; secondary keels on all the scales, but no oblique striation; dorsal scale row next to the vertebral row not much larger than the laterals; eye much larger than nostril.

HABITAT.—Wange, Island Manda, north of Lamu, East Africa.

Type.—U. S. National Museum, No. 20126; Gustav Denhardt coll.

Description.—Depth of rostral two-thirds the width, visible from above; internasals slightly wider than long, two-thirds the length of the prefrontals; frontal as long as wide, much longer than the prefrontals and much shorter than the parietals; loreal as long as deep; one preocular and three postoculars; temporals 1+2, the anterior large, elongated, and widely separating the fifth supralabial from the parietal; seven supralabials, third and fourth in contact with the eye, seventh very small; five sublabials in contact with the anterior genials which are considerably larger than the posterior ones; 15 scale rows, all the scales, including the row next to the gastrosteges, strongly keeled, the latter row even showing a secondary keel on each side, while in the adjoining row there are two secondary keels on the lower half of each scale; vertebral scale row with two very strong primary keels, beginning on the fourth scale from the parietals, and two well-marked secondary keels on each side; scales in row next to the gastrosteges largest, the others gradually diminishing in size toward the vertebral row, the one next to the latter but slightly larger than the others; scales in second row from gastrosteges not elongated, scarcely longer than wide; none of the scales with any oblique striation; color above, including

the lateral portion of the gastrosteges, uniform olive gray; below, yellowish. Length of head from tip of snout to end of parietals, 14mm.

The type and only specimen is somewhat damaged, hence the impossibility of giving the number of gastrosteges and urosteges. Anal single.

Remarks.—Boulenger, in the first volume of the new Catalogue of Snakes in the British Museum (1893, pp. 344-347), recognizes five species of *Simocephalus* with which it is necessary to compare the new species. Of these, two are at once easily excluded, *S. capensis* by its very short parietals, and *S. stenophthalmus* by its extremely small eyes. From the other three species the one here described is at once distinguished by its three postoculars.

This, however, is not the only character in which it differs, as will be shown by the following comparison:

The outline of the head of *S. chanleri*, both in profile and seen from above, is most like that of *S. guirali* (See Moquard, Bull. Soc. Philom., (7) XI [on plate erroneously X] 1887, pl. ii, fig. 3), consequently not so flattened and elongated as that of *S. poensis* (see Moquard, tom. cit., pl. i, fig. 2) or *S. nyassæ* (Cat. Snakes Br. Mus. 1, 1893, pl. xxiii, fig. 2). The size, form, and sculpture of the dorsal scales of *S. guirali* are entirely different, the comparative smoothness of the extreme lateral row, the elongation of the next one as well as the proportionally greater size of the former and of the one next to the vertebral row being quite characteristic, not to mention the oblique striation of the scales, which is not seen at all in *S. chanleri*. In the latter the prefrontals are also comparatively smaller and the frontal larger.

The island whence came the present species is situated not far from the mouth of the Tana River, and is, I believe, the most northern locality on the east coast of Africa in which any *Simocephalus* has been collected.

Boædon geometricus (SCHLEG).

JAN. Icon. Ophid., livr. 36, pl. iii. fig. 2 (1870).

Boodon seychellensis GÜNTHER, Ann. Mag. Nat. Hist. (6) I, May, 1888, p. 330, pl. xviii, fig. c.

B. geometricus BOULENGER, Ann. Mus. Genova (2) XII, 1892, p. 14.

Dr. Abbott has sent home three specimens from the Seychelles, viz: Nos. 16733, 20446, and 20432, the latter being a comparatively young specimen, collected on the Ile Mahé in 1892. It is somewhat darker, but otherwise colored like the larger specimens, the five dark lines on the back being clearly visible in all. There is a fourth specimen in the museum, collected by Col. Pike on Frigate Island, Seychelles, (No. 8286). All four specimens have 23 scale rows.

Boædon lineatus DUM. & BIBR.

Two specimens from the island of Lamu, collected by Denhardt, a large one (No. 20131) and a young (No. 20130); the former has 27 scale

rows, the latter only 25. A large specimen (No. 16754) from Kilima-Njaro, collected by Dr. Abbott, has 29 scale rows.

