

39. Notes on the Recent Reptiles and Amphibians of Egypt, with a List of the Species recorded from that Kingdom. By Major STANLEY SMYTH FLOWER, O.B.E., F.L.S., F.Z.S., late 5th Fusiliers.

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(Map and Text-figure 1.)

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1. PREFACE.

The object of this paper is to show what species are known definitely to inhabit Egypt, that certain species said to occur there probably do not do so, to indicate the species which have been found in the countries bordering Egypt, and especially to call attention to interesting cases of geographical distribution which may help to throw light on the past history of the country.

Thanks to Dr. John Anderson, F.R.S. (1833-1900), who in 1898 published the first volume of his 'Zoology of Egypt,' the work of the herpetologist in Egypt has been made very pleasant. In this handsome quarto volume the author's literary skill and vast fund of historical, geographical, and zoological knowledge were given full scope to create a precious and enduring mine of information and reference. Anderson paid special attention, and spared no expense in suitably illustrating this book. His own artistic sense and devotion to accuracy are mirrored in the series of drawings, where each of the three artists, P. J. Smit, J. Green, and H. Grönvold, he selected for the work has produced plates which are so extremely good that it seems unlikely they can ever be surpassed.

Anderson's most valuable field-work was done in the Red Sea Province of the Sudan; in Egypt itself he appears to have only worked the neighbourhoods of Alexandria, Cairo-Giza-Helwan, Suez, Luxor, and Aswan; and his collection was made up largely by purchases and by donations of spirit-specimens from friends. We know now that mistakes as to localities occurred. As Anderson's death on 15 August, 1900, gave him no time to make corrections, the opportunity is taken of doing so in this paper.

Very much more field-work remains to be done, especially in the great tract of hilly country that lies between the Nile and the Red Sea, and also to a lesser extent on the eastern side of the Sinaitic Peninsula and in the oases of the western desert.

## 2. ACKNOWLEDGMENTS.

I have to thank Mr. G. A. Boulenger, F.R.S., for the invaluable advice and assistance in all herpetological matters that he gave me throughout the earlier progress of this work, and for the continuation of this help at the British Museum in recent years I am indebted to Mr. H. W. Parker and Dr. Malcolm A. Smith.

The staff of the Zoological Society of London have on all occasions assisted me in many enquiries; especially in connection with this paper I wish to record my thanks to Sir Peter Chalmers Mitchell, C.B.E., F.R.S., Mr. E. G. Boulenger, and Mr. F. Martin Duncan.

I have also to acknowledge gratefully my thanks to Lord Rothschild, F.R.S., for allowing me to use the magnificent library in his museum at Tring, and to Dr. E. Hartert, Dr. K. Jordan, F.R.S., and Miss Phyllis M. Thomas, for much help, especially in tracing obscure quotations.

For opportunities of examining freshly caught and living specimens I am indebted to many friends, especially to Mr. J. Lewis Bonhote (1875-1922), Mr. Arthur L. Butler, Brig.-Gen. F. FitzH. Lance, M.C., Mr. Michael J. Nicoll (1880-1925), and Major Maurice Portal, D.S.O.

To Mrs. Stanley Flower I owe unending thanks, not only for help in observing and catching reptiles in Egypt, Sinai, Palestine, and the Sudan, but also for the great care she took in taming them and keeping them alive in captivity.

## 3. REPTILES AND AMPHIBIANS OF EGYPT.

Perhaps the main reason of our want of precise information on the fauna of Egypt is because the Egyptian Empire has varied in extent throughout the centuries in its eastern and southern frontiers. Successive travellers have pushed on to Palestine, Syria, the Sudan, Eritrea, and even Abyssinia, and the collections that they brought back to Europe have been, as it were, "pooled" and all attributed to Egypt. To add to this confusion there has been, probably from time immemorial, a trade in the cities of Egypt by which natural curiosities could be acquired by tourists; and the subject of Egyptian reptiles has been complicated by the special traffic in live snakes and lizards between the resident and the wandering "snake-charmers" and other performers in Asia and North Africa. The dealers were hardly so much to blame as was the credulity of the purchasers who created the demand, and within the last forty years the purchasers have educated the dealers to the—to them incomprehensible—fact that the value of a natural history specimen is enhanced if it has or is said to have an exact locality of origin.

The country of Egypt under consideration in this paper and its divisions have been fully explained in my paper on the mammals of Egypt (P. Z. S. 1932, pp. 370, 371).

The table on pp. 738-740 shows how the valley of the Nile appears to limit the distribution of many species in Egypt, and is a scheme arranged in fifteen columns to show the so far known distribution in Egypt of the species of Reptiles and Amphibians known to inhabit the Kingdom.

1. Excluding Marine Turtles there are 77 species; of these 43 can be called definitely Palearctic and 18 Ethiopian forms.

2. From personal knowledge 18 species are found only near water, while at least 30 can be considered real desert forms.

3. Far western desert and its oases ; almost unexplored zoologically ; only 7 species marked.
4. North-western Egypt, Sollum-Mersa Matruh-Mariut : 20 species known.
5. Wadi Natron : several short collecting visits resulted in 13 species.
6. Fayum : 25 species, others will be probably found in the many small ravines.
7. Alexandria and neighbourhood, a well worked area for many years : 26 species.
8. Delta of the Nile in Lower Egypt : 16 species.
9. Giza area, west of Nile, fairly thoroughly explored : 30 species.
10. Cairo area, east of Nile, fairly thoroughly explored : 36 species.
11. Nile valley, upstream of Giza Province to Aswan town, at the foot of the 1st Cataract, rather superficially known : 24 species.
12. Nile Valley, from Shellal (Aswan) to Wadi Halfa : 14 species.
13. Arabian desert of Upper Egypt between the Nile Valley and Red Sea : almost unexplored zoologically, yet 18 species are known *already*.
14. Suez Canal Zone, west of the Canal, fairly thoroughly explored : 19 species.
15. Sinai is the richest part of Egypt herpetologically ; it is by no means completely explored, and yet 42 species are known.

#### 4. NOTES ON SOME PARTICULAR LOCALITIES :—

##### BELTIM, FARASKUR, HALAIB, WADI NATRON.

**Beltim** is a locality brought into prominence by the many references to it in Dr. John Anderson's volumes on the 'Reptiles and Mammals of Egypt'; if all the species he mentioned had really come from there it would constitute the extraordinary fact that in the middle of the sea-face of the Delta there was an area of old land surface similar to that of the hill-desert east of Cairo which had never been submerged in recent geological time—in fact, it would prove that there had been from the time that the river Nile had first forced its passage to the Mediterranean Sea an eastern and a western river with a permanent dry island between. The geographical and historical evidence is against this. That the Nile has found many different ways through its Delta to the sea is well known, and has been illustrated excellently in the works of H. H. Prince Omar Toussoun (1922, 1923).

Beltim is the chief village of the district, or "Mamura," of Brullos, the most northern part of Gharbia Province, approximately halfway between Damietta and Rosetta, and isolated from the rest of the world by sea, lake, marshes, and soft sand wastes devoid of shelter or fresh water. Its land-fauna is therefore of interest, and proves to be what might be expected, that is an infiltrating colonization from east and west and some species brought by the Nile from the south ; these, now that a freshwater canal and a navigable drain have been constructed to Brullos, may be expected to increase.

The district is only about 20 miles (32 kilos.) in length from east to west, and about  $3\frac{1}{2}$  miles (5 to 6 kilos.) from north to south, so in several visits at different times of the year it has not been difficult to find out the main facts concerning its vertebrate fauna.

Dr. Anderson unfortunately never went to Beltim. Colonel Sir John Godfrey Rogers, K.C.M.G., D.S.O., R.A.M.C. (1850-1922) assured me that he collected

List of species of Reptiles and Amphibians known to occur in Egypt (concluded on p. 740).		Palaeartic or Ethiopian.	Desert or water-loving.	Far western desert and its oases.	North-western Egypt, Sollum, M. Matruli, Mariut.	Wadi Natron.	Fayum.	Alexandria and neighbourhood.	Delta.	Giza area, west of Nile.	Cairo area, east of Nile.	Nile Valley, upstream of Giza to Aswan town.	Nile Valley, Shellal (Aswan) to W. Halfa.	Desert of Upper Egypt between Nile and Red Sea.	Suez Canal Zone, west of Canal.	Sinai.
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1	Leith's Tortoise, <i>Testudo leithii</i> .....	P.	D.	..	×	..	..	×	..	..	..	..	..	..	..	×
2	Green Turtle, <i>Chelonia mydas</i> .....															
3	Hawksbill Turtle, <i>Eretmochelys imbricata</i> .....															
4	Loggerhead Turtle, <i>Caretta caretta</i> .....															
5	Nile Soft-shelled Turtle, <i>Trionyx triunguis</i> .....	E.	W.	..	..	..	×	..	..	×	..	×	×	..	..	..
6	Nile Crocodile, <i>Crocodylus niloticus</i> .....	E.	W.	..	..	..	×	..	..	×	..	×	×	..	..	..
7	Elegant Gecko <i>Stenodactylus sthenodactylus</i> .....			..	×	×	×	×	×	×	×	×	×	×	..	×
8	Petrie's " " <i>petrii</i> .....	P.	D.	..	..	..	..	..	..	..	..	×	×	..	×	×
9	Tripoli " " <i>Tropicolotes tripolitanus</i> .....	P.	D.	..	..	..	..	..	..	..	..	×	×	..	×	×
10	Steudner's " " <i>steudneri</i> .....	P.	D.	..	..	..	×	..	..	×	×	×	..	×	..	×
11	Natterer's " " <i>nattereri</i> .....	P.	D.	..	..	..	..	..	..	..	..	..	..	..	..	×
12	Rough-skinned Gecko, <i>Gymnodactylus scaber</i> .....	P.	D.	..	..	..	..	..	..	..	..	..	..	..	..	×
13	Fan-footed " " <i>Ptyodactylus hasselquistii</i> .....	P.	D.	..	..	..	..	..	..	×	×	×	×	×	..	×
14	Turkish " " <i>Hemidactylus turcica</i> .....	P.	D.	..	..	..	×	×	×	×	×	×	×	×	×	×
15	Cocteau's " " <i>Hemidactylus flaviviridis</i> .....	P.	D.	..	..	..	..	..	..	×	×	×	×	×	×	×
16	Moorish " " <i>Tarentola mauritanica</i> .....	P.	D.	..	×	..	..	×	..	..	..	..	..	×	..	×
17	Egyptian " " <i>annularis</i> .....	E.	D.	..	..	..	×	..	..	×	×	×	×	..	..	×
18	Changeable Agama, <i>Agama mutabilis</i> .....	P.	D.	..	×	×	×	×	..	×	×	×	×	×	..	×
19	Pale " " <i>pallida</i> .....	D.	D.	..	..	..	..	..	..	×	×	..	..	..	×	×
20	Savigny's " " <i>savignii</i> .....	D.	D.	..	..	..	..	..	..	×	×	..	..	..	×	×
21	Sinai " " <i>sinaita</i> .....	D.	D.	..	..	..	..	..	..	×	×	..	..	..	×	×
22	Gray's " " <i>spinosa</i> .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×



List of species of Reptiles and Amphibians known to occur in Egypt (concluded from p. 739).		Palaeartic or Ethiopian.	Desert or water-loving.	Far western desert and its oases.	North-western Egypt, Sollum, M. Matruh, Mariut.	Wadi Natron.	Fayum.	Alexandria and neighbourhood.	Delta.	Giza area, west of Nile.	Cairo area, east of Nile.	Nile Valley, upstream of Giza to Aswan town.	Nile Valley, Shellal (Aswan) to W. Halfa.	Desert of Upper Egypt between Nile and Red Sea.	Suez Canal Zone, west of Canal.	Sinai.
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
62	Günther's Cat-Snake, <i>Tarbophis guentheri</i> . . . . .	E.	W.	.	.	.	.	.	.	.	.	.	.	.	.	X
63	Egyptian " " <i>obtusus</i> . . . . .	E.	W.	.	.	.	X	.	.	.	X	.	.	.	.	.
64	Montpellier Snake, <i>Malpolon monspessulanus</i> . . . . .	P.	.	.	X	.	.	X	X	.	.	.	.	.	X	?
65	Moila " " <i>moilensis</i> . . . . .	P.	D.	.	.	.	X	.	.	X	.	.	.	.	.	.
66	Schokari Sand-Snake, <i>Psammodphis schokari</i> . . . . .	P.	D.	.	X	X	X	.	.	X	X	.	.	X	X	X
67	African Beauty Snake " " <i>sibilans</i> . . . . .	E.	W.	.	.	.	X	.	X	X	X	.	.	.	.	.
68	Mediterranean Hooded Snake, <i>Macroprotodon cucullatus</i> . . . . .	E.	D.	.	X	.	.	X	.	.	.	.	.	.	.	.
69	Egyptian Cobra, <i>Naja haje</i> . . . . .	E.	W.	.	.	.	X	.	.	X	X	.	.	.	.	.
70	Black-necked Cobra, <i>Naja nigricollis</i> . . . . .	E.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
71	Innes's Snake, <i>Walerinnesia aegyptia</i> . . . . .	.	D.	.	.	.	.	.	.	.	X	.	.	.	.	.
72	Field's Horned-Viper, <i>Pseudocerastes fieldi</i> . . . . .	P.	D.	.	.	.	.	.	.	.	X	.	.	.	.	.
73	Greater Cerastes Viper, <i>Cerastes cerastes</i> . . . . .	P.	D.	X	X	X	.	.	.	.	X	.	.	X	.	X
74	Lesser " " " <i>vipera</i> . . . . .	P.	D.	.	X	.	X	.	.	X	X	X	.	X	X	X
75	Carpet-Viper, <i>Echis carinata</i> . . . . .	.	.	.	.	.	.	.	.	.	X	.	.	X	.	.
76	Burton's Carpet-Viper, <i>Echis colorata</i> . . . . .	.	D.	.	.	.	.	.	.	.	X	.	.	X	.	X
77	Green Toad, <i>Bufo viridis</i> . . . . .	E.	W.	X	X	X	.	X	.	.	.	.	.	.	.	X
78	Reuss's " " <i>regularis</i> . . . . .	E.	W.	.	.	.	X	X	X	X	X	X	.	.	.	.
79	Degen's " " <i>vittatus</i> . . . . .	E.	W.	.	.	.	.	X	X	X	X	X	X	.	.	.
80	Mascarene Frog, <i>Rana mascareniensis</i> . . . . .	E.	W.	.	.	.	X	X	X	X	X	X	.	.	X	.

no specimens himself at Beltim or elsewhere; all he did was, at Anderson's request, to give instructions to his department in Cairo to have forwarded to Anderson any things of interest they came across. There can be no doubt but that most of the so-called "Beltim" collection was collected near Cairo, in which city it appears to have been purchased.

**Faraskur**, a most picturesque and very ancient town on the right bank of the Damietta Nile, about 30 miles downstream of Mansura and 12 miles upstream of Damietta, of historical interest as the place where the King of France, Louis IX., was taken prisoner in 1250, is of botanical and zoological importance, as the waters and marshes of Faraskur seem to have contained the last relicts of a tropical African flora and fauna swept down by the Nile floods into this *cul de sac*, and prevented from going farther north by sea-water from the Mediterranean entering the river at times of low Nile.

For many years Prof. Georg August Schweinfurth (1836-1925) used to tell me that it puzzled him how the savants of Napoleon's expedition to Egypt obtained specimens of the water lettuce, *Pistia stratiotes*, a plant which in our time was not to be found anywhere in the Nile system north of the White Nile, at a few days' sailing south of Khartoum. As far as Egypt was concerned this plant had been lost for 112 years; when, in 1911, Schweinfurth, to his intense delight, found it in existence at Faraskur, he entrusted specimens he collected to my care; they arrived in the Giza Gardens 13 December, 1911. In later years I found places close to Faraskur where an unlimited amount of *Pistia* could be obtained, but that in no other place in the whole Delta did this plant occur.

While gathering *Pistia* I found that Degen's Toad, *Bufo vittatus*, originally known from Entebbe, Uganda, was very numerous at Faraskur. These same marshes are believed to have been the last retreat of the resident Hippopotamuses of Lower Egypt (P. Z. S. 1932, p. 444), and it was in this neighbourhood that, as far as I know, the last Egyptian-caught fish of the genus *Polypterus* were obtained about thirty years ago.

It should also be put on record that in 1918 I saw hanging up, dried and painted, in the fish-market at Faraskur a specimen of *Gymnarchus niloticus*, a tropical African fish not otherwise known from north of the White Nile. A leading fish-merchant, Ali Gouwadi, told me that he himself some years before had seen this fish brought in by a local fisherman. No one there had ever seen a fish like it; they had no name for it, and so painted it green to preserve it and hung it up as a curiosity. The specimen was given to the Giza Museum. This cannot be taken as certain evidence of the occurrence of *Gymnarchus* at Faraskur, but the incident should not be overlooked.

**Halaib**, or Mersa Halaib, is on the west coast of the Red Sea, approximately 22° 12' N. by 36° 40' E. It is north of the political boundary between Egypt and the Sudan, but south of the administrative boundary (Arrêté of 1902). Reptiles occurring at Halaib are in this paper included in the fauna of Egypt.

The **Wadi Natron** of Lower Egypt is a shallow open valley in the western desert containing an isolated chain of small lakes, unconnected by surface-water with any river or other lakes, and separated from the Nile Valley by a desert of comparatively high plateaux and sandy hills, with scanty scrub vegetation in places. The administrative centre and principal place in the depression of the Wadi is Bir Hooker, about 29 miles (46 kilos.) west of Khatatba Railway Station (Kom Hamada district, Beheira Province), which is on the left bank of the Rosetta Nile.

Bir Victoria, a locality often mentioned in zoological literature, is *not* in the Wadi Natron, but on the high plateau between the Wadi and the Nile Valley, about  $16\frac{1}{2}$  miles (26 kilos.) east of Bir Hooker and  $12\frac{1}{2}$  miles (20 kilos.) west of Khatatba.

It has been stated that a freshwater turtle, *Trionyx triunguis*, existed in the Wadi Natron, and the inference made that at some earlier period these lakes were in direct relation with the Nile; there appears to be no evidence whatsoever of a turtle having occurred in the Wadi Natron (see p. 754).

##### 5. NATIVE NAMES.

Dr. J. Anderson (1898) published as many vernacular Egyptian names as he could find, and mentioned that many of these were given to him by Dr. Walter F. Innes, and (*o. c.* p. 75) that he was informed by Mr. A. G. Ellis, of the British Museum, that words cannot be regarded as classical if they do not occur in Damiri's work 'Hayat el Hayawan,' that wonderful fourteenth century "Life of animals, or dictionary of zoology."

With the help of Arab, Egyptian, and Syrian friends, and with the assistance given by the translation into English made by the late Surgeon-General A. S. G. Jayakar, Indian Medical Service, published in 1908, I have with much labour struggled to read a great part of Damiri, especially all references to reptiles. There can be no doubt that Damiri (1349-1405) was a great historian, but he had no first-hand knowledge of animals, and the attempt made by Jayakar to give definite scientific specific names to the Arabic names of Damiri is almost a hopeless task; it appears better to consider these names as applicable to genera, families, or even higher groups.

For the work of the Giza Zoological Gardens, as the keepers knew no language but Egyptian-Arabic, it was necessary to have names by which each species was to be known; so, using Damiri as a basis, and where possible all Arabic names published by Anderson, I had to invent or construct names whenever new species were added to the collection. The names now to be mentioned are not "book names," but words that I found actually in use and understood by the illiterate people of the country.