Boulenger has recently (Ann. Mus. Genova (2), XII, 1892, pp. 13-15, and Cat. Snakes Br. Mus., 1, 1893, pp. 327-336), reviewed the genus and decided that Günther's *B. bipreocularis* is only a synonym of *B. lineatus*, and as he with his abundant material undoubtedly is in a better position to judge, I have named my specimens accordingly, in spite of the fact that all three have two preoculars. I have for comparison only five specimens from Loanda, on the west coast, collected by Mr. Heli Chatelain (U. S. National Museum Nos. 16246; 16249-16251; 20033), and one from Cunga, collected by Brown (No. 16075). All of these have only one preocular; moreover, in all, except No. 16075, the third supralabial has the upper posterior angle produced backward so as to join the eye below the preocular, while in the one from Kilima-Njaro as well as in both the Lamu specimens the third supralabial is excluded from the eye (No. 16075 has it joined on the right side, excluded on the left); finally, in the western specimens there are three longitudinal white stripes on the head, the lower one originating beneath the eye on the fourth and fifth supralabial, while in the eastern ones before me there is no trace of such a stripe.

The young specimen in every respect closely resembles Jan's var. *variegata*, from Mozambique (Icon. Ophid., livr. 36, pl. ii, fig. 4), which also has the same arrangement of the third supralabial, at least a partly divided preocular, and lacks the subocular white streak.

I am strongly of the opinion that it may be possible and profitable to recognize the various subspecies of *B. lineatus*. In such a case the present form would probably stand as *B. lineatus variegatus* (JAN), Günther's *B. preocularis* being a strict synonym of it.

Crotaphopeltis hotamboeia (LAUR.).

JAN, Icon. Ophid., livr. 39, pl. ii, fig. 1.

Five specimens, from Tana River, by Chanler, two adults (Nos. 20110, 20091), two young ones (Nos. 20093, 20094), and one somewhat older (No. 20092).

The old ones are lighter in color, being of a medium brownish gray above, with the top of head lighter brownish and a blackish cloud on the auricular and postauricular region, while the young ones are dark brownish slate, approaching blackish, sprinkled with whitish, but without any marked difference in the color of the head.

I have compared them with three specimens (No. 20806-'8) recently received by the Museum from Mr. J. H. Camp, who collected them at Leopoldville, Congo State, and find them identical.

Philothamnus semivariiegatus (SMITH).

Three specimens, two (Nos. 20098 and 20105) from the Tana River, by Chanler, the other (No. 20128) from Island Manda by Denhardt.

Nos. 20128 and 20105 are spotted to the same extent as Peters' figure of his *Ph. punctatus* (Reise Mossamb., Zool. Amph., pl. xix A, fig. 2), while No. 20098 has only a few black spots on the anterior portion of the body.

Hemirhagerrhis kelleri BOETTGER.

Zool. Anz., XVI, April 24, 1893, p. 129.

Two specimens of this species (Nos. 20100, 20112), recently described by Dr. Boettger from Somaliland, were obtained by Mr. Chanler on the Tana River.

Structurally both specimens agree closely with Dr. Boettger's description, allowing for a reasonable individual variation (thus No. 20100 has 2-3 temporals on one side and 2-4 on the other, while No. 20112 has 2-3 on both sides; in the former the preorbitals are somewhat separated from the frontal, while in the latter they barely meet it). In coloration No. 20100 also corresponds well with the Somaliland specimens, but No. 20112 differs in this respect considerably inasmuch as the middle of the back is marked with a broad and very dark brown stripe from the head to within a very short distance of the tip of the tail. This band is four scales wide, occupying the median three rows and one-half scale on each side, the color of these halves being darker, almost black. In addition the other markings above and below are much darker and better defined, the dark vermiculations on top of the head and the outer double line on each side of the gastrosteges being particularly well marked; the two lower whole scale rows in the light space between the median dorsal band and the broad lateral bands are marked with a narrow dusky stripe along the center. The broad median dorsal band is also traceable in the light-colored specimen, especially posteriorly, but it is but slightly darker than the rest of the upper side.

U. S. National Museum number.	Scale rows.	Gastrosteges.	Anal.	Urosteges.	Length of body and head.	Length of tail.
20100.....	17	?	1/1	Pairs 75	mm. ?	mm. 78
20112.....	17	154	1/1	68	230	64

Hemirhagerrhis hildebrandtii (PETERS).

1878.—*Ablabes hildebrandtii* PETERS, Monatsber. Ak. Wiss. Berlin, 1878, p. 205, pl. ii, fig. 6.—FISCHER, Jahrb. Hamburg. Wiss. Anst., I, 1884, p. 7.

The present species is so rare and the original description so meager that I think it advisable to furnish a detailed description of the specimen at hand.

U. S. National Museum, No. 20106; Tana River, East Africa; W. A. Chanler coll.—Nine maxillary teeth, slightly increasing in size backwards, the posterior tooth grooved.

Scale rows 17; gastrosteges 176; anal $\frac{1}{2}$; urosteges 98; supralabials 8, fourth and fifth in contact with eye, seventh largest; infralabials 10, four in contact with anterior chin shield; temporals 2 + 3.