**Tortoises and Turtles, marine and river.**—The commonest name in Egypt is "Tirs" (Shield), usually used in the feminine form "Tirsa," varied as "Um Diraga" (Mother of a shield), which may also mean a Cobra, *Naja*. Another common word for any Chelonian, both in Egypt and the Sudan, is "Abu Gadah" (Father of a cooking-pot). In the Mersa Matruh district of north-western Egypt Lt.-Col. Reginald Sutcliffe Wilson (1873-1932), Lancashire Fusiliers, in February 1920 found that Leith's Tortoise was called "Fākārōna." Educated people in Egypt employ the word "Zaleefah," which is a variant of the classical "Zolhafah."

**Geckoes.**—"Bors," or "Abu Bors," is, as it was in the time of Forskāl, the common name for any Gecko in Egypt. Better informed people may tell you that it is "Abu Boris," to fit better with the words used by Damiri, "Abu Baris" (Jayakar's translation, 1, p. 352) and "Sāmm Abras" (*o. c.* 2, p. 23), meaning respectively "Father of leprosy" and "Poison of a leper." Damiri wrote: "One of the characteristic qualities of this animal is that, when it settles down in salt, it rolls about in it, giving rise to what becomes a means of producing white leprosy."

It should be mentioned that some of the desert Arabs, who know more about lizards than the Fellaheen do, include under the term "Bors" the



**Red-spotted Lizard** *Brenvias rubropunctata*: I do not know why. They believe in poisonous and non-poisonous lizards: a non-poisonous lizard may be known by its running fast for a short distance and then stopping suddenly—for it has remembered it has no poison!

The little house-gecko *Hemidactylus brookii* was called by the Blue Nile Arabs "Abu dig-gale." The large gecko *Tarentola annularis* was called by the Dongola Arabs "Dabb" or "Dabba," a word used in Egypt for *Uromastyx* and on the Blue Nile for *Agama*.

**Agamoid Lizards.**—As mentioned, above the common *Agama* on the Blue Nile is called by the Arabs there "Dabb." The Shagia Arabs in Dongola Province call *Agama sinaita* "Marg-eye-eyen" and *Uromastyx ocellatus* "Dûn-dûn-c."

*Agama stellio* in Egypt is "Hardûn," and Jayakar (*o. c.* 1, p. 522) identified this species with the "Hirdhawn" of Damiri.

"Abu Hamed" is one of the titles of the "Dabb" *Uromastyx aegyptia*.

**Chameleons.**—The regular name is "Hirbaya." Some of the Sinai Arabs that I travelled with in 1918 did not appear to know this name, but called the chameleon "Abu Mehemet."

**Skinks and typical Lizards** (Lacertidae).—"Salhia," or "Sahliya," is the common name for all small diurnal lizards. "Melal" appear to be the real Bedawin name for the Skink *Scincus stincus*, while the Fellaheen, in at any rate parts of the Delta, call the Eyed Skink *Chalcides ocellata* "Shoof-shah." The Tuwari Bedawin of Sinai have a name that sounds like "Air-e-baana" for lizards of the genus *Acanthodactylus*.

The "Skankûr" of Damiri, which Jayakar (*o. c.* 1, p. 51) identifies as *Scincus officinalis* (*S. stincus*), is probably meant for *Varanus griseus*.

The Abuwoash Bedawin, who catch and sell skinks at the present day, call them "Saqaqûr," or "Saqaqûr": this is apparently a result of the spread of modern education.

**Monitors.**—The big lizards of the genus *Varanus* have a good Arabic name "Waral," usually pronounced by Egyptians as "Waran," and used in the feminine form "Warana." *Varanus nilotica* is often called "Timsah," in confusion with the Crocodile. The word "Baranta," used on the Blue Nile, is said to belong to the Hamed language and to be unconnected with Arabic.

**Snakes.**—The universal word for any snake is "Tibân," plural "Taabeen." In Egypt any large snake may be called "Hanash," and in the Sudan the Python is distinguished as "Asala." "Dusaas" is said to be the name for the Sand-Boas *Eryx* spp. The Flowered Snake *Coluber florulentus* is known to many of the Fellaheen as "Asrud." The Schokari Sand-Snake *Psammodphis schokari* and the African Beauty *Psammodphis sibilans* share the obvious nickname "Abu el Suyûr," on account of their prominent longitudinal lines. The usual name for a Cobra *Naja* is "Abu Dira" or "Abu Daraq" (Father of a shield), but this may also mean a tortoise or turtle; another word for cobra is "Nashir." The vipers of the genus *Cerastes* are called "Haiya," and in Upper Egypt are said to be known as "It-raish."

**Frogs and Toads.**—In Egypt any frog or toad is called "Doflah," but by the Blue Nile Arabs "El Gâoon," and by the people at Roseires "Gaunga." Tadpoles are called "Abu Dineeba" (Father of tails) and also "Duhlib."

## 6. NOTES IN SYSTEMATIC ORDER.

Class **REPTILIA**.

*Classis Reptilium* J. N. Laurenti, Syn. Rept. p. 19, 1768.

Order TESTUDINES A. J. G. C. Batsch, Versuch. Anleit. Kennt. Thiere Mineral, 1, p. 437, Jena, 1788.

v. Malcolm A. Smith, Fauna Brit. Ind., Rept. Amph. 1, p. 49, 1931.

Six families of Tortoises, or Turtles, are represented in Egypt and neighbouring countries:—

1. Emydidae. One species in Syria.
2. Testudinidae. One species in Egypt, another in Palestine, and others in the Sudan.
3. Chelonidae. Three species on Egyptian coasts.
4. Sphargidae. One species possibly visits Egyptian coasts.
5. Pelomedusidae. Three species in the Sudan, one of which has been reported from Egypt.
6. Trionychidae. Three species in the Sudan, one of which is found also in Egypt.

Family EMYDIDAE J. E. Gray, 1825, p. 210.

*Type-genus*.—*Emys* A. M. C. Duméril, Zool. Anal. p. 76, 1806.

This family of Freshwater Tortoises, or Terrapins, is not represented in Egypt or in the Sudan, but one form, *Clemmys caspica rivulata*, appears to be common in Palestine and Syria, and live specimens, sometimes in great numbers, were from time to time offered for sale in Cairo.

Family TESTUDINIDAE J. E. Gray, 1825, p. 210.

*Type-genus*.—*Testudo* Linnaeus, 1758, p. 197.

One species of Land-Tortoise, *Testudo leithii*, occurs in Egypt, and one, *T. graeca*, in Palestine. Two species are found in the Sudan—the Spurred, Grooved, or Great African Tortoise, *T. sulcata* (= *T. calcarata*), in two areas separated by the Nile Valley, the eastern area comprising certain localities in the Provinces of Berber and Kassala, the western area parts of Dongola, Kordofan, and Darfur, and the Leopard Tortoise, *T. pardalis*, only in the extreme south, near Bor, Mongalla, Lado, Gondokoro, etc.

A Hinged-Tortoise, *Kinixys belliana*, occurs in the south-west of the Sudan.

Genus TESTUDO Linnaeus, 1758, p. 197.

*Type-species*.—*Testudo graeca* Linnaeus, 1758, p. 198.

**Greek Tortoise.**

TESTUDO GRAECA Linnaeus, 1758, p. 198.

*Type-locality*.—Santa Cruz in West Barbary, N.W. Africa.

*Distribution*.—North Africa, south Europe, west Asia: Morocco, Algeria, Tunisia, Andalusia, Rumania, Macedonia, Gallipoli Peninsula, Asia Minor, Syria, Palestine, Transcaucasia, and Persia.

*Literature*.—*Testudo iberica*. G. A. Boulenger, 1889, p. 176.

*Testudo graeca*. S. S. Flower, P. Z. S. 1925, p. 929, and Copeia, No. 154, p. 133, May 1926.

The possibility of this species, the Spur-thighed Mediterranean Land-Tortoise, occurring in Egypt was mentioned by J. Anderson (1898), but it can be now taken as a definite fact that this tortoise does not occur in any part of Egypt or of the Anglo-Egyptian Sudan.

*Testudo graeca* differs from its allies *hermanni*, *marginata*, *leithii*, and *horsfieldii* in the fact that as a species it can be divided up into several—four or more—different forms, subspecies, or geographical races.

Canon H. B. Tristram (1888, p. 156) noted that two forms of Land-Tortoise occurred in Palestine. Of "*Testudo ibera*" (i. e., *T. graeca*) he wrote:—"This is the common Tortoise of the Holy Land, and is found in every part of the country, quite irrespective of the nature of the soil, till we reach Hebron. The hill country of Judaea appears to be its southern limit, south of which and of the Dead Sea it does not occur." Of "*Testudo kleinmanni*" that it "is the Tortoise of the region between Hebron and Beersheba, and of the Arabah, south of the Dead Sea."

Actually these two forms are both races of *Testudo graeca*, and, as far as my experience goes, are two extreme forms, Syrian specimens attaining larger dimensions and darker colour than the typical Moroccan, or Mauritanian, race, while specimens from southern Palestine are smaller and lighter coloured than any other tortoises of the species in all the countries of its wide distribution.

Tristram's second form is not *T. kleinmanni* (which is a synonym of *T. leithii*), but is the smallest known geographical race of *T. graeca*, which has superficial resemblance to *T. leithii* in its small size and yellow colour, but from which it is easily distinguished at close quarters. Among the points of difference are:—

1. Scales on front of arm, number of longitudinal series: *T. graeca* 4 to 6; *T. leithii* 3.

2. Spur on back of thigh: *T. graeca* always present; *T. leithii* none.

3. In the south Palestine form of *T. graeca* each vertebral and costal shield has a conspicuous black spot near the centre of the shield; in *T. leithii* there is no trace of these centre spots.

Major M. Portal, D.S.O., very kindly gave me four adult specimens that he collected himself in 1917 and 1918 in the coastal plain between the neighbourhood of Gaza and Bir Salem, near Jaffa; these were in length of carapace in a straight line in median line respectively 112, 123, 128, and 132 mm. This largest one was a male.

### 1. Leith's Tortoise.

TESTUDO LEITHII A. C. L. G. Günther, P. Z. S. 1869, pp. 502, 503, text-figs. 1-4.

Named after Dr. A. H. Leith, who presented the type-specimen to the British Museum.

*Type-locality*.—"Sindh."

The fact that the species has not been rediscovered in Sind, in Baluchistan, or in any other part of India, renders it probable that Dr. Leith's specimen was not a native of its reputed type-locality.

*Synonym*.—*Testudo kleinmanni* L. Lortet, 1883, p. 188.

*Type-locality*.—Egypt (Lefebvre collection). Later found near Alexandria, and later in north Sinai, between Ismailia and El Arish. Monsieur Kleinmann was "directeur du Crédit lyonnais en Égypte."

*Distribution*.—Northern Sinai, in suitable localities near the coast, and north-western Egypt, from where it extends into Cyrenaica.

*Literature.*—*Testudo leithii*. G. A. Boulenger, 1889, p. 175. J. Anderson, 1898, pp. 28–31, pl. 2. S. S. Flower, P. Z. S. 1925, p. 928, & Copeia, No. 154, p. 133, May 1926. D. Vinciguerra, 1927, p. 328.

*Occurrence in Egypt.*—This, the only species of Land-Tortoise which occurs in Egypt, has a remarkably restricted geographical range, being found in two districts only, about 180 miles apart:—

1. Northern Sinai, in the neighbourhood of Katia, Romani, Salmana, Bir el Abd, El Arish, Lahfan, Wadi Hareidhin, Khabra Abu Guzoar, and Wadi el Amr.

2. North-western Egypt: Mariut and Mersa Matruh, where Col. R. S. Wilson, Lancashire Fusiliers, told me, 22 February, 1920, these little tortoises occur "on top of escarpment inland."

Specimens from Sinai and from north-western Egypt are alike; the same range of variation in size, markings, etc. appears to exist in the two districts.

*Breeding habits.*—159 individual Leith's Tortoises lived in the Giza Zoological Gardens during my time there. Specimens were observed copulating especially in the months of September and October. The male when copulating has a voice sounding rather like a metal spring being wound up intermittently. I noted two cases of eggs being laid in the month of June, but do not know at what time of year most of the eggs are laid. An egg laid 17 June, 1922, measured on its longer axis 29 mm. and on its shorter 22.75. 69 individuals bred in the Giza Z. G. hatched in the following months:—Jan., 3; Feb., 6; Sept., 6; Oct., 37; Nov., 17.

The sexes of adult tortoises are most easily known by the tail, the female having a short pointed tail, the male a long tail. The penis, when extended, is much longer than the tail, has a long point and is pink in colour, but when fully expanded much of the pink turns to rich purple.

*Weight.*—The usual weight of adults is about .198 to .255 kilos., say 7 to 9 oz.; the largest individuals in the Giza Z. G. that I weighed were .35 to .4 kilos., or 13 to 14 oz.

*Size.*—Newly hatched Leith's Tortoises have the carapace of a length in straight line in median line of about 33 mm., and of an extreme width of about 28 mm., and a maximum vertical depth of about 18 mm.

In an individual about one year old the carapace length was 42 mm., in another known to be about one year seven and a half months in age the length was 60.5 mm.

The carapace length in straight line in median line for adult males is nearly always between 90 and 100 mm.; I have noted a few smaller, 86 to 89 mm., and five larger, *i. e.*, 103, 103, 104, 104, and 110; this last, from near El Arish, is an exceptional size for a male. Adult females have carapaces usually over 110 mm. I measured specimens in Egypt of 113, 114, 115, 116, 117, 118, 121, 121, 126, and 127. It is of interest to note that the 126 mm. female was caught near El Arish and the 127 one at Mersa Matruh; so giantesses occur in both the areas where this tortoise is found.

*External Structure.*—The following notes, being based on the detailed examination of a large series in Egypt, and compared with such specimens of Leith's Tortoise as could be found when visiting museums in Europe, may be worth putting on record, as with the opening up to "civilization" of the districts it inhabits there is the danger of this pretty and harmless little animal being exterminated within a few generations.

1. In all live adult males and females examined the hind lobe of the plastron is movable. In an individual about a year old the hind lobe appeared slightly movable.

2. Normally there are five claws on each fore-foot and four on each hind-foot, the only exception being a male brought from El Arish, or bred in the Giza Z. G. from parents brought from El Arish, which had only four claws on each fore-foot. This animal had a carapace length of 92 mm. and is now in Lord Rothschild's Museum at Tring.

3. There are *no* tubercles on back of thighs.

4. Marginal shields, 11, 11, with only four individual exceptions, mentioned below.

5. Scales on front of arm, number of longitudinal series 3.—In both sexes on front surface of fore-arm below bend a row of three large scales; of these three the innermost is the largest, and in old females (*e. g.* ♀ from El Arish, carapace 115 mm.) may become protuberant and spur-like, and the outermost the smallest; rarely the outermost is but little smaller than the other two. Below this row of three large scales there are normally three more rows of enlarged scales, making on each arm twelve of these scales in all; but a total of eleven is not uncommon, the most distal row being incomplete, the formula then being :—3, 3, 3, 1 gap 1=11.

#### *Individual variations.*

1. *Nuchal shield*.—Normally triangular, in adult males and females about 7 to 7.5 mm. in length by 5.5 to 6 in extreme width. In a single specimen, ♂, from El Arish, carapace 90 mm., the nuchal was remarkable in being narrow and projecting, 6 mm. in length by 2.5 in width.

2. First vertebral shield may or may not have a *prominent anterior* ridged or flat *peak* projecting into the nuchal shield. In thirty-one individuals of both sexes from various localities examined for this character I found the peak well pronounced in eleven, indicated in twelve, and only entirely absent in eight cases.

3. The third or the fifth vertebral shield may be the widest or they may equal each other in extreme width. In thirty-one live specimens, taken at random, I found the third widest in eleven cases, both equal in eight, and the fifth widest in twelve. The number of individuals I have examined is not sufficient to found a definite statement on, but in males there is a tendency for the fifth vertebral to be slightly wider than the third, while in females the third is often much wider than the fifth.

4. In one specimen it was noted that the fifth vertebral had a "peak" projecting backwards about 3 mm. into the supracaudal shield.

5. The edges of the tenth and eleventh marginals on both sides and the supracaudal shield in both sexes may or may not be reverted upwards. In an adult female I noted that the ninth, tenth, and eleventh marginals were thus reverted, and in a male that the eighth to the eleventh marginals and the supracaudal were expanded somewhat like they are in male specimens of *Testudo marginata*.

6. The supracaudal shield is usually, but not always, entire. In thirty-eight individuals I found it entire in twenty-five cases, divided in two, and in eleven in various intermediate stages, the commonest being that the shield was divided in its upper three quarters and entire at the lower edge. This variation can be found both in males and females.

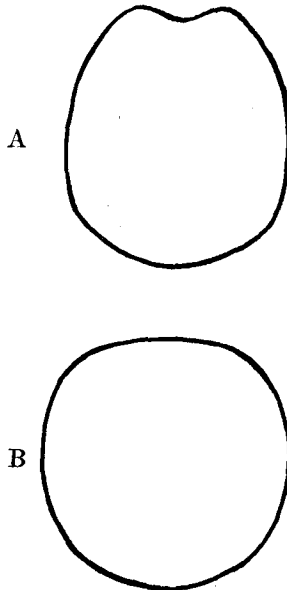
The above 1-6 may be considered as normal variations of the species, the following 7-12 as abnormal, or, perhaps, pathological.

7. ♂ from El Arish, carapace 95 mm., had 6 vertebrae, 3rd measured in extreme width 25 mm., 5th 17, and 6th 27; this specimen had 12 marginal shields on each side.

8. One, hatched in Giza Z. G. 5 Sept. 1932, had 6 vertebrals, there being a small extra shield between the normal 2nd and 3rd vertebrals.

9. On 8 Sept. 1910, I saw a dry shell without locality, carapace 86 mm., with only 3 costals on each side; the 3rd vertebral was in width 24.5 mm., the 5th 38.

Text-figure 1.



Difference in shape of newly hatched tortoises of the species  
*Testudo leithii* and *T. graeca*.

- A. Approximate size of a newly hatched *Testudo leithii*, in Giza Zoological Gardens (parents were from El Arish), 6th December, 1919. Length of carapace, in median line, *circa* 33 mm. Extra width of carapace, *circa* 28 mm.
- B. Approximate outline of a newly hatched *Testudo graeca* in Giza Zoological Gardens, 6th December, 1919. To show the difference of shape between the two species. Length of carapace is the same, 33 mm., but the extreme width equals the length.

10. ♂ from El Arish, carapace 86 mm., had right costals 4/5 and marginals right 10/11, left 12.

11. ♂ from El Arish, carapace 94 mm., marginals right 11, left 12.

12. ♂ from El Arish, carapace 97 mm., marginals right 12, left 11.

*Colour in life of Leith's Tortoise.*

Museum specimens being often discoloured by varnish or other preservatives, the following notes may help to show that these little tortoises are very pretty animals when alive. The eyes are very noticeable, like bright black boot-buttons. In both males and females the irides are black, conspicuous, and shining. The head, neck, limbs, feet, nails, and tail are

yellow. In one female I noted "a black spot on top of head, in centre, behind the eyes." The carapace is pale yellow, with lemon and yellow-green lights and shades, and a definite series of brown or rich reddish-black markings; these marks, regardless of sex or locality, vary in individuals; they may be strong and broad, wide or narrow, or merely outlines to the shields. The nuchal shield is all yellow. The 1st to 4th vertebrae have their anterior and lateral borders marked, the 5th vertebral may have markings on the outer portions of the posterior margin only. The costals have their anterior margins and anterior three quarters of lower margins more or less marked, and in quite young specimens traces of the end of rays of a "star pattern" may be seen on these shields. Of the marginals the 2nd, 3rd, 9th, 10th, and 11th are usually outlined or well marked on the anterior border; the 1st and 4th may or may not be; the 5th, 6th, and 7th are generally all yellow. The supracaudal is marked on the anterior and lateral margins or upper parts of both sides. The plastron is yellow, with a red-brown to black mark which distinguishes *T. leithii* from the other Palaearctic land-tortoises, *graeca*, *hermanni*, *marginata*, and *horsfieldii*; this mark, usually conspicuous and never quite obsolete, consists of a triangular or wedge-shaped dark spot in the middle of the anterior portion of each abdominal shield. In a few individuals the front edges of the pectoral shields are also margined with dark brown.

Proportions of shell of *Testudo leithii*.

Percentages.	Average, 4 adult males.	Average, 4 adult females.	One specimen about one year old.
Carapace:			
Length in median line in straight line.	100	100	100
" " " " following curves.	123	124	124
Width (maximum) at 8th marginals in straight line . . . . .	74	73.5	80
Depth (maximum) of carapace and plastron, below centre of 3rd vertebral . . . . .	50	50	52

Family CHELONIDAE A. C. L. G. Günther, Rept. Brit. Ind. p. 51, 1864.

Cheloniadae J. E. Gray, 1825, p. 212.

Cheloniidae E. D. Cope, Bull. U.S. Nat. Mus. no. 1, p. 16, 1875, & Proc. Amer. Philos. Soc. Philad. 20, p. 143, 1881, 1882.

*Type-genus*.—*Chelonia* Brongniart, 1800.

Three genera are represented in Egyptian waters: *Chelonia*, *Eretmochelys*, and *Caretta*.

Marine turtles occur in Lake Menzala, Lower Egypt, but whether *Chelonia* or *Caretta*, or both genera, I do not know. They enter the lake by the Gameel "boghos," about six miles west of Port Said, and are called by the fisherfolk "Tirsa." On 6 June, 1922, I saw one in the lake, a little to the west of the "boghos"; it appeared to be *Chelonia mydas*, but I did not identify it for certain.

The Green Turtle, among other points, can be told by having the 1st vertebral shield *much broader* than the 2nd, 3rd, or 4th. In the Hawksbill and Loggerhead the 1st vertebral is but little, if at all, wider than the 2nd, 3rd, or 4th.

The Green Turtle has four pairs of costal shields, the Loggerhead five or more pairs.

Turtles resort to the Mediterranean coast of Sinai to deposit their eggs, but I failed to find out which species do this. An opportunity was missed, unfortunately. After the war I came across a letter, addressed to the Director of the Giza Z. G., from Sergeant-Major F. A. Pitman at El Arish, 30 August, 1917, saying: "On the 28th June I caught a very large turtle at El Arish; I killed it on 29th, and in it were 48 perfect eggs and about 150 without shell; we ate the eggs bar two I blew and six I set in the sand outside my tent protected by a bit of wire-netting. I set them on July 1st and they hatched out August 28th [62 days]; two were dead in the shell, but four are alive and perfect. I wondered if you would accept them as a present for the Zoo. I have the shell, skull, and two eggs, and if you would like I will loan them to the Zoo until such time I can get them home to England." It appeared that this letter was received at Giza 3 September, 1917, and the offer declined 6 September, 1917.

Genus CHELONIA A. Brongniart, Bull. Soc. philom. Paris (no. 36), p. 89, 1800.

*Type-species.*—*Testudo mydas* Linnaeus, 1758=*Chelonia mydas*.

## 2. Green Turtle.

CHELONIA MYDAS (Linnaeus), 1758.

*Testudo mydas* Linnaeus, 1758, p. 197.

*Type-locality.* Ascension Island, Atlantic Ocean.

*Distribution.*—Tropical, subtropical, and temperate seas, including the Mediterranean and Adriatic.

*Literature.*—*Chelone mydas*. G. A. Boulenger, 1889, p. 180.

*Chelonia mydas*. Malcolm A. Smith, Fauna Brit. Ind., Rept. 1, p. 70, 1931.

*Occurrence in Egypt.*—The Green Turtle occurs off both the Mediterranean and Red Sea coasts of Egypt. Specimens were often to be purchased alive in Port Said, but were always blind, from injuries received from the fishermen.

G. Despott (Bull. Mus. Valletta, 1, 2, pp. 80–82, 1931) writes that the Green Turtle is rare at Malta, and (p. 81) of a specimen recently caught there that people considered "the flesh . . . far superior to that of our common turtle (*Thalassochelys caretta*), which they had been accustomed to eat."

Genus ERETMOCHELYS L. J. Fitzinger, Syst. Rept. p. 30, 1843.

*Type-species.*—*Testudo imbricata* Linnaeus, 1766=*Eretmochelys imbricata*.

## 3. Hawksbill Turtle.

ERETMOCHELYS IMBRICATA (Linnaeus), 1766.

*Testudo imbricata* Linnaeus, 1766, p. 350.

*Type-locality.*—"American seas."

*Distribution.*—Tropical and subtropical seas.

The Rev. Leonard Jenyns (Manual Brit. Vert. Anim., Cambridge, 1835, pp. 290, 291) states that *Chelonia imbricata* "has occurred in a few instances, as a straggler, on the British coasts."

*Literature.*—*Chelone imbricata*. G. A. Boulenger, 1889, p. 183.



*Eretmochelys imbricata*. Malcolm A. Smith, Fauna Brit. Ind., Rept. 1, p. 67, 1931.

*Occurrence in Egypt*.—F. Steindachner (1901, p. 326) records this species from the Red Sea coast of Egypt.

R. Mertens (1922, p. 168) writes that the type-specimen of *Caretta bissa* Rüppell, 1835, from the Red Sea, is an *imbricata*.

Genus CARETTA C. S. Rafinesque-Schmaltz, Specchio Sci. Palermo, 2, no. 9, p. 66, 1814.

*Type-species*.—*Caretta nasuta*=*Testudo caretta* Linnaeus, 1758=*Caretta caretta*.

#### 4. Loggerhead Turtle.

CARETTA CARETTA (Linnaeus), 1758.

*Testudo caretta* Linnaeus, 1758, p. 197.

*Type-locality*.—"About the American Islands."

*Distribution*.—Tropical, subtropical, and temperate seas, including the Mediterranean and Red Sea.

In the Atlantic an occasional Loggerhead may wander as far north as England, the Scillies, Ireland, and even Scotland. J. Ritchie, Scot. Nat., Edinburgh, 1924, pp. 99-103 & 165, 166.

*Literature*.—*Thalassochelys caretta*. G. A. Boulenger, 1889, p. 184.

*Occurrence in Egypt*.—The Loggerhead is the commonest Turtle off the Mediterranean coast of Egypt; specimens said to be from Alexandria, Brullos, Damietta, and Port Said were brought alive to Cairo for sale, 1901-1922.

At Port Said, 9 December, 1912, I saw on the quay a fairly large Loggerhead which had been recently caught; the poor animal was still alive, but had been blinded by the fishermen. Lieut. P. Stammwitz, Middlesex Hussars, obtained, during the war, a skull of this species on the north coast of Sinai.

Canon H. B. Tristram (1888, p. 157) wrote that this species was not uncommon on the coast of Palestine, and that he saw it brought in by fishermen at Sidon. I have seen many carapaces of individuals from the Palestine coast, and have been called in officially by the Customs Department as an "expert" to value these. Some Palestinians having made out that these were the "tortoise-shell" of commerce and that great pecuniary profit might be made by their export!

As a matter of fact the Loggerhead is of commercial value both in the Mediterranean and in parts of the Indian Ocean as an article of food for human consumption. I have been astonished to find how general it is in use for "turtle-soup," not only in hotels on shore and on big passenger steamers, but even in the Governor's Palace in Malta, where on two occasions I found that the soup served, and appreciated by the guests, at big dinner parties was made from Loggerhead. One of these turtles had a carapace length of 405 mm., the other of 445 mm.

Family SPHARGIDAE J. E. Gray, 1825, p. 212.

*Type-genus*.—*Sphargis* Merrem, 1820=*Dermochelys* Blainville, 1816.

Genus DERMOCHELYS H. M. D. de Blainville,  
Bull. Soc. philom. Paris, 1816, p. 111.

*Type-species*.—*Testudo coriacea* Linnaeus, 1766=*Dermochelys coriacea* Blainville, 1816.

Proc. Zool. Soc.—1933.

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**Leathery Turtle.**

DERMOCHELYS CORIACEA (Linnaeus), 1766.

*Testudo coriacea* Linnaeus, 1766, p. 350.

*Type-locality*.—Mediterranean Sea.

*Distribution*.—Tropical, subtropical, and temperate seas, including the Mediterranean and Adriatic; in the eastern Atlantic individuals have been found on the coasts of Spain, France and England, and even as far north as Oldenburg in Germany, where in August 1930 one was found stranded, as recorded by Veterinary-Surgeon L. Greve (Natur. u. Museum, 61, p. 30, 1931).

*Literature*.—*Dermochelys coriacea*. G. A. Boulenger, 1889, p. 10. F. Siebenrock, 1909, p. 553.

*Occurrence in Egypt?*—On 13 March, 1920, Monsieur D. E. Pachundaki, Director of the Royal Egyptian Hydrobiological Institute, showed me the carapace of a large Leathery Turtle that had been purchased lately in the market at Alexandria. Unfortunately we were unable to ascertain whether the specimen had been caught in the Mediterranean or in the Red Sea, or had been brought from some remote locality and been resold in Egypt.

Family PELOMEDUSIDAE E. D. Cope, Proc. Acad. Nat. Sci. Philad. 20, p. 282, 1868.

*Type-genus*.—*Pelomedusa* J. Wagler, 1830.

Two genera, *Pelomedusa* and *Pelusios*, are represented in north-east Africa by one species of the former and two of the latter genus.

*Pelomedusa galeata* is well known from the Sudan, and has been said to occur in Sinai. *Pelusios derbianus* was obtained by Mr. G. W. Grabham in 1912 at Wadelai, 2° 50' N. by 31° 30' E., and *Pelusios adansonii* is common on the White Nile and its tributaries, the Zeraf, Gebel, and Ghazal rivers.

Genus PELOMEDUSA J. Wagler, Syst. Amphib. p. 136, 1830.

*Type-species*.—*Testudo galeata* J. D. Schoepff, 1792.

**Helmeted Terrapin.**

PELOMEDUSA GALEATA (J. D. Schoepff), 1792.

*Testudo galeata* J. D. Schoepff, Hist. Testud. p. 12, 1792.

*Type-locality*.—Not stated definitely, but "East Indies" may from Schoepff's remarks be limited to South Africa.

*Distribution*.—Widely distributed in Africa in more or less isolated colonies in various localities from Senegambia to Somaliland, and from the Sudan, Eritrea, Uganda, and Kenya Colony south to Angola, the Kalahari, the Transvaal, and Cape Province. It is said to occur also in Madagascar and in Sinai.

*Literature*.—*Pelomedusa galeata*. G. A. Boulenger, 1889, p. 197.

*Occurrence in Egypt?*—The British Museum 'Catalogue of Chelonians' (1889, p. 199) mentions one specimen from "Mount Sinai." Among the granite mountains of southern Sinai there are charming secluded valleys with perennial streams and beautiful little ponds, with patches of vegetation of almost tropical luxuriance, just nice paradises for water-tortoises, but I failed to find any, and the local Bedawin, who are keen naturalists in regard to every animal or plant that has edible or medicinal value, knew of no such creatures. In answer to an enquiry Mr. G. A. Boulenger kindly wrote to me from the

British Museum, 5 August, 1918 :—"There is no other record for *Pelomedusa* in Sinai than the entry in the B.M. Register, and I am not at all sure that the locality can be relied upon." And in a letter of 16 December, 1918, Mr. Boulenger said : "The source for the Sinaitic habit of *Eremias mucronata* is the same as for the *Pelomedusa*. It may therefore well be erroneous."

Considering the extreme local habit of this species there is still the possibility that some colony of Helmeted Terrapins may yet be found in Egypt in some isolated, seldom visited glen among the mountains between the Nile and the Red Sea, or in the eastern part of the Peninsula of Sinai.

*Sudan.*—*Pelomedusa galeata* is known from at least three parts of the Sudan :

1. Blue Nile. Recorded from Sennar by W. C. H. Peters. One very young specimen was given to me alive by Anis Eff. Saad at Wad Medani in 1907. In January 1921 Capt. G. D. Rastrick Carr, M.C., R.A.M.C., gave me five live young ones that he had collected himself at Gebel Moya, near Sennar.

2. White Nile. A. L. Butler sent me for identification a dry shell of this species that he had "picked up between Renk and Fashoda" between 1902 and March 1907.

3. Red Sea Province. In 1906 A. L. Butler found this species common in the pools "in the rocky cânyons" in the Gemilab Hills near Suakin, between 3000 and 4000', and early in 1908 he collected thirteen specimens alive in the Khor Arbat, a permanent stream issuing from the hills, about 25 miles from Port Sudan, and wrote : "I could have got a hundred easily."

*Dimensions.*—The largest Sudan specimen I measured was a male (from Khor Arbat, May 1908, living in Giza Z. G., 8 August, 1917), carapace length in straight line in median line 200 mm. (7·87"), weight 1·25 kilos. (2·75 lbs.).

Family TRIONYCHIDAE T. Bell, Zool. Journ. London, 3, p. 515, 1828.

(Trionichidae J. E. Gray, 1825, p. 212.)

*Type-genus.*—*Trionyx* E. Geoffroy, 1809.

The Nile Soft-shelled Turtle, *Trionyx triunguis*, occurs in Egypt, in the Sudan, and in parts of Palestine. Two other species of Soft-shelled Turtles, *Cyclanorbis senegalensis* and *Cyclanorbis oligotylus*, are known from the White Nile (F. Siebenrock, 1906, pp. 835 & 838).

Genus TRIONYX E. Geoffroy, Ann. Mus. Hist. Nat. Paris, 14, p. 1, 1809.

*Type-species.*—*Trionyx aegyptiacus* E. Geoffroy, 1809=*Trionyx triunguis* (Forskål), 1775.

## 5. Nile Soft-shelled Turtle.

TRIONYX TRIUNGUIS (Forskål), 1775.

*Testudo triunguis* P. Forskål, Descr. Anim. p. ix., 1775.

*Type-locality.*—Nile.

*Distribution.*—Africa : tropical African water-systems from the Senegal and the Congo to the Nile, following the Nile down to Lower Egypt, and thence accidentally to the Palestine coast and rivers flowing into the Mediterranean in that country.

*Literature.*—*Trionyx triunguis*. G. A. Boulenger, 1889, p. 254. J. Anderson, 1898, pp. 32-34, pl. 3.

*Occurrence in Egypt.*—Being esteemed a valuable luxury of diet for human

consumption, the Nile Turtle has been hunted persistently in Egypt for hundreds, probably thousands, of years; yet a few individuals survive. I had at least five Egyptian-caught specimens alive in my hands: one obtained by Mr. Howard Carter in August 1902 at Kom Ombo in Aswan Province; one from a canal in the Embaba district of Giza Province, caught in February 1908, which was presented to the Giza Zoological Gardens by H.H. the late Prince Kamel el Din Pasha; one caught in the Nile near Giza town by local fishermen in January 1909; and a large female from Ezbet Sameda Saleh, rather more than two miles north of Ibshawai in the Fayum.

Dr. J. Anderson (1898, Introduction, p. xlv, and p. 33) says that in the manuscript of James Burton (1788–1862) in the British Museum (Add. MSS. 25, 623) "the interesting fact is recorded that *Trionyx triunguis* existed in the waters of the Natron Lakes. If this observation was correct, it is of considerable importance, as it may be inferred from it that the Wádi el Natrun had been at some period of its history in direct relation with the Nile." It is unfortunate that some subsequent authors have accepted this inference as an established fact.

James Burton (*o. c.*) said nothing about *Trionyx* occurring in the Wadi Natron in the detailed diary he wrote of his visit to the valley, lakes, and old buildings, but on the back of page 140 is a note concerning the Ichneumon "Nems" . . . . "a sp. of tortoise of the Nile called cirsé or thirsé . . . . it is not so much the ichneumon as the thirsé that destroys the young crocodiles." This is not part of Burton's journal, but one of the quotations or *aides memoire* that he used to jot down freely, and it does not refer to the Wadi Natron.

*Sudan.*—Thanks to the lesser density of the human population Nile Turtles are much commoner in the Sudan than in Egypt; I have seen them in the Provinces of Halfa, Dongala, Berber, and Khartoum, and along the Blue and White Niles.

As "Um Diraga" *Trionyx* is well known to the riverine Arabs. On 18 June, 1920, at Kulgeili in Dongala Province, Sheikh Hassan el Tayib, Omdeh of Kulgeili, told me that both the turtles themselves and their eggs are very much prized as food by the Shagia Arabs: certain men make a speciality of turtle-hunting, and are very clever at it, knowing the turtle's habits. These men hunt at night, when the turtles come ashore to lay their eggs.

*Palestine.*—As Canon H. B. Tristram (1888, p. 157) stated, *Trionyx aegyptiacus*, i. e., *T. triunguis*, has not yet been observed in the Jordan Valley, but occurs in some of the rivers of western Palestine which flow into the Mediterranean. At high Nile the Bahr Basandila and the Damietta Nile discharge great volumes of water into the Mediterranean, where a strong current flows close along the shore to the east; floating carcasses of cattle and donkeys are stranded on this coast for miles eastward of their entry to the sea, and it is presumable that live Nile Turtles and also Crocodiles that are swept out to sea in the rush of Nile water will regain the land in the same direction. Along the north coast of Sinai there is no haven for them, but following the shore-line they may—probably only a few individuals in many years—find suitable homes in the rivers and marshes of littoral Palestine.

It should be noted that the Soft-shelled Turtle of the Lake of Tiberias, or Sea of Galilee, in the Jordan Valley is of a different species—*Trionyx euphratica*, according to F. Siebenrock (1913, p. 54).

#### *Notes on Habits.*

1. Agility out of water. A very small Turtle caught in a seine-net at Roseires, Blue Nile, 30 June, 1905, put in a bucket on land, climbed out and

walked back to the river ; and in the Giza Z. G. a female at least five years old frequently travelled of her own accord from one pond to another ; in doing this she used to climb over a vertical fence of wire-netting 1 metre high ; she would climb up the near side and flop down the other.

2. In glass-sided tanks in the Giza Z. G. these Turtles could be watched easily when they were feeding on live " Bolti " fish, *Tilapia* spp., that had been placed in their tanks ; I noted that when a *Trionyx* seized in its mouth any fish that was too large to be swallowed whole, the *Trionyx* used its fore-feet, and with its sharp claws impaled the fish and tore its head off. The *Trionyx* then continued to use its hands in finishing its meal.