Rostral normal, more than twice as wide as high, quite visible from above; nasal large, much swollen and bent up on the upper surface of the head, the nostril being pierced on the canthus rostralis and quite visible from above, the subnasal suture not reaching the nostril, oblique posteriorly, meeting the suture between first and second supralabials; internasals almost triangular, very small, less than one-third the prefrontals; loreal long and narrow, twice as long as high; a deep furrow from rostral to eye formed by the suture bordering the supralabials above; preocular comparatively small, just touching the frontal above; frontal long, twice as long as broad, longer than prefrontals and internasals together, as long as parietals; supraoculars large, considerably swollen; two postoculars, upper one slightly larger; anterior temporals two, long, the upper one particularly narrow, pointed anteriorly and barely reaching the upper postocular; two pairs of chin shields, the posterior slightly longer. Dorsal scales smooth, with one very distinct apical pore.

Color above drab, with a broad serrated brown band down the middle of the back almost to the tip of the tail, the borders and lateral projections being almost black, the adjoining scales, especially anteriorly, pale buff; a series of blackish spots corresponding to the lateral serrae of the dorsal band on the scale row nearest to the gastrosteges and urosteges; on the posterior half of the body a more or less distinct line on the third row from the gastrosteges and urosteges; tip of tail nearly unicolorous buff; top of head drab, with indistinct marblings of dark brown; a dark-brownish transocular streak; each of the labials in both jaws with an ill-defined dark brownish spot; underside whitish, indistinctly marbled with dull rufous and marked with ill-defined, narrow, longitudinal blackish spots; underside of tail densely sprinkled with grayish.

Length of head and body, 250mm.; length of tail, 107mm.

Remarks.—This species is evidently rather closely related to Günther's *Coronella nottoania* (P. Z. S., 1864, p. 309, pl. xxvi, fig. 1), which should apparently stand as *Hemirhagerrhis nottoania*. The difference between the two species, as far as it can be made out from the description alone, consists in the number and shape of the anterior temporals and the greater length of the tail in the present species. The coloration appears to be very similar, the chief difference being that the dorsal band in the present species is serrated all the way and the presence in this species of the spots on the scale row next to the gastrosteges. Many other differences might be pointed out were we to accept the details of the scutellation of the head as shown in the figure as absolutely correct in every instance, but that is hardly to be expected.

From *Hemirhagerrhis kelleri*, the type of the genus, the present

species differs somewhat in the dentition, it having nine supramaxillary teeth instead of five. They are somewhat smaller and more closely set, but this would scarcely justify their generic separation, inasmuch as all the other characteristics of the genus are present, particularly the single, swollen nasal with the incomplete, oblique subnasal suture. The coloration is also of a very similar character.

At first I had determined upon a new name for the present species, not supposing that an opisthognath snake had been described by Peters as an *Ablabes*; but a comparison with his figure and description leaves but little doubt but that it is the same species, and that Peters overlooked the groove of the last maxillary tooth.

Since writing the above I find that Boulenger has recently united *H. nototenia* and *H. hildebrandtii* under the name of *Amphiophis nototenia* (Proc. Zool. Soc. Lond., 1891, p. 307). For the reasons given above I still retain the two names distinct. As to the propriety of uniting *Hemirhagerhis* Boettger with *Amphiophis* Smith, I can have no opinion, since I am unacquainted with the type species of the latter.

Psammophis sibilans (LIN.).

Jan, Icon. Ophid., livr. 34, pl. iii, fig. 3.

Two adult specimens, one (No. 20129) from Wange, by Denhardt, the other from the Tana, by Chanler (No. 20099).

Psammophis biseriatus PETERS.

Sitzungsber. Naturf. Fr. Berlin, 1881, p. 88.

I have no doubt that the two specimens (U.S. Nat. Mus. No. 20095 *ad.*, 20096 *jun.*) collected by Mr. Chanler on the Tana River belong to this species in spite of some differences from the description of the single type specimen (Mus. Berol., No. 9394) collected by Hildebrandt at Taita.

The chief differences consist in the single anal, as described by Peters, against double in both our specimens, and in the somewhat greater number of urosteges in the type. The latter difference, however, is easily within the range of individual variation, and the difference in the anal seems hardly to be of much greater importance in this instance, inasmuch as the specimens in all other respects seem to agree perfectly. There is the less room for doubt, as both Boulenger and Boettger record the species from Somaliland (Ann. Mus. Genova (2) XII, 1892, p. 15.; Zool. Anz., 1893, p. 119), our locality, consequently, being intermediate.