*Dimensions.*—Individuals whose dorsal disc in median line, measured in a straight line, is about 500 mm. in length average (of 10 measured) 10.8 kilos. in weight ; those with dorsal disk about 550 in length average (of 5) 15.2 kilos. The largest male I measured, from Khartoum, with a dorsal disk of 630 mm., weighed 22 kilos. ; the largest female, from Giza, with a dorsal disk of 700 mm. (2' 3½"), weighed 24 kilos, (37.12 lbs.).

Order LORICATA B. Merrem, Tent. Syst. Amphib. p. 34. 1820.

Represented in Egypt by one species only, the famous Nile Crocodile.

Family CROCODYLIDÆ J. E. Gray, 1825, p. 195.

*Type-genus.*—*Crocodylus*=*Crocodylus* of Gronovius, 1763, and Laurenti, 1768.

Genus CROCODYLUS L. T. Gronovius, Zoophyl. fasc. 1, p. 10, 1763.

*Type-species.*—*Crocodylus niloticus*, but not stated definitely by Gronovius.

## 6. Nile Crocodile.

CROCODYLUS NILOTICUS J. N. Laurenti, Syn. Rept. p. 53, 1768.

*Type-locality.*—" East Indies and Egypt."

*Distribution.*—Africa : in suitable localities from the Cape of Good Hope northwards to Senegambia, isolated waters in the interior of Mauritania, Algeria, Tunisia, and Tripoli, and the Nile in Egypt, whence it strays sporadically to the coast of Palestine, and enters rivers flowing into the Mediterranean in that country. Also found in Madagascar, and at one time in the Seychelles (G. A. Boulenger, Trans. Linn. Soc. London, 12, pt. 4, p. 295, 1909) ; it is also probable that it occurred formerly in Sicily (J. Anderson, 1898, p. 27).

*Literature.*—*Crocodylus niloticus*. G. A. Boulenger, 1889, p. 283. J. Anderson, 1898, pp. 1-27, pl. 1. G. W. Grabham. " A Crocodile's Nest " [at Nushra Abib, on the Rahad River, near the Sudan-Abyssinian frontier, May 1907, with photograph], 'Nature,' London, 80, p. 96, March 1909. S. S. Flower, Ministry of Public Works, Egypt, Zool. Service Publications, No. 27, p. vii, pl. 8, Cairo, 1914 ; No. 34, pp. 17, 18, Cairo, 1921 ; No. 35, p. 7, Cairo, 1922 ; No. 38, pp. 14-18, Cairo, 1924.

*Occurrence in Egypt.*—The recrudescence of Crocodiles in the Nile downstream of the 1st Cataract has been described already in full in the above-mentioned publications of the Egyptian Zoological Service. In 1923 the most northern point along the river in which a Crocodile had been killed was in Beni Suef Province at a place about 90 miles (or 145 kilometres) south

of Cairo. I am told that in January 1927 a Crocodile 12 feet (3.66 metres) long was shot at Rahmaniya, on the Rosetta branch of the Nile, which is about 80 miles (or 129 kilos.) north of Cairo, and that the specimen was being preserved in the Giza Museum.

In the Nile between the 1st and 2nd Cataract—that is, Lower Nubia from Shellal (Aswan) to the frontier of the Sudan near Wadi Halfa—there were no Crocodiles in the years 1898–1910. About 5 April, 1911, the late Major Claud V. N. Percival, Rifle Brigade, then Acting Governor of Halfa Province, saw a crocodile about 5 feet long lying on the left bank of the Nile nearly opposite the pumping-station of Mr. Loiso, about 10 miles north of Halfa. Percival had the crocodile “in view for over a minute, at a less distance than thirty yards. It then slipped off into the water and disappeared.” Percival mentioned the fact in one of the monthly Province Reports for 1911, and also gave me a signed written statement.

On 30 May, 1912, a crocodile, estimated to be 9 or 10 feet long, was seen lying partly in the water and partly on a sand-bank near Korosko by Mr. L. G. Allison of the Sudan Government Railways and another British official.

In 1918, 1919, and 1920 several crocodiles were reported from between Halfa and Korosko: at one time three were reported as being in the neighbourhood of Korosko, the largest being said to be about 9 feet long. On 9 December, 1920, near the administrative boundary between Egypt and the Sudan, my wife and I saw two crocodiles; she noted, “Both crocodiles faced south with yellow gleaming mouths wide open, bodies dark on pale sand.”

*Sudan.*—Crocodiles occur along the main Nile in the Provinces of Halfa, Dongola, Berber, and Khartoum, in the Eastern Sudan in the Atbara, Setit, Dinder, and Rahat Rivers, along the Blue Nile, and along the White Nile and its tributaries, but, A. L. Butler told me, they are not known from the Gash or from any rivers flowing to the Red Sea.

In many parts of Africa where crocodiles are known to have been numerous during the last century it is already difficult, if not impossible, to ascertain in what number they existed in any particular year or their distribution along the rivers, so it may perhaps be of future use to put on record a few definite observations.

In Dongola Province, 1903–1920, crocodiles were fairly numerous, but from all accounts never of very great size, the largest being 10 to 11 feet in length. Mr. Emerson, Sudan Government Steamers, told me at Kareima, 22 November, 1910, that in seven years' experience of the navigable reach from Kareima downstream to Argo he had only known of one case of a human being having been killed by a crocodile; and in the part of this reach from Merowe down to Mansur Koti Gen. Sir Herbert Jackson told me, 15 June, 1920, crocodiles were hardly, if ever, known to attack human beings, and the people were not at all afraid of them. On the other hand, upstream of Kareima, in the 4th Cataract country, crocodiles are considered very dangerous. At Kulgeili the Omdeh, Sheikh Hassan el Tayib, told me, 18 June, 1920, that in the last five years fourteen human beings of his village alone had been killed or badly mauled by crocodiles, and as to how many fatalities had happened to people of other villages or to strangers travelling through the district he could not say.

*Blue Nile.*—Summary of notes made on five trips by water from Khartoum to Roseires and back: June, July 1905; Nov., Dec. 1906; Sept., Oct. 1907; July, Aug. 1909; and Oct., Nov. 1910. Crocodiles seen daily from within a few hours' steaming of Khartoum to Roseires; they were most numerous

in the Singa Abdulla reach and the Deesa to Roseires reach. The upstream voyages occupied respectively 14, 6, 10, 11, and 7 days the downstream 6 to 8 days. Between Khartoum and Wad Medani the largest number of crocodiles seen in one day was 7, 7, and 8; near Sennar 27, 27, 37, and 42; near Singa I counted in one day 93 crocodiles, and on another day (7 Dec. 1906) 123 separate individuals; just downstream of Roseires the largest counts in one day were 37, 37, 48, and 64. Out of 1062 noted (the same animal was in some cases probably noted more than once) I estimated 634 to be less than 5 feet in length, 413 to be between 5 and 10 feet, and 15 to be over 10 feet long, 4 of these being under 11 feet and the largest being perhaps 14 feet. Out of 18 that I shot and bagged the largest male was in total length 8' 7" (2.6 metres), the largest female 9' 3" (2.8 m.). A female shot in Nov. or early Dec. 1906 by Capt. R. B. Black, R.A.M.C., in total length 9' 2½" (2.8 m.), contained "forty fertilized eggs and many more very small ones."

On I July, 1912, while steaming from Singa to Sennar, I saw 41 crocodiles—12 medium and 29 small.

*White Nile.*—Crocodiles were numerous and attained larger sizes than on the Blue Nile; though individuals of about 10 feet were not uncommon, ones over 13 feet long were rare. Instances of these I happen to retain notes of were:—

Total length, 14'	(4.26 metres).	Fashoda, 1900.
14' 3"	(4.34 ,, )	Omdurman, May 1900 (Phipps).
14' 9"	(4.49 ,, )	Lake No, 1914 (Tabor).
15'	(4.57 ,, )	Kosti, 1914 (W. R. G. Bond).
15' 3"	(4.64 ,, )	Just north of Renk, 1907 (Oppenheim).
16' 7"	(5.05 ,, )	Bahr el Gebel, winter 1909–1910 (Ward).

The largest crocodiles that I have seen in Africa have been on the Bahr el Gebel, between Heliat Nueir and Shambe; here (both in 1900 and in 1914) I met a few which were certainly not less than 15 feet, and may perhaps have been 20 feet in total length. On 26 June, 1914, I saw one of these great fat animals on land, where he was exploring a Dinka meat-drying ground.

*Size of Young Crocodiles.*—More or less contradictory statements on this subject being available in books, it appears worth while to publish here some definite measurements for comparison:—

1. Three young Crocodiles caught on the Blue Nile in July 1905, and one in July 1908, were all exactly the same in total length, 343 mm. (1' 1½").

2. Three purchased alive in Khartoum 17 August, 1909, were respectively 362, 375, and 394 mm. (1' 2¼", 1' 2¾", and 1' 3½").

3. One from near Khartoum 8 January, 1914, was 375 mm. (1' 2¾").

4. On the other hand, a *Crocodylus niloticus*, believed to be from West Africa, which I purchased alive in Liverpool 6 October, 1905, and took out to Egypt, was in total length when it died, 22 February, 1906, only 301 mm. (11½").

5. Eight from Merowe, Dongola Province, Sudan, presented by Major-General Sir Herbert W. Jackson, K.B.E., C.B., arrived in the Giza Z. G. 26 July, 1916. Mr. J. Lewis Bonhote measured these 22 August, 1916, and found them all to be practically the same size, *i. e.*, two 340 mm., four 350, one 360, and one 365 in total length (all between 1' 1½" and 1' 2½"). Each was in girth of body about 100 mm. (say 3.9"), and in weight about 109 grammes (3 oz. 13½ drams).

6. Fifteen from "one of the islands in the Cataract just South of Halfa"—

that is, the 2nd Cataract of the Nile—presented by Mr. S. A. Tippetts, then Governor of Halfa, arrived in the Giza Z. G. 1 July, 1921. Mr. Michael J. Nicoll measured fourteen of these on arrival (the fifteenth was lost), and noted their total length as being—one 273 mm., two 295, two 296, one 298, one 307, five 310, one 311, and one 316.

Average length of the fourteen 302.64 mm.=11.893 inches. Smallest 273 mm.=10.748 inches.

*Rate of Growth.*—The rate of growth of individual Crocodiles in the Giza Z. G. was variable and uncertain. Specimens caught when young increased in length from 130 to 360 mm. (say 5 to 14 inches) a year during their earlier years; 233 mm. (say 9 inches) may be taken as an average. A female 2.18 metres (7 feet 2 inches) in length when caught did not grow more than 152 mm. (say 6 inches) in the next eight years.

*Weight as compared to length.*—

<i>Crocodylus niloticus.</i>	Length.		Weight.	
	metres.	ft. in.	kilos.	lbs.
1. juv. from Khartoum, about 1 year 8 months in captivity . . . . .	.705	2 2½	1.8	4
2. ♀ from Khartoum, about 4 years in captivity.	1.657	5 5¼	18	40
3. ♀ from West Africa, about 4½ years in captivity . . . . .	1.84	6 0½	30	66
4. ♀ from Khartoum, about 8 years in captivity.	2.337	7 8	72.5	160
5. ♂, El Karably, Aswan Prov., Egypt, caught 20 Oct. 1921, died 3 Jan. 1922 . . . . .	2.9	9 6½	44	97
<i>Alligator mississippiensis, for comparison.</i>				
1. ♂ in Giza Z. G. 1899–1911 . . . . .	2.66	8 9	104.4	309.5
2. ♂ " " " . . . . .	2.74	9 0	145	320

NOTE 1.—Though the Crocodile may be considered by people in England as a mere dangerous pest, it is looked upon in quite a different light in many of the parts of Africa and of Asia where it occurs. The toll that it takes on the lives of human beings and domestic animals is put up with as one of the unalterable and necessary laws of the universe. The Crocodile is very useful; its flesh and eggs are considered excellent for human food, its skin provides material for armour in the form of helmets and shields and leather for countless purposes, its teeth and bony scutes form ornaments and charms, and, above all, the contents of its musk sacks are a very valuable product—but these are mere material uses, there is also the spiritual or ethical use of the crocodile, both to too wilful youth and to too venturesome old age: one hears in riverine communities the caution, "If you do that, a crocodile will catch you!" At Malakal, on the White Nile, 25 May, 1914, Capt. J. L. F. Tweedie, Gloucestershire Regiment, told me that the Shilluks have a "crocodile test" for adultery: a man accused of adultery has to swim the river; if he is taken by a crocodile he is guilty, if he gets safe across he is innocent.

NOTE 2.—In the Museum at St. Gall, Switzerland, 15 June, 1931, I saw a stuffed Crocodile (estimated roughly to be between 10 and 12 feet in length) which Dr. Emil Bächler, the Director of the Museum, told me was from Egypt and had been at St. Gall since 1627. The specimen is not protected by glass, and shows how strong crocodile skin is as being still presentable after over 300 years of exhibition.



Order SAURIA James Macartney,  
in William Ross, Transl. G. Cuvier's Lect. Comp. Anat. table 3, 1802.

Forty species of Lizards are recorded definitely from Egypt; these represent six families:—

1. Geckotidae .....	11 species.
2. Agamidae .....	10 „
3. Chamaeleonidae .....	2 „
4. Scincidae .....	7 „
5. Lacertidae .....	8 „
6. Varanidae .....	2 „

Family GECKOTIDAE J. E. Gray, 1825, p. 198, & 1827, p. 55.

*Type-genus*.—*Gecko*=*Gekko* J. N. Laurenti, Syn. Rept. p. 34 [misprint for 43], 1768 (the type-species for the genus being *Lacerta gecko* Linnaeus, 1758, from south-east Asia).

Geckotidae. A. C. L. G. Günther, Rept. Brit. Ind. p. 99, 1864.

Alternative spellings include:—

Geconidae. E. D. Cope, 1871.

Geckonidae. G. A. Boulenger, 1884.

Gekkonidae. L. Stejneger, 1907.

The following genera occur in Egypt:—*Stenodactylus*, *Tropiocolotes*, *Gymnodactylus*, *Ptyodactylus*, *Hemidactylus*, and *Tarentola*.

Geckoes belonging to four other genera must be referred to also.

*Ceramodactylus doriae* has been reported to occur in Sinai by G. A. Boulenger (1885, p. 13) from one specimen from H. C. Hart, but it is not certain that Hart obtained this in Sinai; it appears probable that he collected it in the Wadi Araba (south-east Palestine or north Arabia), but the species may occur in Sinai.

*Bunopus blanfordii* was referred to by J. Anderson (1898, pp. 50–53, text-fig. 4). I met no Geckoes of this genus.

*Pristurus flavipunctatus* is another Gecko not yet found in Egypt, but which may occur; it was known from the Red Sea Province of the Sudan (J. Anderson, 1898, pp. 56–59, pl. 4, fig. 10), from Gebel Araschkol in Kordofan (F. Werner, 1908, p. 1828), from Eritrea, Somaliland and Arabia. In 1914 Werner and Wettstein obtained specimens at Sennar, in north and in south Kordofan and in the Nuba Hills Province (F. Werner, 1919, p. 470). In J. Anderson's time he could write (1898, p. 57) that this species "has never been observed in the Nile valley proper." I first caught one in 1909 on the Blue Nile, and at Singa Abdulla, Blue Nile, in January 1921, my wife found them to be commoner than was supposed by *in the day time* looking carefully at the stems of the "Heglic" trees. A fine male from Singa, 18 January, 1921, with serrated dorsal ridge on its tail, measured in length, head and body 37 mm., tail 56 mm.

*Lygodactylus picturatus gutturalis*, a Tree Gecko, with its chin strongly marked in black and white and with a bright lemon-yellow abdomen, I found to be not uncommon on the Blue Nile, at Singa and Roseires, in 1906 and later years. From this part of the Sudan it has been recorded also by T. Barbour (1913, pp. 145, 146). A. L. Butler in 1907 found it in the Bahr el Ghazal Province, and it is known from the White Nile and the Bahr el Gebel from Duem to Gondokoro (F. Werner, 1908, p. 1833), and it has been caught on board a Nile steamer (F. Werner, 1919, p. 475).

Genus *STENODACTYLUS* L. J. Fitzinger, Neue Classif. Rept. p. 13, 1826.

*Type-species*.—*Stenodactylus elegans* Fitzinger, 1826=*Ascalabotes sthenodactylus* Lichtenstein, 1823.

Two species occur in Egypt, *sthenodactylus* and *petrii*.

### 7. Elegant Gecko.

*STENODACTYLUS STHENODACTYLUS* (Lichtenstein), 1823.

*Ascalabotes sthenodactylus* H. Lichtenstein, 1823, p. 102.

*Type-locality*.—Egypt and Nubia.

*Type-specimen* from the Hemprich and Ehrenberg collection.

*Distribution*.—North Africa and south-west Asia: Rio de Oro, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, the Sudan, and Eritrea, south to the Lake Rudolph area, Sinai, Palestine, and Arabia.

*Literature*.—*Stenodactylus guttatus*. G. A. Boulenger, 1885, p. 17, & 1887, p. 479. T. Barbour, 1914, p. 79. D. Vinciguerra, 1927, p. 332, & 1931, p. 250.

*Stenodactylus wilkinsonii*. G. A. Boulenger, 1885, p. 18.

*Stenodactylus elegans*. J. Anderson, 1898, pp. 35-44, text-figs. 1-3, pl. 4, figs. 1-6. F. Steindachner, 1901, p. 326. L. G. Andersson, 1904, p. 6. A. Andres, 1908, p. 4, & 1920, p. 18.

*Occurrence in Egypt*.—This pretty little lizard is found only on waste lands, both on open sandy desert, preferably with a certain amount of scrub vegetation, and in rocky places. Though not numerous in individuals, it is distributed very widely, being known from Mariut, Alexandria, the Wadi Natron, the Fayum, the deserts on both sides of the Nile from the Cairo-Giza area southwards to the Sudan frontier, the west coast of the Gulf of Suez and Red Sea, and from southern Sinai where it has been found near both the Gulfs, Suez and Akaba, and inland. In May 1918 I met a specimen in the Nakbt el Hawa ("Pass of the Winds") at about 4000 feet (1220 metres) above sea-level.

In Palestine this species is recorded from "the Ghor, north of the Dead Sea" by Canon H. B. Tristram (1888, p. 153), and from Haifa, Jaffa and Jerusalem by Prof. F. Werner (1898, p. 1).

### 8. Petrie's Gecko.

*STENODACTYLUS PETRII* J. Anderson, Herp. Arab. Egypt, p. 96, 1896.

Named after Prof. Sir William Mathew Flinders Petrie, D.C.L.

*Type-locality*.—Tel el Amarna, Assiut Province, Upper Egypt.

*Synonym*.—*Stenodactylus elimensis* T. Barbour, Proc. New. Engl. Zoöl. Cl. 5, p. 79, pl. 2, 2 Dec. 1914.

*Type-locality*.—Wady Gharandel, Sinai. *Type-specimen* collected by Dr. J. C. Phillips, 25 March, 1914.

*Distribution*.—Algeria, Cyrenaica, Egypt and Sinai.

*Literature*.—*Stenodactylus petrii*. J. Anderson, 1898, pp. 45, 46, pl. 4, fig. 7. F. Werner, 1909, p. 598. D. Vinciguerra, 1931, p. 250.

*Stenodactylus elimensis*. Barbour & Loveridge, Bull. Mus. Comp. Zoöl. Harvard, 69, no. 10, p. 345, June 1929 [Type].

*Occurrence in Egypt*.—I saw only about six specimens in sandy deserts near Kantara and near Imailia on the Suez Canal, and in northern Sinai.

Mr. Arthur Loveridge has been so kind as to give me permission to publish

the following letter, from the Museum of Comparative Zoölogy at Harvard College, which he wrote 31 March, 1933 :—" A year ago I had occasion to restudy all our material of the genus *Stenodactylus* and came to the conclusion that *S. elimensis* Barbour was a synonym, or just possibly a race, of *S. petrii* Anderson. It should be borne in mind that at the time (1914) when it was described Dr. Barbour had but a single old specimen of *petrii* in the collection and that without locality. Subsequently we got two Tripoli specimens from Berlin. As indicated this material was insufficient to enable me to reach a definite opinion as to whether or no *petrii* might not hold good as a Syrian subspecies; unfortunately we have only the holotype. I consider *stenurus* Werner, 1899, is definitely a synonym of *petrii*. As for *sthenodactylus* I came to the following conclusions: *S. s. sthenodactylus* Lichtenstein, 1823, includes *elegans* Fitzinger, 1826; *guttatus* Cuvier, 1829. *S. s. mauritanicus* Guichen., 1850, appeared to me a recognizable race. We had, however, only three examples from Morocco and Algerian localities. Of the typical form ten specimens from 'Dalmatia,' Tripoli, Tunis, Sinai and Port Sudan, the last collected by myself."

Genus TROPIOCOLOTES W. C. H. Peters, Mon. Kön. Preuss. Akad.  
Wiss. Berlin, March 1880, p. 306.

*Type-species.*—*Tropiocolotes tripolitanus* Peters, *l. c.*

Three nominal species, *tripolitanus*, *steudneri* and *nattereri*, have been recorded from Egypt.

### 9. Tripoli Gecko.

TROPIOCOLOTES TRIPOLITANUS W. C. H. Peters, *l. c.* pp. 306, 307, six figs.

*Type-locality.*—Uadi M'bellem, Tripoli. The type-specimen was collected by Gerhard Rohlfs and A. Stecker on their journey to Kufra Oasis, 1878-9.

*Distribution.*—Rio de Oro, Algeria, Tunisia, Tripoli, Cyrenaica and Egypt.

*Literature.*—*Stenodactylus tripolitanus*. G. A. Boulenger, 1885, p. 19.

*Tropiocolotes tripolitanus*. J. Anderson, 1898, pp. 47, 48, pl. 4, fig. 8. D. Vinciguerra, 1931, p. 250.

*Occurrence in Egypt.*—J. Anderson (1898, p. 47) records "6 specimens from around the Pyramids of Gizeh, under stones." F. Werner (1909, p. 599) also mentions it from Egypt. Personally I did not meet this species, nor were any specimens ever brought in to the Giza Museum or Zoological Gardens by Bedawin or other collectors during my time, 1898-1924.

### 10. Steudner's Gecko.

TROPIOCOLOTES STEUDNERI (Peters), 1869.

*Gymnodactylus steudneri* W. C. H. Peters, Mon. Kön. Preuss. Akad.  
Wiss. Berlin, Nov. 1869, p. 788.

Named after Dr. Hermann Steudner, 1832-1863.

*Type-locality.*—"Aus dem Sennar, ohne nähere Angabe des Fundorts." The single type-specimen was found in Steudner's collection: it appears probable that it was collected in Egypt and not in the Sudan, but it must be remembered that the older travellers used the term "Sennar," not in the restricted sense of the district round the town of Sennar on the Blue Nile,

but to include all the countries that had been invaded by the armies of the former Kingdom of Sennar, that is parts of the modern Provinces of Khartoum, Kordofan, Dongola, Berber and even Halfa.

*Distribution.*—Cyrenaica, Egypt, Nubia, and Sinai.

*Literature.*—*Stenodactylus petersii*. G. A. Boulenger, 1885, p. 18. *Type-locality.* Egypt=*S. steudneri*. G. A. Boulenger, 1887, p. 480.

*Tropicolotes steudneri*. J. Anderson, 1898, pp. 48, 48, pl. 4, fig. 9. A. Andres, 1920, p. 18. D. Vinciguerra, 1931, p. 251.

*Occurrence in Egypt.*—J. Anderson (1898) obtained one specimen of Steudner's Gecko from the Pyramids of Giza, fifteen from "margin of desert" Luxor, and one from near Philae, Aswan. The officers of the 'Pola' collected fifteen specimens from under stones at Halaib (F. Steindachner, 1901, p. 326), and A. Andres (1920) recorded it from the Wadi Hof, Helwan, and from north-west Sinai. In the British Museum there is one from "Kosheh, Nubia," collected by Mr. W. L. S. Loat. Michael J. Nicoll caught two specimens, which he passed to me for identification, on 25 March, 1909, on the Mokattam Hills, just east of Cairo, and one 5 April, 1923, on Gebel el 'Anqabiya, about 3½ miles south of the Cairo-Suez Road, and about 21 miles east of Cairo. On 5 April, 1922, some Bedawin from Aburoash, Embaba district, Giza Province, brought me two individuals alive: these were the only specimens of *Tropicolotes* collected by natives during the time that I was in Egypt.

My personal experience of Steudner's Gecko suggests that it is a rare but widely distributed species capable of existing in most desolate places. I met only three individuals, these I caught alive and found them to become interesting and easily managed pets. The first was found when digging in sand in the side of a very dry valley among the desert hills south of Kalamshah in the Fayum, 3 January, 1918. The second was found under a stone on the top of an absolutely barren, wind-swept, sun-burnt, dry stony hill, in the desert east of Esna, Upper Egypt, 12 April, 1918: the only other living things I could find on this hill were a few "Fish-insects," *Lepisma* sp. The third was from under a great boulder in a barren, bare, baking valley in the desert east of Matana (downstream of Esna), 14 April, 1918: "Fish-insects" were found in this place also.

*Habits in captivity.*—These pygmy lizards were kept in glass cases with deep sand and a little pile of rockwork; they did not burrow in the sand but spent their whole time on the top of the rocks, looking very alert. They fed on house, and other, flies, but only one or two flies daily.

*Size.*—The specimen caught 12 April, 1918, lived in captivity 1 year 10 months 21 days; after death 3 March, 1920, it measured (head and body 30.5 mm., tail 40 mm.) in total length 70.5 mm., or a little over 2¾ inches.

### 11. Natterer's Gecko.

TROPICOLOTES NATTERERI F. Steindachner, Denkschr. Akad. Wiss. Wien, 69, p. 336, pl. I, fig. 2, 1901.

*Type-locality.*—Nawibi, east coast of Sinai.

*Distribution.*—Prof. F. Steindachner described this form from two specimens, one from Nawibi, east coast of Sinai, that is on the west side of the Gulf of Akaba, and one from Bir al Mashiya in Arabia on the east side of the same gulf: he stated that it was not very different from *T. steudneri*.

I do not know whether this is a "good" or a "nominal" species.

Genus GYMNOACTYLUS J. B. Spix, Spec. Nov. Lacert.  
Brazil, p. 17, 1825.

*Type-species*.—*Gymnodactylus geckooides* Spix, l. c., from South America.

Two species, *scaber* and *kotschyi*, are mentioned as having been found in Egypt in the British Museum Catalogue (G. A. Boulenger, 1885, pp. 27–29).

The Gecko which Franz Steindachner named in honour of Theodor Kotschy in 1870 *Gymnodactylus kotschyi*, is well known from Palestine (H. B. Tristram, 1888, p. 153; F. Werner, 1898, p. 1). Major M. Portal, D.S.O., sent me a live specimen from Palestine in January 1918, and wrote that this species "lives on Olive Trees only." I was unable to find any evidence of it having occurred in Sinai or in Egypt in Africa.

## 12. Rough-skinned Gecko.

GYMNOACTYLUS SCABER (Heyden), 1827.

*Stenodactylus scaber* C. H. G. von Heyden, in Rüppell, Atlas, nördl. Afr. Rept. p. 15, pl. 4, fig. 2, 1827.

*Type-locality*.—Tor, Sinai.

*Distribution*.—West Asia: Sinai, Arabia, Mesopotamia, Persia, Afghanistan and Sind; also recorded from the African side of the Red Sea in Abyssinia, the Sudan and Upper Egypt.

*Literature*.—*Gymnodactylus scaber*. J. Anderson, 1898, pp. 54, 55, pl. 5, figs. 1, 2.

NOTE.—I have not met this species.

Genus PTYODACTYLUS L. Oken, Isis, 1, p. 1183, 1817, and  
J. E. Gray, 1825, p. 198.

*Type-species*.—*Ptyodactylus lobatus* = *Gecko lobatus* I. Geoffroy, Descr. Égypte, Rept. p. 130, 1827, which is antedated by *Lacerta hasselquistii* Donndorff, 1789; this species occurs in Egypt.

## 13. Fan-footed Gecko.

PTYODACTYLUS HASSELQUISTII (Donndorff), 1789.

*Lacerta hasselquistii* J. A. Donndorff, Zool. Beytr. Leipzig, 3, p. 133, 1789.

*Type-locality*.—Egypt.

*Distribution*.—North Africa and south-west Asia: Algeria, including both the northern Sahara and the Hoggar, Egypt, Nubia, Sudan, Eritrea, Abyssinia, Somaliland, Sinai, Palestine, Syria, Arabia (widely distributed), and it, or an allied species, occurs also in Sind.

*Literature*.—*Ptyodactylus guttatus* Heyden, 1827. *Type-locality*. Tor, Sinai. A local form of *P. hasselquistii* Donndorff, R. Mertens, 1922, p. 169.

*Ptyodactylus lobatus*. G. A. Boulenger, 1885, p. 110. Subsp. *syriacus* Peracca, F. Werner, 1898, p. 2. *P. l. sancti-montis* [*Type-locality*. "Rasheya, base of Mount Hermon, Syria"]. T. Barbour, 1914, pp. 80, 81.

*Ptyodactylus sancti-montis*. Barbour & Loveridge, 1929, p. 325.

*Ptyodactylus hasselquistii*. J. Anderson, 1898, pp. 60–76, pls. 6, 7, & 1900, p. 424. F. Steindachner, 1901, p. 327. L. G. Andersson, 1904, p. 6.

*Ptyodactylus hasselquistii*. F. Werner, 1908, p. 1829, & 1919, p. 471.

*Subspecies*.—This attractive lizard is of special interest in the study of

variation in animals, as was well shown by J. Anderson (1898), who devoted sixteen pages of text and twelve figures to this species. Among the difficulties of subdivision are firstly the unfortunate fact that some of the localities that Anderson accepted as authentic are doubtful, and secondly that a mere geographical locality is not sufficient for a *sedentary* animal. For taxonomic purposes specimens should have full data as to habitat, access to moisture, elevation above sea, etc. Having had opportunities of seeing hundreds of these Geckoes alive, both under natural conditions and in captivity, I tried to name them according to Anderson's notes. Even trinomial nomenclature failed, individuals had to be catalogued by such names as *Ptyodactylus hasselquistii guttata siphonorkhina aburoashi*. In 1914 I reverted to binomials for Egyptian specimens, but there is no doubt but that in its wide range this species shows some well-marked races which can be treated as subspecies.

*Occurrence in Egypt.*—Unknown in the Delta, the Fan-footed Gecko is numerous in rocky places and in old buildings on both sides of the Nile in the Cairo-Aburoash-Giza-Sakkara-Helwan area, and in the valleys to the east including the Wadis Digla, Hof and Rashid, and in June 1919 I caught one in the very rocky hills about twelve miles south of No. 8 Tower on the Cairo-Suez Road. In Upper Egypt I know it to occur in suitable localities along the Nile in the Provinces of Assiut, Qena and Aswan. Capt. G. W. Murray, M.C., in January 1924, collected a specimen in the Wadi Gul'an, Upper Egypt, about 24° 22' N. by 35° 17' E., approximately 153 miles east of Kom Ombo, which is on the Nile: and J. Anderson (1900, p. 424) recorded one collected by D. MacAlister in "the neighbourhood of the Emerald Mines on the coast of the Red Sea, in nearly the same latitude as Assuan," *i. e.*, about 24° N.

This species is well known from southern Sinai (H. C. Hart, 1891, p. 210; F. Steindachner, 1901, p. 327; T. Barbour, 1914, p. 80); it occurs also in central Sinai. On 16 October, 1918, at Nakhel in the castle and other buildings I saw many individuals, all of large size and very pale in colour, running on the walls at about the time of sunset, and on 19 October, 1918, at Ain Sudr (39 miles west of Nakhel, and about 35 miles south-east of the town of Suez) these Geckoes were numerous on, and under the overhanging ledges, the limestone cliffs near the spring, and also in a neighbouring little valley; in the morning, and up to at least noon, they were active in the bright sunshine, it would have been easy to catch a score or so; as at Nakhel all the individuals seen were of large size.

*Palestine.*—The Fan-foot is abundant and distributed widely in Palestine (H. B. Tristram, 1888, p. 153; H. C. Hart, 1891, p. 210; F. Werner, 1898, p. 2; T. Barbour, 1914, pp. 80-82). Major Maurice Portal, D.S.O., caught one near Gaza in 1917, and another, of large size, on Mount Carmel in April 1919.

*Sudan.*—I found this species numerous in the Provinces of Halfa, Dongala and Berber. Both Arthur L. Butler and I met it in the hills of the Red Sea Province, and Franz Werner (1919, p. 471) recorded it from Kordofan.

*Habits in Egypt.*—In the caves and buildings in which it lives this animal is active in the daytime, when, usually the upper surfaces are pale yellowish brown with numerous circular spots of pale lilac-blue. Even in summer-time it will venture out into the hot sunshine, but is very quick at disappearing into crannies if it fears danger by being approached too closely.

Both by day and night its presence may be made known by its characteristic one-syllable call, "a cry that has aptly been compared by Sir. J. G. Wilkinson to the sound made by a man in urging on a horse" (J. Anderson, 1898, p. 75).

As an indication of the *sedentary* nature of this species, it may be worth while putting on record notes on one of the experiments I made :—

A Fan-footed Gecko brought in from the desert was turned loose in my room, though both by day and night the doors and windows of the room were more often open than shut, the gecko never went into any other room and was never observed to go out of doors, even into the verandah. Some months later as I had to move to another house about half a mile away, I took the gecko with me and turned it loose in my new room where it ran about the walls and furniture and never went out. About three months later I returned to the original house taking the gecko with me and again turned it loose, and again it remained in the room where it had been liberated, until it disappeared some time in the third year after it had had to leave its desert home.

Genus HEMIDACTYLUS L. Oken, *Isis*, 1, p. 1183, 1817.

*Type-species.* Not mentioned by Oken—"Gecko tuberculeaux Daudin" = *Gecko mabouia* Moreau de Jonnés, *Bull. Soc. philom. Paris*, p. 138, 1818 = *Hemidactylus mabouia*. *Type-locality.* St. Vincent, West Indies

One species, *turcica*, is common in Egypt, a second, *flaviviridis*, is rare or very local, and three other species known from localities to the south of Egypt may yet be found in that country. These are the widely distributed *mabouia* which has been recorded from as far north as Assab in Eritrea (D. Vinciguerra, 1931, p. 97), and which, as it is known to board steamers (Barbour & Loveridge, 1930, p. 788), may be expected to turn up at Egyptian Red Sea ports. Secondly, *brookii*, another widely distributed species, which is the common house-gecko of many parts of the Sudan. Thirdly, the East African *squamulatus*, of which, on 21 June, 1905, I caught a specimen a few miles north of Wad Medani on the Blue Nile (this was the type of *Hemidactylus floweri* F. Werner, 1908, p. 1830).

#### 14. Turkish Gecko.

HEMIDACTYLUS TURCICA (Linnaeus), 1758.

*Lacerta turcica* Linnaeus, 1758, p. 202.

*Type-locality.*—Turkey.

*Distribution.*—Countries round the Mediterranean and Red Sea, and some of the islands in those seas, and has been found from time to time, distributed by unintentional human agency, east to India and west to Florida and Texas. It is recorded definitely from Spain, southern France, Sicily, Morocco, Algeria, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Eritrea, Sinai, Palestine, Transjordan, Syria, Arabia and Asia Minor.

*Literature.*—*Hemidactylus turcicus*. G. A. Boulenger, 1885, p. 126. J. Anderson, 1898, pp. 80–85, pl. 5, figs. 3, 4. F. Werner, 1898, pp. 2 & 7 [localities in Palestine & Syria]. F. Steindachner, 1901, p. 327 [localities in Red Sea].

*Hemidactylus sinaitus* G. A. Boulenger, *l. c.* *Type-locality.* "Mount Sinai."

*Occurrence in Egypt.*—This is the commonest and most widely distributed house-gecko in Egypt, to be found in the old forts on the sea-shore of the Mediterranean and right up the Nile Valley into the Sudan. I know it from the districts of Alexandria, Edku, Rosetta, Damietta and Ismailia on the Suez Canal, from various places in the Delta, from Cairo and Giza, from the Fayum and from Wadi Halfa. On the Egyptian coast of the Red Sea it is recorded from Suez, Ras Gharib, Shadwan, Qoseir and Halaib, and south

of the frontier from Red Sea ports in the Sudan. It is well known from Sinai (F. Werner, 1893, p. 359; J. Anderson, 1898; A. Andres, 1920, p. 18), where I obtained specimens in 1918, all from houses, in El Arish, in Magdhaba, 20 miles south-east of El Arish, and from Tor: these were all of the typical form and not *sinaitus*. The specimens from Akaba and from Petra mentioned by T. Barbour (1914, p. 82) were also true *turcica*.

*Eggs*.—The well-known entomologist, Monsieur Anaste Alfieri, told me that on 27 July, 1920, he found "a nest" of seven eggs buried in the soil, at a depth of about 10–15 cm. (say, 4 to 6 inches), in a shady place in a garden at Gezira, Cairo. Two of the eggs were broken when found. One egg was broken by accident and the lizard hatched out (Mr. Alfieri kindly sent it to me for identification). The eggs were white in colour, and measured 10 to 10.5 mm. on their longer and about 9 mm. on their shorter axis. It was a fortunate opportunity to identify the species which had produced these eggs, as similar or slightly larger eggs (long axis 11 mm., short 10 mm.), were from time to time sent to me from residents in Cairo, who *complained* of finding strange little eggs in, or on, the furniture in their houses, and one Egyptian gentleman was much troubled by finding a clutch of eggs inside his bed.

### 15. Cocteau's Gecko.

HEMIDACTYLUS FLAVIVIRIDIS E. Rüppell, Neue Wirbelth. Amphib. p. 18, 1835.

*Type-locality*.—Massawa.

*Distribution*.—Malaya, Burma, India, Baluchistan, Persian Gulf ports, Socotra, Somaliland and the African and Arabian coasts of the Red Sea, including Eritrea, the Sudan and Egypt.

H. W. Parker (P. Z. S. 1932, p. 345) writes:—"This Indian gecko almost certainly owes its distribution along the borders of the Red Sea to human agency."

*Literature*.—*Hemidactylus coctaei*. G. A. Boulenger, 1885, p. 137.

*Hemidactylus flaviviridis*. J. Anderson, 1898, pp. 77–80, pl. 5, fig. 5.

*Hemidactylus flavoviridis*. F. Steindachner, 1901, p. 327.

*Occurrence in Egypt*.—J. Anderson (1898, p. 80) found this "to be the common house-gecko of Suez . . . equally prevalent at Suakin," and mentions that Klunzinger met it at Kosseir. Personally I did not see this species in Egypt.