The chief characteristics of the species, viz, the very elongated head and the great length of the frontal as compared with the supraoculars, the former, consequently, being broadly in contact with the preocular and the prefrontals widely separated from the supraoculars, are very strongly marked in our specimens, and Peters' description of the coloration agrees very well with the larger one. Peters does not at all describe the coloration of the head, which is very characteristic, how-

ever, but as the markings on top of the head are less distinct in the larger of our specimens than in the smaller one, it is possible that they disappear by increasing age. The sides of the head in both specimens are equally strongly marked, as follows: Labials pure white, with a few minute black specks near the commissure and a well-defined black line along the upper edge of the supralabials, bordering below a chestnut-brown transocular band, and no light marks on preocular or postoculars. Top of head grayish brown, with several well-defined light clay-colored marks, narrowly outlined in black in the young specimen; thus the posterior half and the anterior lateral corners of the frontal are marked in this manner, joining behind a curved line occupying the exterior and posterior border of the supralabials; a U-shaped figure crosses the parietals, while a narrower and fainter line joins the frontal with the rostral covering the internasal and the prefrontal sutures.

The young specimen differs from the old one in the coloration of the back, the ground color being more ashy and the markings more ferruginous. The median scale row is of the latter color, forming a narrow line down the entire length of the back, the inner corners of the lateral spots almost touching it and the outer edges of these in turn connected with a similar line on the fourth outer scale row; each of the outer three scale rows are also marked with a darker brown line; the lateral lines appear to break up into spots on the posterior third of the body and to disappear entirely on the tail.

Of minor differences between Peters' description of the type and our specimens may be mentioned that in these the loreal is perceptibly longer than the nasals together.

Both our specimens have nine supralabials, fifth and sixth in contact with the eye; the younger specimen has 2+3+3 temporals, the older one 1+2+2, but the upper ones are large and plainly the result of the fusion of two plates; the second pair of genaeals are very elongate in both specimens, exceedingly so in the larger one.

U. S. National Museum number.	Scale rows.	Gastrosteges.	Anal.	Urosteges.	Length of body and head.	Length of tail.
20095.....	15	143	1/1	<i>Pairs</i> 120	<i>mm.</i> 420	<i>mm.</i> 280
20096.....	15	155	1/1	102	220	105

* About.

Our specimens agree, as it will be seen, perfectly with the one collected at Arusha, at the base of Kilima Njaro, by Dr. G. A. Fischer, and described, as well as figured, by Dr. J. G. Fischer (Jahrb. Hamburg. Wiss. Anst., 1, 1884, p. 13, pl. i, fig. 4), which has 144 gastrosteges, $\frac{1}{2}$ anal, and 109 urosteges. This specimen seems to be somewhat larger than our largest, and the top of the head appears to be uniformly colored as the type: the spots on the labials are larger than in ours.

Thelotornis kirtlandii (HALLOW.).

One specimen (No. 20097) from the Tana River.

Rhamphiophis rostratus (PETERS).

An adult specimen (No 20111) from the Tana River, by Chauier. The specimen shows on the right side of the face the abnormality of having the upper posterior angle of the fifth supralabial separated as a large subocular.

Dasypeltis palmarum?

U. S. National Museum, No. 16755; Kilima-Njaro; Dr. W. L. Abbott coll.

Dasypeltis abyssina?

U. S. National Museum, No. 16756; Kilima-Njaro; Dr. W. L. Abbott coll.

There is such a confusion in the literature concerning the species of the genus *Dasypeltis*, and the specimens before me agree so little among themselves and with the published descriptions, representing about half a dozen species or subspecies, that I have been unable to name them to my own satisfaction. I have therefore selected the names belonging to descriptions which come the nearest to them, adding a query to each. The only other course would have been to make new names, but as I have no doubt that some of the old names will be found available as soon as some one with more material shall have been able to untangle the present skein. But I will ask as a favor of my fellow herpetologists that, if they ever quote the names heading these remarks, they will kindly not omit the question marks which I have added.

No. 16775 is much the larger of the two specimens before me; it is of a uniform dark brownish olive above and yellowish beneath; it has 23 scale rows. This would make it easily *D. palmarum* (Günther, Cat. Col. Sn. Br. Mus., p. 142).* In addition, it has 3+4+5 temporals, the first row scarcely longer than the others, second and third rows keeled. The denticulation of the keels of the third, fourth, fifth, and sixth lower lateral scale rows is very pronounced, the scales themselves being very small and placed obliquely. The supralabials are quite high, the fifth, for instance, being considerably higher than wide. The parietals are very small, being only as long as the frontal.

The other specimen (No. 16756) is much smaller; in fact, quite young. The ground color is the same dark brownish olive, perhaps a shade more brown, and at first sight it appears to be uniform, but upon a closer inspection it is found that there is a series of darker spots on the back separated by a pale space, the markings closely resembling those on the back of Sordelli's figure of *R. scaber* (Jan, Icon. Ophid.,

*Leaving out of consideration the *Rachiodon inornatus* described by Duméril and Bibron (Erp. Gen., VII, p. 498) having 25 scale rows and "la carène des écailles du bas des flancs . . . très-forte . . . mais à peine dentelée."

39 livr., pl. ii, fig. 4,*) which Peters refers to his *D. scabra* var. *medici*. Even the markings on the neck and head seem to be identical. Were these the only distinctions I should unhesitatingly regard the specimen as the young of the one here called *D. palmarum*?, and the var. *medici* as a synonym, but the scutellation of the head of the young specimen is so radically different from the old one, and from Sordelli's figure as well, that I must regard them as two distinct species until it be proven that the individual variation in these snakes is almost unlimited, and that there is only one species of *Dasypeltis*. The specimen in question has 25 scale rows, the keels of the lateral rows well denticulated. The head, as compared with No. 16755, differs as follows: The supraoculars are more arched, as described by Duméril and Bibron in case of *D. abyssina*; the temporals are 2+4+5, the two first ones being excessively long and smooth, the others small, carinated; the supralabials are very low, the fifth, for instance, being wider than high; the sixth supralabial is extraordinarily developed, the upper border being elongated obliquely backwards along the lower first temporal and parallel with the latter; the seventh supralabial is also quite elongated and partly below the sixth; the parietals are long, being as long as frontal and prefrontals together. I may add that both sides of the head are identical.

It will be observed that the large uniformly colored specimen (No. 16755) as regards cephalic scutellation agrees closely with Sordelli's figure, quoted above, while the young and spotted specimen (No. 16756) in nearly every respect agrees with Duméril and Bibron's *D. abyssina*, both as described (Erp. Gen., VII, pp. 496-497) and figured (Atlas, pl. lxxxi, fig. 2) by them, the chief difference consisting in the lighter and yellower ground color of the latter. It is difficult to see in which other respect Peters' *D. scabra* var. *mossambica* (Reise Mossamb., Zool., III, 1882, p. 120) differs from Duméril and Bibron's species, and it would even appear that Peters' *D. lineolata* (Monatsber. Ak. Wiss. Berlin, 1878, p. 206) only differs in coloration.

In view of the above facts I am inclined to think that all through eastern Africa there occur two well defined species of *Dasypeltis*, (1) *D. palmarum* (possibly only a color variety of true *D. scabra*) having 23 to 25 scale rows; 3 short anterior temporals; parietals not longer than frontal; and (2) *D. abyssina* (with several color varieties, *mossambica*, *lineolata*) having 25 to 27 scale rows; 2 very elongate anterior temporals; parietals as long as frontal and prefrontals together.

Naja nigricollis REINH.

A young specimen (No. 20090) from the Tana River, by Chauler.

The scutellation of the head is perfectly normal, except that on the right side there are four postoculars, the lower one having been divided, and that on the left side a small portion of the fifth supralabial is divided off forming an additional minute supralabial.

* Probably the type of Bianconi's *Dipsas medici* from Mozambique; see p. 2 of cover of livr. 29.

The scale rows on the middle of the body number 25.

The coloration above is pale drab, the margins of the scales being paler, the underside uniform pale buff; round the neck a single broad bluish black collar covering 12 gastrosteges and about as many scales on the vertebral line, starting on the fifth gastrosteg and on the sixth vertebral scale from the parietal. A spot of similar bluish black below the eye, but not reaching the commissure.

Atractaspis rostrata GÜNTHER.

One specimen (No. 20127) from Wange, Island Manda, collected by G. Denhardt; 23 scale rows.

Causus rhombeatus (LICHT.).

Two specimens (U. S. Nat. Mus., Nos. 16757, 16758) collected by Dr. Abbott at Kilima-Njaro, in poor condition. They have 19 scale rows; normal rostral; internasal broadly in contact with loreal; large dark, white-margined spots on the back. For these reasons I refer the species to *C. rhombeatus*, of which I have no authentic South African specimen at hand for comparison; but Abbott's specimens agree well with the type of Hallowell's *C. maculatus*, except that in the latter the rhombs are more distant, and the angle of the black cephalic chevron more acute. It will be observed that Peters has already recorded the species from Taita (Monatsber. Ak. Wiss. Berlin, 1878, p. 207).

Causus nasalis, sp. nov.