Genus TARENTOLA J. E. Gray, 1825, p. 199.

*Type-species*.—*Lacerta mauritanica* Linnaeus, 1758, which is known as "Tarende," "Tarente," "Tarentole" or "Tarentola" by the inhabitants of Provence, Sardinia and Italy (*cf.* Cetti, Daudin, Olivier and Rafinesque-Schmaltz).

Two species, *mauritanica* and *annularis*, occur in Egypt. Another species, *ephippiata*, has been recorded from the Sudan by J. Anderson (1898, p. 88), and from Air (1400 metres) in the Sahara by F. Angel, Bull. Mus. Hist. nat. Paris (2), 4, p. 385, 1932.

### 16. Moorish Gecko.

TARENTOLA MAURITANICA (Linnaeus), 1758.

*Lacerta mauritanica* Linnaeus, 1758, p. 202.

*Type-locality*.—Mauritania.

*Distribution*.—Portugal, Spain, Majorca, southern France, parts of Italy,



Sardinia, Sicily, Dalmatia, Ionian Islands, Crete, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, the African side of the Red Sea, and Sinai: also found in the eastern Canary islands—Fuerteventura, Lanzarote, Graciosa and Allegranza.

*Literature.*—*Tarentola mauritanica*. G. A. Boulenger, 1885, pp. 196 & 413. J. Anderson, 1898, pp. 86, 87, pl. 8, figs. 1, 2. D. Vinciguerra, 1927, p. 333, & 1931, p. 251.

*Occurrence in Egypt.*—The Moorish Gecko is common in the north-west of Lower Egypt along the Mediterranean coast, at Mersa Matruh (Dr. J. Anderson), Daba, about 80 miles west of Alexandria (The Rev. S. H. Hare, Chaplain, Suffolk Yeomanry, October 1916), Mariut (many specimens, Herr A. Andres and Mr. J. Lewis Bonhote), Mex (Andres), Alexandria (Anderson and Andres), Abukir (Anderson), and I have found it myself at Edku and near Sidi Abd el Rasik, between Edku and Rosetta. It is absent from the Delta and the Cairo-Giza area.

The only other records of this species occurring in Egyptian territory are:—

1. One specimen was caught at Romani in north Sinai in November 1916 by Capt. A. W. Boyd, M.C., 1/7th Lancashire Fusiliers.

2. F. Steindachner (1901, p. 328) records that the officers of the 'Pola' collected many specimens at Halaib, Upper Egypt, on the west coast of the Red Sea, and at Sahiti in Eritrea, and on Dahalak Island, off Massawa.

There appears to be no certain evidence of its ever having been found in Palestine.

### 17. Egyptian Gecko.

TARENTOLA ANNULARIS (I. Geoffroy), 1827.

*Gecko annularis* I. Geoffroy, in Savigny, Descr. Égypte, 1 (1), Rept. p. 130, 1827. v. C. D. Sherborn, Index Anim. 2, p. 341, 1923.

*Type-locality.*—"Egypt."

*Distribution.*—Egypt, Nubia, Sudan, Eritrea, Abyssinia and Somaliland.

*Literature.*—*Tarentola annularis*. G. A. Boulenger, 1885, p. 197. J. Anderson, 1898, pp. 89-91, pl. 8, fig. 3. For notes on habits etc., see:—Richard & Lucy Cottam, Sudan Notes & Records, 6, pp. 40-50, July 1923.

*Occurrence in Egypt.*—This may be an Ethiopian form that has followed the Nile down into Egypt. The only instance I know of where this species has been found north of the neighbourhood of Cairo is that in June 1917 Michael J. Nicoll and I met it in the Irrigation Rest House at Salhia, Fakus district, Sharqia Province, eastern Delta. In the Cairo-Giza area, including Embaba, Aburoash, Mena House and Abusir west of the Nile, and Ein el Shams, Heliopolis, Ma'adi and Helwan east of the Nile, this species was numerous in houses and ruined buildings. In April 1918 M. J. Nicoll found the Dashur Pyramid, El Ayat district, Giza Province, "swarming with *Tarentola annularis*." I met it in all the three districts of the Fayum, and in November 1909 a large individual, head and body 120.5 mm. in length, was caught by M. J. Nicoll on an island in the Birket el Kurun.

It occurs throughout the Nile Valley in Upper Egypt, and was particularly numerous at Aswan. On 25 February, 1901, I saw it in the ruins on the, now submerged, island of Philae, and F. Werner (1928) has recorded this species from Elephantine and Kitchener's Islands, opposite Aswan town.

*Sudan.*—I found *T. annularis* numerous in the Provinces of Dongola, Berber and Khartoum, along the Blue Nile at Wad Medani, Sennar, Singa

and Roseires, in the Shata Gardens near Suakin, and at about 3840 feet (1170 metres) above sea-level at Erkowit. F. Werner (1908, p. 1832, & 1919, p. 475) recorded it from Duem on the White Nile and from Kordofan. In June 1920 in Dongola I found that the Shagia Arabs dread *T. annularis*, which they call "Dhaba," and tell much the same stories about it as do the people in Egypt, about its partiality for salt and poisonous properties, and if a gecko is seen in a house everyone attacks it and beats the poor innocent animal to death. I put some of the geckoes for a day into an empty bird-cage belonging to General Sir Herbert Jackson: at a later date some Fire-finches were placed in this cage, the birds all died within a few days and the General was told that this was on account of the poison left behind by the geckoes.

*Food in captivity.*—It is not advisable to try to keep other lizards with this species on account of its cannibalistic tendencies: we fed them usually on insects, and I have seen one of the geckoes seize and eat such a formidable-looking Arachnoid as a full-grown lively *Galeodes arabs*.

Family AGAMIDAE J. E. Gray, 1827, p. 57.

*Type-genus.*—"Agama Oppel," i. e. Michael Oppel, 1811: should be *Agama* F. M. Daudin, 1802.

Two genera, *Agama* and *Uromastyx*, occur in Egypt.

Genus AGAMA F. M. Daudin, Hist. Nat. Rept. 3, p. 333, 1802.

"Agame vient du mot *agama*; c'est le nom que les habitans de la Guiane donnent à une espèce renfermée dans ce nouveau genre." Daudin, o. c. p. 335.

*Type-species.*—*Agama colonorum* Daudin, o. c. p. 356 = *Lacerta agama* Linnaeus, 1758, p. 207.

Six species are known definitely to occur in Egypt:—

1. *mutabilis*.
2. *pallida*.
3. *savignii*.
4. *sinaita*.
5. *spinosa*.
6. *stellio*.

Among other species occurring in Asiatic countries near Egypt, *flavimaculata* is known from Arabia, *persica* has been recorded from Transjordan by K. P. Schmidt (1932, p. 224), and true *runderata* is found in Syria.

Going south into the Sudan we meet *hartmanni* and *agama*.

### 18. Changeable Agama.

AGAMA MUTABILIS B. Merrem, Tent. Syst. Amphib. p. 50, 1820.

*Type-locality.*—Egypt.

*Distribution.*—Egypt (west of Nile), Upper Nubia (west of Nile), thence westward into parts of Cyrenaica, Tunisia and Algeria.

*Literature.*—*Agama inermis* A. Reuss, Mus. Senckenb. 1, p. 33, 1834.

*Type-locality.* Upper Egypt. Identical with *A. mutabilis* Merrem, 1820. R. Mertens, 1922, p. 171.

*Agama latastii*. G. A. Boulenger, 1885, p. 344. *Type-locality.* Egypt.

*Agama mutabilis*. J. Anderson, 1898, pp. 92-99, pl. 9, figs. 1-5.

*Occurrence in Egypt.*—In this species the scales on the upper surfaces of the thighs are uniform in size, there are *no* irregularly scattered larger scales. It is fairly common on the desert in Egypt, *west* of the Nile only, and is to be seen in March, April and the first half of May, and again in October, November and December. In January and February and from the second half of May to the end of September they appear to hide underground. They are most noticeable in the spring months, but once in the autumn, 7 November, 1922, I noted of a specimen "very bright blue underneath, and a conspicuous red mark at juncture of upper and lower jaws on each side."

The most western locality from which I have seen a specimen is Daba, about 80 miles west of Alexandria, where, in October 1916, one was caught by the Rev. S. H. Hare, Chaplain, Suffolk Yeomanry. It is numerous in Mariut, Alexandria and its environs, and at Abukir, all places close to the Mediterranean coast. Inland it is the common and, as far as I know, only *Agama* of the Wadi Natron, and of the desert southwards through the three Giza Province districts of Embaba, Giza and El Ayat, to the Fayum.

*Sudan.*—I did not meet this species myself and saw only one specimen that had been collected early in 1910 by G. Blaine in the "desert between Dongola and El Ain."

### 19. Pale Agama.

AGAMA PALLIDA A. Reuss, Mus. Senckenb. 1, p. 38, pl. 3, fig. 3, 1834.

N.B.—The figure given by Reuss is good.

*Type-locality.*—Not stated by Reuss, designated as "Sinai" by J. Anderson (1896, p. 79), and as "Upper Egypt" by R. Mertens (1922, p. 171).

*Distribution.*—Egypt (east of Nile), Sinai and southern Palestine.

The northern limit of *Agama pallida* in Palestine and Transjordan is not yet known definitely. Agamas of this group that I have seen from Syria are referable to G. A. Olivier's species *runderata*. G. A. Boulenger (J. Bombay Nat. Hist. Soc. 27, p. 351, 1920), writing of Mesopotamian specimens, says that *pallida* "should be regarded as a variety of" *runderata*; in which case *runderata* takes precedence by many years as a specific name over *pallida*. R. Mertens (1922, p. 171) retains *pallida* as a good species.

*Literature.*—*Agama pallida*. G. A. Boulenger, 1885, p. 348. J. Anderson, 1898, pp. 100–106, text-fig. 6.

*Occurrence in Egypt.*—*Agama pallida* is easier to identify in life by some characteristic actions and positions than it is as a museum specimen, but even when preserved in spirits the irregularly scattered enlarged scales on the upper surfaces of the thighs are seen easily. Its distribution within the Kingdom of Egypt, as far as now known, may be stated in four paragraphs:—

1. It is numerous in the desert on the *east* side of Cairo; I examined at least sixty individuals (1899–1923) and saw hundreds, from Abu Zabal, Khanka, Kafr el Gamus, Zeitun, Heliopolis, Abbassia, Mokattam Hills, Ma'adi, Helwan, Wadi Hof (east of Helwan), and along the Cairo–Suez Road to about halfway to Suez, and also in the desert to about ten miles due south of Basta el Gafra (No. 8 Tower).

2. West side of Suez Canal: in March 1915 Mr. D. J. Reid, Egyptian Camel Transport Corps, caught one at Faïd and one at Abu Shenab, between Faïd and Kubri.

3. Dr. J. Anderson (1898) recorded this species from Tel el Amarna in Upper Egypt, a place which I got no opportunity to visit, but where this *Agama*

might be expected to occur. Anderson's localities of " Beltim " and " Kafr Amar " are erroneous.

4. Sinai : recorded by H. C. Hart (1891, pp. 8, 15 & 210), J. Anderson (1898), L. G. Andersson (1904, p. 7), T. Barbour (1914, p. 83) and A. Andres (1920, p. 18), I found it numerous, from sea-level up to at least 1500 feet (457 metres), in the following localities :—Wadi el Arish, Lahfan, Magdhaba, Abu Aweigila, Gebel Wogair, Wadi el Gedairat, El Kossaima, Wadi el Moweilleh, Wadi el Hossani, the Maghara Hills, El Hassana, Nakhl, Ain Sudr, Sudr el Haitan, the desert east of Suez, Ain Musa and Wadi Garundel.

In southern *Palestine* I found this species to be fairly numerous.

*Habits and colour.*—In May these lizards are conspicuous on the desert, the animal appears to be blue-grey, or lead-colour, in sharp contrast to the yellow sand. When approached they remain motionless ; if picked up at once in the hand their capture is easy, but if missed at the first attempt they do not allow a second, but scamper away as best they can. *In spirits* the blue colour changes to yellow, and in some cases the head becomes red. In September and October immature individuals outnumber adults, of which males appear to be more numerous than females. Large or small there was no difficulty in catching them by hand : I caught very many, examined them and let them go free. When caught, if turned on their back and their throat and abdomen be lightly stroked with the finger, these lizards (as many other species of reptiles and mammals do) will lie motionless as if " mesmerized " and can be examined and measured. How *pallida* from its conspicuous and slow movements (slow as compared to lizards of the genera *Acanthodactylus* and *Eremias*) escapes extermination I do not know : one would imagine that, apart from carnivorous mammals and reptiles, birds of prey and ravens would eat them all up. The blue-grey colour noted in May was not seen in autumn or winter, when these lizards were usually pale yellow above, or might be reddish yellow with transverse rich maroon-brown bands, or rarely, in some localities, dark reddish almost purplish brown with narrow yellow lines intersecting the dark patches.

## 20. Savigny's Agama.

AGAMA SAVIGNII Duméril & Bibron, *Erp. gén.* 4, p. 508, 1837.

Named after Marie Jules César Lelorgne de Savigny, 1777–1851, French zoologist.

*Type-locality.*—Egypt.

*Distribution.*—Egypt (east of Nile), Sinai and southern Palestine.

*Literature.*—*Agama flavimaculata*. J. Anderson, 1898, pp. 110–114, pl. 11, which is not *A. flavimaculata* Rüppell, 1835, see G. A. Boulenger, *Bull. Soc. zool. Fr.* 44, pp. 111–115, 1919.

*Occurrence in Egypt.*—The localities of " Beltim " and " Kafr Amar " given by J. Anderson (1898) are not correct.

This species is numerous, conspicuous and easily caught, in the desert north-east of Cairo, beyond Kafr el Gamus, near Abu Zabal, and along the Cairo–Suez road. I saw many whenever I rode out there in weather suitable for these lizards to be above ground. It is also common on the desert edge near Salhia, Fakis district, Sharqia Province, from where it has a continuous distribution on the desert to the Suez Canal, along the west side of which I saw many individuals in many localities, including El Ferdan, Ismailia, Ezbet el Sahara and Serapeum.

In Sinai, it is equally numerous on the east side of the Suez Canal, at Bir el Dueida, on the Kantara-Katia road, all along the Wadi Abu Aruk and to the east of Lake Timsah. In northern Sinai it occurs near Katia and Romani and in the Maghara Hills, and I met a single specimen at Abu Aweigila, between El Arish and Kossaima, but there is no evidence so far of its occurrence in central or southern Sinai.

*Palestine.*—In 1917 Major Maurice Portal, D.S.O., caught alive two exceptionally large specimens of *Agama savignii* in southern Palestine, south of Gaza.

## 21. Sinai Agama.

AGAMA SINAITA C. H. G. von Heyden, in Rüppell, Atlas Reise nördl. Afrika, Rept. p. 10, pl. 3, 1827.

*Type-locality.*—Sinai.

*Distribution.*—Egypt (east of Nile), Upper Nubia (east and west of Nile), Red Sea Province of Sudan, Eritrea, Sinai, south Palestine and Arabia.

*Literature.*—*Trapelus sinaiticus*. H. B. Tristram, 1888, p. 154, with picture, pl. 16, fig. 3, by R. Mintern.

*Agama sinaita*. G. A. Boulenger, 1885, p. 339. J. Anderson, 1898, pp. 106–109, pl. 10, fig. 1. F. Werner, 1919, p. 476. H. W. Parker, A. M. N. H. (10) 8, p. 516, 1931.

*Occurrence in Egypt.*—In the Mokattam and other hills and on some of the desert plateaux between Cairo and Suez this species was not uncommon, and it was easy to catch specimens in the Wadi Hof, Helwan, but it is a curious fact that in the years 1898–1924 not a single specimen was ever brought into Giza, or offered for sale elsewhere, by Bedawin or Egyptians. Farther south in the Eastern Desert individuals were collected by G. W. Murray, M.C., at Wadi Helal (east of Nile), Edfu district, Aswan Province, in 1914, and, three specimens, at Wadi Gul'an, about 24° 22' N. by 35° 17' E., approximately about 153 miles east of Kom Ombo on the Nile, in January 1924.

*Sinai.*—Not known from northern Sinai or from the central limestone area, this species has been recorded from the southern part of the peninsula and from near Akaba by H. C. Hart (1891, pp. 13, 15, & 210), F. Steindachner (1901, p. 328) and T. Barbour (1914, p. 82). In south Sinai on 21 May, 1918, after crossing the Nakbt Ajaweh into Wadi Hebran I saw an *Agama sinaita* at an elevation of about 3100 feet above sea-level, and a second individual at about 2600 feet. Both were seen when they were sitting on the tops of boulders in the full sunlight and they were very conspicuous. Having caught them I found that they were both adult females, the one from 3100 feet was in total length 234 mm. (or nearly 9¼ inches), and on 26 May, 1918, in the Wadi Rahaba at about 5300 feet (1615 metres) I met several of these lizards, always perched on the tops of big rocks. Their colouring draws attention to them from a distance. The whole head, neck and shoulders are a most brilliant "electric" blue, the remainder of the animal being uniform "kharki" brown. When approached closely these lizards dart away, and disappear into crevices of the rocks. It appeared to me that each individual lizard has its post on the top of a boulder where it sits in the sun and waits for its insect prey, and has also its regular line of retreat to its own particular spot to "take cover" in.

In comparing Hart's remarks with my own it must be remembered that he traversed this district in November. I have noticed that *Agama pallida* is a very conspicuous object on the desert in the spring or early summer, but

“ assimilates itself to its surroundings ” in the autumn months. It is probable that the same is the case with *Agama sinaita*.

*Sudan*.—*Agama sinaita* occurs in the hills of the Red Sea Province; A. L. Butler has collected it at 3000 feet above sea-level and I at about 3800 feet (or 1160 metres).

In June 1920 I met this species at Uli and at Kulgeili, both on the left bank of the Nile, in the Merowe district of Dongola Province. Sheik Hassan el Tayib, Omdeh of Kulgeili, told me that this lizard is considered harmless by the Shagia Arabs, who call it “ Marg-ai-ain.”

*Notes on colour changes*.—1. On 15 March, 1912, Mrs. S. S. Flower caught three Sinai Agamas in the Wadi Hof, Helwan: one of these was found to have its left fore foot missing, an old injury, as the stump was completely healed; in spite of this deficiency it could run fast, when going at full speed it appeared to use its hind legs only: when caught its colour was yellowish, but after a few days in captivity at Giza it assumed a blue head.

2. An individual in Dongola Province, 16 June, 1920, was coloured like the Sinai ones, that is the front and sides of the head, sides of neck, shoulders and front of upper arms *bright blue* and the rest of the lizard kharki. In captivity at Giza this specimen assumed a different appearance, at noon, 1 August, 1920, I noted:—“ He ’ was lying prone on a rock in the sunshine: eye very bright: tail hidden in a crevice. Head, sides of shoulders and fore arms *pale chocolate red*: otherwise the lizard was dull brown, with four noticeable dark brown transverse stripes, these stripes were arranged in pairs, one pair on the shoulders the other on the loins.”

## 22. Gray's Agama.

AGAMA SPINOSA J. E. Gray, in E. Griffith, Anim. Kingd. 9, Syn. p. 57, 1831.

*Type-locality*.—Africa.

*Distribution*.—Upper Egypt (east of Nile), Red Sea Province of the Sudan, Eritrea, Abyssinia and Somaliland. Sinai?