DIAGNOSIS.—Nineteen scale rows; rostral produced, but forming no ridge above; internasal not in contact with loreal, being excluded by the prefrontal which is in contact with the posterior nasal; anal single; back with narrow, more or less distinct chevron cross-bands having the angle turned backwards.

HABITAT.—Tropical Africa.

Type.—U. S. National Museum, No. 16055, ♂; West Africa; W. H. Brown coll.

Remarks.—In the form of the rostral the present species seems to be somewhat intermediate between *Causus rhombeatus* and *C. resimus* (both species with 19 scale rows), it being more pointed and prominent than in the former, though not to the same extent as in the latter, which is described and figured (Monatsber. Ak. Wiss. Berlin, 1862, p. 277, pl., fig. 4) as having "das Rostralschild vorspringend mit aufgestülpter Krempe." From both of these, however, it differs in the relation of the internasal to the loreal, the posterior outer corner of the former bending down behind the posterior nasal in the two old species, while in the present one it is considerably shorter and not meeting the loreal at all. The cross-bands on the back of *C. nasalis* show a style of pattern entirely different from that of *C. rhombeatus*. The type of *C. resimus* appears to have been uniform on the back, but it is possible that young speci-

mens may show a coloration more approaching *C. nasalis* than *C. rhombeatus*.

Causus rostratus GÜNTHER (P. Z. S., 1864, p. 115, pl. xv) is a species marked like *C. rhombeatus*, but with the rostral of *C. resimus*. Judging from the illustration quoted, the internasal is broadly in contact with the loreal, as in both of these species, and differs consequently in the same manner as they from *C. nasalis*. It has, moreover, only 17 scale rows. In view of these facts I am unable to regard *C. rostratus* as a synonym of *C. resimus*, as du Bocage has been doing (Journ. Sc. Lisboa, VIII, No. 32, Mch. 1882, p. 290).

Causus lichtensteini JAN (a specimen of which is in the Museum, No. 20805, collected by Mr. J. A. Camp at Leopoldville, Congo State), differs in so many points that a comparison may be considered unnecessary; it has 15 scale rows and a blunt rostral, even less prominent than that of *C. rhombeatus*. On the other hand, the coloration is somewhat similar to that of *C. nasalis*, and the internasal is widely separated from the loreal. The above characters are more than sufficient to separate them.

Causus jacksonii GÜNTHER is the latest species described (Ann. Mag. Nat. Hist., (6) I, May 1888, p. 331), and in many respects the one which comes nearest to *C. nasalis*. The coloration appears to be very similar as well as the form and size of the rostral. Whether the internasal joins the loreal, or not, is not expressly mentioned in the description, and no figure is given, but it is said that "in other respects [except rostral] the scutellation is very much as in the other two species" [*C. rostratus* and *C. rhombeatus*]. The chief character to be relied on in Dr. Günther's description is therefore the number of scale rows, which is 23, and as he had three specimens before him this alone would seem sufficient.

The exact locality of the type of *Causus nasalis* was not furnished by the collector (Mr. W. H. Brown, of the U. S. Eclipse Expedition to West Africa, 1889). However, a very similar specimen, though larger but in poorer condition, was obtained by him at Cunga on December 25 (U. S. Nat. Mus. No. 16074), and the type is probably from the same neighborhood. This large specimen has lost the arrow-shaped mark on the occiput, as well as the postocular streak, but the dorsal chevrons are well marked. In the type both the cephalic and the dorsal marks are well pronounced.

In addition to these West African specimens we have recently received two specimens collected by Mr. Chanler on the Tana River (U. S. Nat. Mus. Nos. 20088 and 20089), both smaller than the type; No. 20089, in fact, quite young, only 148^{mm} long. In the larger specimen the blackish color markings have nearly disappeared, but they are well developed in the young one, agreeing perfectly with the type in color, though the ground color is more bluish.

In scutellation the eastern specimens differ but very little from the western ones. The internasals and loreals are quite alike. The only

difference which I can detect is that the indication of a keel on the dorsal scales is slightly more pronounced in the eastern ones. The number of scale rows are also somewhat variable in the latter as I have counted 20 rows almost as often as 19. In addition I may say that in the youngest specimen the rostral is but slightly prominent, hardly more so than in *C. rhombeatus*.

U. S. National Museum number.	Collector.	Locality.	Scale rows.	Gastro- steges.	Anal.	Uro- steges.	Head and body.	Tail.
16055.....	Brown....	West Africa.....	19	143	1	2000-2000	mm.	mm.
16074.....	do.....	Cunga, West Africa..	19	146	1		310	30
20088.....	Chanler..	Tana River, E. Africa.	19 (20)	134	1		495	42
20089.....	do.....	do.....	19 (20)	145	1		270	32
							140	8

II. BATRACHIA.

ECAUDATA.

Phrynomantis bifasciata (SMITH).

Three specimens (U. S. National Museum, Nos. 20113-20115) collected by Chanler at the Tana River. They belong to Boulenger's variety A (Cat. Batr. Sal. Br. Mus., p. 173) with the modification that the lateral bands do not commence on the upper eyelids but between the nostrils. It is to be noted that Dr. G. A. Fischer has already collected this species at Wito on the Tana (Peters, Reise Mossamb., Zool., Amph., p. 172).

Bufo regularis REUSS.

Eight specimens (U. S. National Museum, Nos. 20107, 20116-20122) collected by Mr. Chanler on the Tana River, and two (Nos. 16751-16752) by Dr. Abbott at Kilima-Njaro.

In all the specimens the vertical light line above the shoulder is plainly indicated, no matter how different the coloration may otherwise be. All are likewise marked with dark rose-color on the posterior aspect of the thighs, while in some of the younger individuals the rose-color also pervades the back in a varying degree. In the young specimens the tympanum is comparatively smaller than in the adults; but the first finger is in all distinctly longer than the second.

Hyperolius cinctiventris COPE.

The only specimen sent home by Mr. Chanler, who collected it on the Tana River (U. S. National Museum, No. 20493), belongs undoubtedly to the species collectively named as above, but I am not by any means convinced that all the names referred to by Boulenger (Cat. Batr. Sal. Br. Mus., 1882, p. 126) under the present species are in reality unconditional synonyms.

For that reason it may be useful to make a few notes concerning structure and coloration of Mr. Chanler's specimens.

In the first place the rudiments of webs between the fingers are very minute; the temporo-cranial fold as well as the gular fold and the one surrounding the ventral disk strongly marked; skin on the disk as well as on the space between the lateral folds coarsely granular, skin on throat and underside of thighs more finely so.

Color above (in alcohol) very light drab with minute brownish spots on lower back; a well-defined arrow-shaped brownish gray mark between eyes, the point turned backwards and a short shaft-like projection from the anterior margin; a similarly colored band from nostril through eye obliquely down to corner of mouth; lips white, with an indistinct broad brownish band from eye to lip; a dusky line across the wrist and a similar one across the middle of the forearm, the space between being perceptibly lighter than the ground color; lower half of tibiae apparently similarly marked; lower surface of limbs, breast between the gular fold and the anterior border of the ventral fold, as well as space between the lateral border of the latter and the temporo-cranial fold, cinnamon-colored.

Phrynobatrachus acridoides (COPE).

Two specimens (U. S. National Museum, Nos. 20101-20102), collected by Mr. Chanler on the Tana River, agree in all essential points with Cope's original description (Journ. Acad. Phila., VI, 1867, p. 198) of *Stauroides acridoides*. In addition to the characteristic dorsal plicæ our specimens have another descending from beneath the well-pronounced tympanum to the humerus. The coloration is also as described, though our specimens have no vertebral band, but there is a large blackish, pale-margined, triangular patch across the top of the head to the outer edge of the eyelids, the apex of the triangle pointing backwards; the tympanum is covered with a dark patch and the upper lip is dark with minute white dots.

Rana mascareniensis DUM. & BIBR.

Five specimens (U. S. National Museum, Nos. 16734-16738) from the Seychelles by Dr. Abbott. In all the specimens the fifth toe is longer than the third, or exceptionally equal to it, but never shorter. No. 16735 is a male with the external slits of the vocal vesicles parallel with the commissure and situated directly under the tympanum.

APODA.

Hypogeophis rostratus (CUV.).

Six well-preserved specimens, five adult and one young (U. S. National Museum, Nos. 20440-20445), collected by Dr. Abbott in the Seychelles, and one half-grown specimen received from the Paris Museum (No. 20403), throw considerable light on the individual variation of the present species and the validity of the characters assigned to it.

They show, among other things, that the relative number of complete and incomplete "circular folds" relied upon by Boulenger in constructing his key to the species of this genus (Cat. Bat. Grad. Br. Mus., 1882, p. 96) is of no value. It is plain from the appended table that while in some of the specimens "nearly all the circular folds* completely surround the body," in others the majority of these folds are widely separated on the anterior portion of the back, a few nearest to the head being complete, however, in most cases. On the ventral surface all the rings counted are continuous, the lateral impressions on the posterior portion, which were not counted, alternating with the complete rings. It seems, therefore, better to rely upon the smaller number of rings and their incompleteness on the anterior portion of the ventral surface in separating *H. guentheri*† from *H. rostratus*.

List of specimens.