*Literature*.—*Agama spinosa*. G. A. Boulenger, 1885, p. 355. J. Anderson, 1898, pp. 114–118, pl. 10, figs. 2 & 3, & 1900, pp. 419 & 424. H. W. Parker, P. Z. S. 1932, p. 352.

*Occurrence in Egypt*.—For many years only known from the three old specimens in the British Museum presented by James Burton (1788–1862) and Sir John Gardner Wilkinson (1797–1875).

J. Anderson (1900) recorded that D. MacAlister collected “ in the neighbourhood of the Emerald Mines on the coast of the Red Sea, in nearly the same latitude as Assuan,” i. e., *circa* 24° N., and presented to the British Museum, “ Two specimens, differing in no respect from the examples from Suakin. As already pointed out by me, the type of this species, presented very many years ago to the British Museum by James Burton, the distinguished Egyptologist, came, in all likelihood, from the Eastern Desert about the latitude of Keneh,” i. e., *circa* 26° 11' N.

Personally I know this species only from Erkowit, in the hills of the Red Sea Province of the Sudan, where it has been collected also by A. L. Butler.

T. Barbour (1913, p. 146), in describing the collection made in the winter of 1912–1913 by Drs. John C. Phillips and Glover M. Allen in the Blue Nile country, says that these travellers met with *Agama spinosa* “ commonly throughout their journey, and it was apparently the only member of the genus that they procured. The series preserved consists of 6 specimens from Singa, 4 specimens from Gabbardi, and 8 specimens from Fazogli.”

T. Barbour (*l. c.*) points out the difficulty of understanding the conceptions of F. Werner regarding the *Agama* forms that have been called *colonorum*, *doriae*, *hartmanni* and *spinosa*.

In my own opinion *spinosa* may be one of the many local forms of the very wide-spread species *Agama agama*.

#### Hartmann's Agama.

AGAMA HARTMANNI W. C. H. Peters, Mon. Kön. Preuss. Akad. Wiss. Berlin, January 1869, p. 65.

Named after Dr. Carl Eduard Wilhelm Robert Hartmann, 1832–1893.

*Type-locality*.—Dongola Province, Sudan.

*Distribution*.—Sudan, Abyssinia, Somaliland, Kenya Colony.

*Literature*.—*Agama hartmanni*. G. A. Boulenger, 1885, p. 340. J. Anderson, 1898, pp. 119–121. A. Loveridge, 1929, p. 56 [Rejaf, south Sudan].

*Agama doriae* G. A. Boulenger, Ann. Mus. Genova, (2) 2, p. 127, 1885.

*Type-locality*. Keren, Bogos, north Abyssinia, & 1887, p. 495.

The *Agama* which I found to be very numerous along the Blue Nile at Sennar, Eneikliba, Singa and south to Roseires, I considered might be *hartmanni*.

#### Sennar Agama.

AGAMA SENNARIENSIS F. Werner, Anz. Akad. Wiss. Wien, 51, no. 27, p. 393, 1914, "near *colonorum*."

*Type-locality*.—Sennar, Blue Nile, Sudan.

*Literature*.—*Agama doriae sennariensis*. F. Werner, 1919, p. 479, pl. 1, figs. 4, 4 a.

#### Linnean Agama, or Margouillat.

AGAMA AGAMA (Linnaeus), 1758.

*Lacerta agama* Linnaeus, 1758, p. 207.

*Type-locality*.—"America."

*Distribution*.—Tropical Africa: from Senegambia south to Angola, and east to the East African colonies, Eritrea and the Anglo-Egyptian Sudan.

*Literature*.—*Agama colonorum*. F. M. Daudin, Hist. Nat. Rept. 3, p. 356, 1802. G. A. Boulenger, 1885, p. 356. G. Scortecchi, 1928 & 1930 (2) [Eritrea].

This lizard is numerous in the southern Sudan, at Bor, Malek, Mongalla, Gondokoro and Rejaf on the Bahr el Gebel, and was first found in the Bahr el Ghazal Province by A. L. Butler in 1907.

#### MR. H. W. PARKER ON SUDAN AGAMAS.

Mr. Parker, at my request, has been so good as to re-examine the Sudan Agamas in the British Museum and, after my paper had been read, I received the following interesting letter from him, dated British Museum, 1st July, 1933.

"There are three forms distinguishable, briefly, as follows:—

I. Outer toe extending well beyond the inner: a nuchal crest; spines above the ear well marked; a gular sac and transverse gular fold; size large (largest ♂ 132 mm. from snout to vent) and habitus stout. No light line along the

back. Scales around the body *circa* 70-75; ventrals and inferior femorals small.

A. Tail of male distinctly compressed and crested; gular sac black-tipped. Sennar Province.

B. Tail of male scarcely compressed and without a crest; gular sac uncoloured (? red in life). Kordofan, Bahr-el-Ghazel and Mongalla.

I cannot, at the moment, differentiate the females of these two.

II. Outer toe not, or only slightly, extending beyond the inner; no nuchal crest; spines about the ear very small; no marked gular sac or transverse gular fold, but a small prehumeral pit; size small (largest ♂ 97 mm. from snout to vent) and habitus slender. Very frequently a narrow golden line along the back. Scales around the body *circa* 65; ventrals and inferior femorals larger.

Tail of male cylindrical; whole of throat infuscate, brownish.

White Nile Valley.

A and B above, I consider to be races of *Agama agama*. The Eastern form is certainly *doriae*, of which presumably *sennariensis* is a strict synonym. The western form may be *A. a. agama*.

The third form is almost certainly a distinct species which is wedged in between the two races of *Agama agama* and probably overlaps the ranges of both. Judging from the original description and Werner's (1908) remarks on *A. hartmanni* I have very little doubt that this is the name which should be applied to it.

Our material on this grouping is:—

*Agama agama agama*.

1911.7.15.18.19.	♂ & ♀	Malek, Bahr-el-Gebel.	Rev. A. Shaw.
1920.8.7.1.	♂.	Abu Haraz, Kordofan.	Adm. Lynes.
1927.8.13.17.18.	♂, ♂.	Rejaf.	Flower.
1927.8.13.19-28.	♂♂♀♀ juv.	El Obeid.	"
1927.8.13.29-37.	"	Mongalla.	"
1907.10.24.5.	♂, juv.	Between Wau and Chak Chak, Bahr-el-Ghazel.	Butler.
1913.19.6.6.	♂.	El Obeid [!].	Flower.

*Agama agama*. No males available:—so subspecific name based purely on localities. *Agama agama agama*.

1930.11.12.1-5.	♀♀ & juvs.	Talodi.	(Sudan Govt. Mus.).
1905.11.25.1, 2.	♀♀.	Bor, Bahr-el-Gebel.	Garstin.

*Agama agama doriae*.

1911.7.15.1-6.	♂♂ & juvs.	Singa, Blue Nile.	Flower.
1914.5.14.4-11.	♂♂, ♀♀ & juvs.	Singa, Blue Nile.	Lowe.
1909.10.15.19.20.	♂♂.	Roseires, Blue Nile.	Flower.

*Agama agama doriae*. Subspecific name based on locality.

1907.12.2.21.	Juv.	Abzoghli, Blue Nile.	Loat.
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*Agama hartmanni*.

1913.9.16.8-11.	♂♂♀♀.	Singa.	Flower.
1901.7.13.1.	♂.	20 miles N. of Fashoda.	Hawker.



1913.9.16.7.	♂.	Sennar Province.	Flower.	
1914.8.17.6.	Juv.	Singa.	Flower.	
1905.10.16.50.	Hgr.	Chartoum.	McMillan.	
1907.12.2.10.	♀.	Goz-abu-Gumah.	Loat."	[End of Mr. Parker's letter.]

### 23. Starred Agama.

AGAMA STELLIO (Linnaeus), 1758.

*Lacerta stellio* Linnaeus, 1758, p. 202.

*Type-locality*.—Delos in the Cyclades, v. F. M. Daudin, Hist. Nat. Rept. 4, p. 15, 1802, and Mertens & Müller, 1928, p. 26.

*Distribution*.—Levant Countries: Cephalonia, Greece, Salonica, Hortiach Plateau, Xanthus, Cyclades (Antiparos, Delos, Milos, Mykonos, Naxos, Paros), Chios, Rhodes, Cyprus, Asia Minor, Upper Mesopotamia, Kurdistan, Syria, Transjordan, Palestine, Sinai and a small part of north-west Lower Egypt.

*Literature*.—*Agama stellio*. G. A. Boulenger, 1885, p. 368. J. Anderson, 1898, pp. 122–124, text-fig. 7. T. Barbour, 1914, p. 83. K. P. Schmidt, 1932, p. 224.

*Subspecies?*—Superficially there appear to be three subspecies, or geographical races, of *Agama stellio* in the area treated of in this paper:—

1. The usually dull-coloured small form from Alexandria, which has been introduced to the Cairo–Giza neighbourhood.

2. The brightly coloured medium-sized form that is so very numerous in Palestine, and which extends into northern Sinai.

3. The form of the granite mountains of southern Sinai.

To settle this question it would be necessary to have a thorough knowledge of the variations of the species throughout its wide distribution.

*Occurrence in Egypt*.—The Starred Lizard, or "Hardûn," occurs in only one part of Egypt in Africa—that is to say, at Alexandria and in the environs of that city. I noted it as being numerous from Um Siraya, at the east end of the Mariut district to the quarries west of Mex, and in suitable localities from near the main Railway Station, through Hadra, Nuzha, Sidi Gaber, Ramleh, San Stefano, and Mandara (J. L. Bonhote, 1915) to as far east as Abukir—that is to say, a stretch of country along the Mediterranean coast about twenty miles long by less than two miles wide.

Individuals from Alexandria in recent years—that is to say, since Dr. John Anderson was in Egypt—have been introduced artificially into two public gardens near Cairo, first the Giza Zoological Gardens, second the Delta Barrage Gardens. The first introduction to Giza is said to have been made by Mr. W. E. Jennings Bramly in, or shortly before, 1896. Anyway by the beginning of October 1898 the species appeared well established there. Subsequently in 1901 several dozen more specimens were sent from Alexandria and liberated at Giza: after this they bred every year and the numbers seemed to increase, but it was interesting to notice that in over 25 years no spreading took place, the lizards remained inside the Giza Gardens, in an area of about a hundred acres. The Delta Barrage Gardens, at the point where the Rosetta and Damietta branches of the Nile commence, are about fifteen miles north-west of Cairo: in February 1908 I first noticed *Agama stellio* there, and Mr. Walter Draper, the Superintendent, told me that these lizards had been introduced from Alexandria to protect the plants from damage by rats! The species became well established, but, as far as I know, up to 1923, did not spread, which is remarkable, as some of the neighbourhood,

especially the banks of the Rayah Menafia (taking water to the Bahr Shebin), looks suitable for the wants of the "Hardûn."

It will be an interesting fact in animal distribution, to be looked out for in the future, to ascertain for how long these artificial colonies remain and when, if ever, they will commence spreading.

It may be that the presence of this species in Alexandria is the result of introduction by human agency, perhaps from Greece?

*Sinai*.—The scarcity of this species in North Sinai as compared to its abundance in South Palestine, as for instance at Beersheba and at Gaza, is remarkable. I only saw three individuals; one that I caught on barren rocky ground, at about 800 feet above sea-level, about three miles west of El Kossaima, north-east Sinai, 30 September, 1918; one small specimen that I caught on very bare rocky ground, at about 100 feet above sea-level, near Bir el Maghara, 13 October, 1918; and a female caught by the late Monsieur R. Fourteau, of the Egyptian Geological Survey, on Gebel Dhalfa, north-east Sinai, 7 April, 1920.

From South Sinai *Agama stellio* has been recorded by T. Barbour (1914, p. 83), in May 1918 I met this lizard on three occasions. On the 20th in the Wadi Firan, at just above 2000 feet elevation, I saw a pair on the top of a huge block of granite. They were conspicuous from a distance and made a very fine, almost imposing, sight, as with heads well raised they sat motionless in the bright sunshine. On my close approach they both dived down into a fissure of the rocks. Being anxious to see them closer, as they differed from Egyptian *A. stellio* in larger size and darker colour, I had to resort to smoking them out of their retreat with a fire of dry date-palm leaves. On the 26th in the Wadi Rahaba, at 5300 feet (1615 metres), there were several of these lizards all seated on the tops of big granite blocks; on the same rocky clumps were specimens of *Agama sinaita*. The *stellio* were easily distinguishable at a distance of many yards from the *sinaita* by the dull black colour of their heads, their stouter build, their ringed tails and the different shape of their hind feet, in *stellio* the fourth toe is the longest, whereas in *sinaita* the third toe exceeds the fourth in length. On the 29th I saw several of these fine and conspicuous animals on the steep hill side of granite rocks above the Convent of St. Catherine at 5000 to 5200 feet above the sea.

*Palestine*.—The Starred Agama is extremely numerous and widely distributed (H. B. Tristram, 1888, p. 154, as *Stellio cordylina*), occurring from sea-level up to 9843 feet (3000 metres) on Mount Hermon (F. Werner, 1898, p. 2). During the years 1917–1920 specimens were received at the Giza Zoological Gardens that had been collected at Gaza, Ramleh, Ludd, Jenin, Saronia near Jaffa, and at Surafend, halfway between Bir Salem and Wadi Rubin, and presented by Brigadier General F. FitzH. Lance, M.C., Capt. Charles Mellows and Major Maurice Portal, D.S.O., and in 1922 from Baalbek in Syria collected and presented by Prof. Edward Hindle.

Personally I have noted this species from in the south at Khan Yunas, Shellal on the Wadi Guzzee and Beersheba, northward to Mount Carmel. At Gaza it was particularly numerous: scores and scores of individuals were to be seen on walls, ruins, earth-banks, prickly-pear hedges etc. In the Judæan Hills it was also very numerous on rocks and on the stems of olive trees.

*Colour in life*.—Egyptian specimens are nearly uniformly coloured, yellowish brown or grey, rarely nearly black and are without prominent markings. Palestine specimens usually have red or yellow patches on the head, symmetrical blotches of red or yellow down the back and small red or yellow spots

on the legs, and the tail appears in alternate rings of pale yellowish red and dull greyish brown: in many adults the body-markings are vivid red, and I have seen specimens with such bright red heads that they reminded me of the brilliant-coloured *Agamas* of the Sudan. T. Barbour (1914, p. 83) has called attention to the very handsome and brilliant coloration of adult males from El Kerak, east of the Dead Sea.

*Gular pouch*.—It has been stated that this species has no gular pouch, actually at times *Agama stellio* distends a large gular pouch, which, when dilated, is very noticeable in the adult animal. I have noted this frequently at Giza—at any rate, in the months of February, March, April, May, August and October.

*Habits at Giza*.—During the colder months these lizards hide in holes and crevices. On 5 January, 1905, I found eight individuals hibernating in a hole in an old wall. On 31 January, 1907, I found two hibernating in a similar cavity. In January and February they are seldom seen, for the rest of the year they are conspicuous daily in the Gardens. Very young individuals, apparently just hatched, were seen usually in the first week in August (1908–1920).

These lizards are essentially diurnal: at night they sleep so soundly that they can be picked up and handled without being awakened.

When running fast on a garden path they will at times run on their hind legs only, but only for a yard or two.

Genus *UROMASTYX* B. Merrem, Tent. Syst. Amphib. p. 56, 1820.

*Type-species*.—*Uromastyx spinipes*. "Habitat in Aegypto" = *Uromastyx aegyptia* (Forskål).

According to J. E. Gray (1827, p. 58) the type-species is *Uromastix acanthinurus* Bell, 1825, now known to be a different species from the *Stellio spinipes* of Daudin, 1803, which is a synonym of *Lacerta aegyptia* Forskål, 1775.

Four species occur in our area:—

1. *ocellatus*. Sudan, with a variety in Upper Egypt.
2. *ornatus*. Sinai.
3. *aegyptia*. Egypt (east of Nile) and Sinai.
4. *acanthinurus*. Sinai and Nubia.

#### 24. Eyed Dabb-Lizard.

*UROMASTYX OCELLATUS* H. Lichtenstein, Verzeich. Doubl. Zool. Mus. Berlin, p. 107, 1823.

*Type-locality*.—Nubia.

*Distribution*.—North-east Africa: the Dongola and Red Sea Provinces of the Sudan and parts of Upper Egypt east of the Nile.

Represented in Somaliland by *Uromastix macfadyeni* H. W. Parker, P. Z. S. 1932, p. 353.

*Literature*.—*Uromastix ocellatus*. J. Anderson, 1898, pp. 127, 128, pl. 12.

*Occurrence in Egypt*.—One specimen was caught in Upper Egypt in January 1924 by Capt. G. W. Murray, M.C., in the Wadi Gul'an, about 24° 22' N. by 35° 17' E., or approximately 153 miles east of Kom Ombo on the Nile.

This did not appear to be a typical *ocellatus*, but to represent an individual, or possibly a geographical, variety. I noted that it had:—

- Number of scales round fattest part of body, about 249.  
 ,, scales across back, between hind legs, about 56.  
 ,, ventral scales, between gular and inguinal folds, about 115.

Ear without denticulations. No enlarged tubercles on pelvic region. Femoral pores, 15 on each side. Arms covered with small uniformly-sized scales. Legs covered with small scales with irregularly scattered large pointed tubercles, which were most numerous below the bend of the knee. Tail divided into 28 whorls above, and 25 on lower median surface.

*Sudan.*—The late General Sir Herbert W. Jackson, K.B.E., C.B., presented a live specimen from the Dongola Province to the Giza Z. G. 24 May, 1906, and thanks to his assistance I was able to obtain thirteen more alive in the Merowe district in June 1920 and learn something of their ways, but it is to small children tending goats that I owe the actual pleasure of seeing these nice lizards in their natural home. In the rugged country of the 4th Cataract

Dimensions of *Uromastix ocellatus*.

Locality.	Wadi Gul'an, Upper Egypt.		Merowé district, Dongola Province.					
	Received, in spirits, from G. W. Murray, 5.2.1924.		Died in captivity.					
Date .....	G. W. Murray, 5.2.1924.		12.9.1920.		19.2.1921.		19.2.1921.	
Sex .....	*		♀.		♀.		♂.	
Length :	mm.	per cent.	mm.	p.c.	mm.	p.c.	mm.	p.c.
snout to vent .....	175	100	137	100	140	100	169	100
tail .....	141	80.51	101	73.7	121	86.4	147	86.7
total .....	316	180.43	238	173.7	261	186.4	316	186.5
axilla to groin .....	106	60.52						
Arm, measured anteriorly to end of longer claw. }	61	34.83						
Leg, ditto .....	80	45.68						
Head, length .....	37	21.12						
„ width .....	32	18.27	..	..	27	19.3	34	20.3
„ depth .....	21	11.99						
Maximum width :								
body .....	60	34.26						
tail, at 3rd whorl from base .....	26	14.84						

Note 1.—\* not dissected, as the specimen was to be sent to the British Museum.

Note 2.—In the pair that died 19 February, femoral pores were conspicuous in the male, inconspicuous in the female.