U. S. National Museum number.	Portion of back.	Number of complete rings.	Number of incomplete rings.	Total number of rings.
20440	Anterior ..	10 .....	.....	106
	Middle .....	.....	63 .....	.....
	Posterior ..	33 .....	.....	.....
20444	Anterior ..	12 .....	.....	106
	Middle .....	.....	74 .....	.....
	Posterior ..	20 .....	.....	.....
20445	Anterior ..	17 .....	.....	106
	Middle .....	.....	54 .....	.....
	Posterior ..	35 .....	.....	.....
20442	Anterior ..	.....	74	111
	Posterior ..	37 .....	.....	.....
20441	Entire	107 .....	.....	107
20443	Entire	105 .....	.....	105
20403	Entire	109 .....	.....	109

Hypogeophis alternans, sp. nov.

DIAGNOSIS.—About 163 to 175 folds, the posterior 40 to 50 complete on the ventral and dorsal lines; the posterior 79 to 86 complete across the dorsal surface as well, while anterior to these, above and below, the complete primary rings alternate with secondary rings broadly interrupted on the dorsal and ventral lines; snout shorter than width of head across the eyes; tentacle halfway between and below eye and nostril.

HABITAT.—Seychelle Islands.

Type.—U. S. National Museum, No. 20418; Mahé, Seychelles; Dr. W. L. Abbott coll.

* As "circular folds" I have only counted those which are visible on the upper and lower surfaces, whether interrupted on the middle of the back and belly or not. I have consequently left out those short impressions on the posterior half of the body which are only visible if counting along the sides and which can not by any stretch of language be termed "circular." As a result I count 105 to 111 circular folds against Boulenger's "about 125."

† Judging from the number of rings and their completeness on the back of the full-length figure on plate vii (Cat. Bat. Grad. Br. Mus., 1882) it represents *H. rostratus* rather than *H. guentheri*, although so designated.

Description of type specimen.—Teeth small, subequal in each jaw, the mandibulars larger than the maxillaries, the palatines very small; number of teeth on one side: Maxillary, about 30; mandibulars, outer row, about 25, inner row, 5; snout rounded, prominent, shorter than width of head across the eyes; eyes very indistinct; tentacle near the border of the lips equidistant from eye and nostril; body depressed, with a shallow longitudinal groove on each side of the back and one along the ventral median line; 175 folds, of which the posterior 40 are continuous across both the dorsal and the ventral lines, while the posterior 86 are also continuous on the dorsal line; anterior to the 40 below and the 86 above complete primary rings alternate with incomplete folds, the latter decreasing in length toward the head, though clearly traceable to within one ring from the latter; tail somewhat conical, indistinct. Purplish-black above and below, anterior portion of head dark yellowish gray.

Total length, 315 mm.; greatest diameter of body, 16 mm.; snout, 6.5 mm.; width of head across the eyes, 8.5 mm.

Remarks.—In general coloration the present species, of which we possess the large type specimen collected by Dr. Abbott and a half-grown one received from Prof. Léon Vaillant (No. 20404; Seychelles), agrees very closely with our specimens of *H. rostratus*, but it is at once distinguishable from the latter by the different arrangement and number of the folds, the greater width of the head, shorter snout, and different position of the tentacle, which in the latter is much nearer to the nostril.

On the other hand, the new species shows considerable similarity in the arrangement of the folds to Boulenger's *Cryptosophis multiplicatus*, which also hails from the Seychelles. The latter represents a different genus, however, lacking the interior row of mandibular teeth, while our specimen has five well-developed inner mandibulars on each side. The position of the tentacle is also widely different it being three times nearer the eye than the nostril in *C. multiplicatus*.

As the arrangement of the folds also resembles somewhat that of *Urotyphlus oxyurus*, I was at first inclined to refer Duméril's two small specimens from the Seychelles, and recorded by him as belonging to the latter species (Mém. Soc. Sc. Nat. Cherbourg, IX, 1863, p. 316, pl. i, fig. 8), to the species here described by me. In looking at the figure (*l. c.*) I find, however, that the tentacle is placed directly under the nostril, and I am consequently forced to believe that there is still another caecilian found in the Seychelles in which the tentacle is thus located, though its identity with the true Indian *U. oxyurus* appears rather doubtful.

In regard to the generic position of the new species I have to remark that the tentacle appears to be surrounded entirely by a groove, but as it presents the same appearance as in several of the specimens of *H. rostratus*, in which I have been unable to make out its flap-like nature,

I have concluded that this is due to shrinking of the alcoholic specimens. The squamosals are in contact with the parietals.

The young specimen is in less satisfactory state of preservation, but the characteristic points are readily made out and the differences in the folds between the two specimens are expressed in the diagnosis.