Note 3.—In the two females that died 12 Sept. and 19 Feb. right and left ovaries were about equally developed : on 12 Sept. evidently in a non-functional period.

the lizards live, apparently in pairs, in holes among the rocks, in summer they come out in the early morning to feed on leaves, but remain in their holes during the heat of the day. The Shagia Arabs call *U. ocellatus* "Dûn-dûn-e," they have no other name for it, and apply the name "Dabba" to the Gecko *Tarentola annularis*. These Arabs are mortally afraid of the Gecko, but not of the *Uromastix*, which the poorer people and children hunt for, cook and eat. In captivity at Giza these lizards eat green leaves of various kinds, especially those of the "Sont" tree, an *Acacia*. With a choice of various leaves, of sliced water-melon, of raw meat etc. I noted an *ocellatus* deliberately choosing to make a meal of dry "Orton" seeds, which it picked up seed by seed and appeared to crush in its jaws with great relish. These lizards were awake or asleep by day, but always in profound slumber by night.

**25. Ornate Dabb-Lizard.**

UROMASTYX ORNATUS C. H. G. von Heyden, in Rüppell, Atlas, Reise nördl. Afr. Rept. p. I, pl. 1, 1827.

*Type-locality*.—Mohila or Moila, Arabia, on the east coast of the Red Sea.

*Distribution*.—Arabia and Sinai.

*Literature*.—*Uromastix ornatus*. J. Anderson, 1898, pp. 128, 129, pl. 13. F. Steindachner, 1901, pp. 328, 329, pl. 1, figs. 1-1 c. T. Barbour, 1914, p. 83.

*Occurrence*.—Personally I did not meet this species. One from Sinai, from W. Schlüter, is mentioned by F. Werner (1893, p. 359). J. Anderson (1898) says that the individual he figured "came from an altitude of 500 metres in the granitic region of Mount Sinai," he does not say how the specimen came into his possession, or for how many years it had been in alcohol before it was figured, for in comparing Anderson's plate 13, with his plate 12 of *U. ocellatus*, it must be remembered that *ocellatus* was coloured from several living specimens while *ornatus* was done from a single spirit-specimen.

The officers of the 'Pola' purchased eleven specimens alive from Bedawin in Sinai, obtaining them at three localities—Tor on the west coast of the peninsula, Dahab on the east coast and Sherm Sheikh at the extreme south. F. Steindachner (1901) described their wonderful coloration, illustrated by some beautifully drawn figures by E. Konopicky.

**26. Egyptian Dabb-Lizard.**

UROMASTYX AEGYPTIA (Forskål), 1775.

*Lacerta aegyptia* P. Forskal, Descr. Anim. p. 13, 1775.

*Type-locality*.—Egypt.

*Distribution*.—Egypt (east of Nile), Sinai and northern Arabia.

N.B.—The often-repeated statement that it occurs in Crete is an error.

*Literature*.—*Uromastix spinipes*. G. A. Boulenger, 1885, p. 407.

*Uromastix aegyptius*. J. Anderson, 1898, pp. 129-131, pl. 14.

N.B.—Anderson's locality "Beltime" is an error.

*Occurrence in Egypt*.—As far as I could find out, this species only occurs east of the Nile: in the desert country between Cairo and Suez and in Sinai. Mr. C. G. A. Sibeth caught one himself on 26 June, 1910, in the Wadi Hof, Helwan, which he presented to the Giza Z. G. the following day. Major F. W. Borman caught one, 21 March, 1921, at the mouth of the Wadi Digla, between Cairo and Helwan. Mr. A. H. Plummer obtained one, 12 May, 1922, on the desert near Khanka, north-east of Cairo. My personal experience of this lizard in the wild state is confined to the desert along the Cairo-Suez road, from near Cairo to near Suez, in the months of April, May and June only.

*Sinai*.—Recorded from Sinai by F. Steindachner (1901, p. 328), L. G. Anderson (1904, p. 7) and by A. Andres (1920, p. 19). One adult and one juvenile specimen were caught alive by the late Monsieur R. Fourtau, of the Geological Survey, Cairo, in May 1920 at El Turkmania, Maghara, north Sinai. Fourtau presented these to the Giza Z. G. 3 June, 1920.

*Colour in life*.—This lizard can change rapidly the general colour of its body and limbs from blackish grey to pale sandy yellow. On the desert, in May and June, these animals are conspicuous from a distance by having black heads and necks, on approaching closer one sees that the colour is not really black but an intense royal blue. They sit in the sunshine, with their heads elevated, on the borders of their burrows, into which they dive when one tries to approach still closer.

Individuals lived in captivity at Giza for periods of 9, 10, 11, 11½ and over 15 years, but never assumed this blue colour.

The irides are conspicuous—reddish brown or crimson in colour.

*Size*.—The smallest (juvenile) specimen that I measured was in total length 207 mm. (head and body 122, tail 85). Adults of over 600 mm. were common, the largest I measured was 662 mm. (head and body 375, tail 287). A stuffed specimen purchased in Cairo in 1898 was in total length, as stuffed, 680 mm., or 2' 2¾".

Healthy adults weighed 1.5 to 1.6 kilos.—say, 3½ lbs.

*Voice*.—Though usually silent (at any rate, to human ears), at times they utter a sort of guttural cackling, which is only audible when one is within three or four yards of the lizard.

*Habits*.—They can run with surprising speed, climb with agility and hide away in holes underground with great celerity. If cornered some individuals strongly resent being handled, they bite fiercely and also strike sideways with their formidable tails. The hotter the day and the brighter the sunshine the more active they become and the more they eat, but they cannot stand prolonged exposure to the sun, *they must have shade to retire into when they please*. So in captivity plenty of such bedding as leaves, plant-stems, stones and sand, for them to burrow under, is essential for their well-being. At night, and in dull and cold weather, they do not feed and become very sluggish, sometimes so much so that an individual placed on its back will remain lying in that position.

*Food in captivity*.—In Egypt, chiefly lettuce, but also cabbage and other garden leaves: they eat the kind of clover called "bersin" readily, and also the fruit of the Prickly Pear. Some individuals will eat boiled rice. We used to put ripe dates in their cages, but the lizards made no attempt to eat the dates.

We always provided these animals with water, but I never saw one drink, except once in April 1907 when I saw a Dabb-Lizard apparently engaged in drinking—this individual died a few days later.

*Folk-lore*.—Though "Dabb" is the common Egyptian name for *Uromastix*, it is spoken of, in the presence or possible presence of the lizard, by desert Arabs as "Abu Hamed." The many and curious tales that are told about this remarkable-looking animal do not necessarily belong to *Uromastix aegyptia* as a species, but to the genus *Uromastix* generally. Prof. J. J. Hess, of Zürich, told me the story he had heard from Arabs, how "Abu Hamed" was a blacksmith, his tail his file and his lungs his bellows, and at the time when wild animals spoke he was the Sheik of all the animals. Prof. Hess also kindly referred me to the book of Charles M. Doughty, 'Travels in Arabia Deserta,' 1888.

## 27. Bell's Dabb-Lizard.

UROMASTYX ACANTHINURUS T. Bell, Zool. Journ. London, 1, p. 457, pl. 17, 1825.

*Type-locality*. Africa, the two type-specimens were brought home by Capt. Lyon, R.N.: restricted to Algeria "near Biskra, northwards to El Kantara." E. Hartert, 1913, p. 80.

*Distribution*.—Morocco, Algeria, Tunisia, Tripoli and, very locally, in Nubia, and in southern Sinai.

*Literature*.—*Uromastix acanthinurus*. G. A. Boulenger, 1885, p. 406. J. Anderson, 1898, pp. 131, 132, pl. 15.

*Uromastix dispar* Heyden, 1827, from Ambukol. Type-specimen is identical with *U. acanthinurus* Bell. R. Mertens, 1922, p. 172. This was from the Hemprich and Ehrenberg collection: native name "Dendene" (Heyden, *o. c.* p. 5).

*Occurrence in Egypt.*—I have never met this species in a wild state. F. Steindachner (1901, p. 328) recorded that the officers of the 'Pola' purchased a female specimen alive from the Bedawin at Sherm Sheikh, at the extreme south of the peninsula of Sinai.

*Sudan.*—In May 1900 Lieut. W. E. Longfield, R.E., gave me a specimen, in spirits, at Wadi Halfa, that he had obtained locally, it is now in the British Museum. On 1 March, 1910, Mr. Gilbert Blaine presented two individuals alive to the Giza Z. G. which he had obtained "from the desert between Dongola and El Ain," and 8 January, 1914, another specimen from the Dongola Province was received at Giza from Mr. A. L. Butler.

Family CHAMAELEONIDAE J. E. Gray, 1827, p. 57,  
and A. C. L. G. Günther, Rept. Brit. Ind. p. 162, 1864.

Camelionidae J. E. Gray, 1825, p. 200.

Chamaelionidae J. E. Gray, 1825, p. 212.

Chamaeleontidae E. D. Cope, Proc. Acad. Nat. Sci. Philad. 16, p. 226,  
October 1864.

*Type-genus.*—*Chamaeleon* Gronovius, 1763.

Genus CHAMAELEON L. T. Gronovius, Zoophyl. fasc. 1, p. 12, 1763.

Antedates *Chamaeleo* J. N. Laurenti, Syn. Rept. p. 45, 1768.

*Type-species.*—*Lacerta chamaeleon* Linnaeus, 1758.

Two species occur in Egypt, *chamaeleon* and *africanus* (often known as *basiliscus*): other forms known from the southern Sudan are *senegalensis laevigatus* and *gracilis*, and the Arabian species *calypratus* was originally said to be from the Nile.

## 28. Chameleon.

CHAMAELEON CHAMAELEON (Linnaeus), 1758.

*Lacerta chamaeleon* Linnaeus, 1758, p. 204.

*Type-locality.*—North Africa: as restricted (Mertens & Müller, 1928, p. 25).

*Distribution.*—Countries bordering the Mediterranean Sea: southern Spain, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Sinai, Palestine, Syria, Asia Minor, Cyprus, Chios, Samos and is said to have been introduced into the Canary Islands.

*Literature.*—*Chamaeleon vulgaris*. G. A. Boulenger, 1887, p. 443. J. Anderson, 1898, pp. 225–228, pl. 29. A. Andres, 1920, p. 20. D. Vinciguerra, 1927, p. 329.

*Chamaeleon vulgaris musae* F. Steindachner, 1901, p. 331. *Type-locality.* Moses Wells, near Suez.

*Chamaeleon chamaeleon*. S. S. Flower, P. Z. S. 1925, pp. 955–958. [Habits, duration of life, etc.]

*Chamaeleo chamaeleon chamaeleon* and *C. c. saharicus* R. Mertens, 1929, pp. 292, 298.

*Occurrence in Egypt.*—The distribution of the two species of Chameleon

in Egypt is interesting, their areas do not overlap and in each case appear to be limited by the distribution of the Hooded Crow *Corvus cornix* (or *Corvus corone sardonius*), as shown on the map.

*C. chamaeleon* appears to be a Palaearctic form that at some earlier time inhabited all the country of what is now Lower Egypt, while *C. africanus* is probably an Ethiopian form which followed the Nile northwards.

At the present day *C. chamaeleon* inhabits two parts of Egypt divided by the Nile valley and its delta. To the west it occurs in the desert in places where there is a certain amount of vegetation from Mersa Matruh to Mariut, and inland to the Wadi Natron, where it is abundant. To the east its distribution may be considered continuous, allowing for the destruction of desert vegetation in many localities in recent years, from the east of Cairo to Palestine. Prof. F. Werner (1919, p. 501) mentions a specimen caught by Herr Höfler on a little bush in the desert near Heliopolis. I met it on the edges of the Salhia desert, Fakus district, Sharqia Province, in 1912 and 1917, from where it is abundant to the west side of the Suez Canal at Kantara, El Ferdan, Ismailia (five caught, two on castor-oil plants, three on "lebbek" trees, in Sept. 1901, and many seen in 1915), Ezbet el Sahara and Serapeum.

*Sinai*.—*C. chamaeleon* is equally numerous on the east side of the Suez Canal, almost everywhere if there is any vegetation regardless of irrigation, and all through northern Sinai through Katia to El Arish, and even on low scrubby shrubs on the open wind-swept plateau of central Sinai.

*Palestine*.—*C. chamaeleon* is even more numerous in Palestine, and appears to be very widely distributed and to flourish as well at about 1250 feet (381 metres) below sea-level near the Dead Sea as at 2525 feet (800 metres) above the sea in the Lebanon (H. B. Tristram, 1888, p. 154; F. Werner, 1898, p. 4). During the years 1917–1920 twelve Chameleons were received alive at the Giza Zoological Gardens that had been caught at Khan Yunis, Gaza, Bir Salem, Surafend, Jenin, and Haifa.

## 29. Basilisk Chameleon.

CHAMAELEON AFRICANUS Laurenti, 1768.

*Chamaeleo africanus* J. N. Laurenti, Syn. Rept. p. 46, 1768, "Seba, I. 43.4," "founded on fig. 4, pl. 83, of the first vol. of Seba," J. Anderson, 1898, p. 232.

Dr. Malcolm A. Smith wrote to me from the British Museum, 22 March, 1933, "I have been into the question of *Chamaeleo africanus* with Parker. Seba's figure might stand for the *basiliscus* of Cope or for *calcaratus*. You could, therefore, either follow Anderson's example and place *africanus* under *basiliscus* with a query, or call it *africanus*," and on the 6 April, 1933, "I have discussed the matter with several men in the Museum. The majority favour the view that if you can with reason pin an older name down to something it is advisable to do so. It gets it out of the way instead of leaving it with an eternal query. In your case you are only concerned with two species, and you have the name *africanus*, the home of one of them, available. In spite of the fact, therefore, that many of Seba's localities are totally incorrect, you seem to be justified in quoting this locality as a good one."

Following on this enquiry I quote as synonyms :—

- (1) *Chamaeleo mexicanus* J. N. Laurenti, Syn. Rept. p. 45, 1768. Though *mexicanus* has page priority to *africanus*, both Seba's figure (pl. 82, fig. 1) and the geographical name render it too doubtful to be now recognized.



(2) *Chamaeleo calcaratus* B. Merrem, Tent. Syst. Amphib. p. 162, 1820.

*Type-locality*.—Africa.

Not *Chamaeleon calcaratus*. G. A. Boulenger, 1887, p. 445.

N.B.—The Indian Chameleon is very closely allied to the Basilisk Chameleon. In some living specimens of the Basilisk Chameleon the occipital dermal lobes may be sufficiently developed to be felt in one's fingers. The Indian Chameleon appears to require a specific, or a subspecific, name.

(3). *Chamaeleon basiliscus* Cope, 1868.

*Chamaeleo basiliscus* E. D. Cope, Proc. Acad. Nat. Sci. Philad. 20, p. 316, 1868.

*Type-locality*.—Korosko, El Derr district, Aswan Province, Egypt. The type-specimen was collected by Prof. H. A. Ward (Cope, *l. c.*), and is now in the Museum of Comparative Zoölogy, Cambridge, Mass., U.S.A. (Barbour & Loveridge, 1929, p. 238).

*Distribution*.—Lower Egypt (in western and north-central Delta only), Nubia, Sudan, Eritrea and Somaliland, and a specimen from the Niger, in the region of Diarafabé, recorded by G. F. de Witte (1930, p. 618), shows that its range may extend to western north-tropical Africa.

*Literature*.—*Chamaeleon basiliscus*. G. A. Boulenger, 1887, p. 446. J. Anderson, 1898, pp. 230–232, pl. 31. F. Werner, 1908, p. 1860 and 1919, p. 500.

*Occurrence in Egypt*.—The Basilisk Chameleon is quite common in two areas in Egypt, one in the extreme north, the other in the extreme south, but is not known from the intermediate country. The northern area comprises the eastern suburbs of Alexandria, Gabbari, Ramleh, etc., the neighbourhood of Edku (between Alexandria and Rosetta), the districts of Damanhur and Delingat in Beheira Province, and the district of Kafr el Sheikh and the Mamuria of Brullos in Gharbia Province. In these localities I know of it from personal observation. At Beltim, Brullos, the people are so frightened of Chameleons that they are afraid to go near them, much less to catch them: the more sophisticated inhabitants of Alexandria catch many Chameleons and offer them for sale to tourists and others.

The southern area consists of the banks of the Nile in the El Derr district of Aswan Province, Upper Egypt, south to the Sudan frontier at Wadi Halfa, or in other words Lower Nubia—the country between the 1st and 2nd Cataracts of the Nile. I do not know how the supply of Chameleons keeps up in this narrow tract of land, from 1901 onwards I have noted natives offering live ones for sale to the steamer passengers at the regular landing-places, such as Abu Simbel Temple.

*Sudan*.—At Wadi Halfa it is not uncommon in gardens. It was recorded from the Red Sea Province by J. Anderson (1898, p. 230). I found it very numerous on the Blue Nile at Sennar, Dar el Fetieth, Ereidiba, Singa and Roseires. A. L. Butler obtained it at Geteina on the White Nile, and specimens have been collected in Kordofan by F. Werner (1919, p. 500) and by myself.

*Size*.—Specimens from Lower Egypt and from the Sudan attain to about equal dimensions: the largest individuals that I happen to have retained notes on were:—

a ♂	from Blue Nile,	head and body	158,	tail	170,	total length	328 mm.
a ♂	„	Lower Egypt,	„	178,	„	205,	„ 383 „
a ♀	„	„	„	167,	„	179,	„ 346 „
a ♀	„	Blue Nile,	„	172,	„	171,	„ 343 „

*Spirit-staining*.—Newly dead specimens of the Basilisk Chameleon when placed in spirit stain the spirit green, even to a second and third change of spirit.

Family SCINCIDÆ J. E. Gray, Ann. Nat. Hist. 2, no. 10, p. 287, 1838.

Sincidae J. E. Gray, 1825, p. 201.

*Type-genus*.—*Scincus* Laurenti, 1768.

Seven species of Skinks are found in Egypt, representing the five genera of *Mabuya*, *Ablepharus*, *Eumeces*, *Scincus* and *Chalcides*.

Three other genera should be mentioned, as they have representatives in neighbouring countries and some of these species may be found eventually in Egypt:—

1. *Lygosoma* J. E. Gray, Zool. Journ. London, 3, p. 228, 1827. Two species are known from the Anglo-Egyptian Sudan; *laeviceps*, which was first obtained by A. L. Butler in 1907 in the Bahr el Ghazal Province, and *sundevallii*, which I found to be fairly numerous on the Blue Nile, from near Abu Usha south to Roseires and also at Mongalla on the Bahr el Gebel.

2. *Scincopus* W. C. H. Peters, Mon. Kön. Preuss. Akad. Wiss. Berlin, 1864, p. 45.

The **Geryville Skink**, *Scincopus fasciatus*, was found in the Red Sea Province of the Sudan by J. Anderson (1898, pp. 200–203, pl. 26) and at Bara, in north Kordofan, by A. L. Butler (before 5 March, 1907, when I examined a specimen from there). This fine species is known from the Trarza country in Mauritania and from the Algerian and Tunisian Sahara, and there is hope that it may yet be found to be really Egyptian.

3. *Ophiomorus* Duméril & Bibron, Erp. gén. 5, p. 799, 1839.

The type-locality of the little limbless lizard, *latastii*, is Mt. Hermon; we do not yet know if it inhabits southern Palestine.

Genus MABUYA L. J. Fitzinger, Neue Classif. Rept. p. 23, 1826.

*Type-species*.—*Scincus mabouya* F. M. Daudin, 1802, from the Antilles.

Two species, the Palearctic *vittatus* and the Ethiopian *quinquetaeniatus*, occur in Egypt.

Seven other species are recorded from neighbouring countries; *brevicollis* (Wiegmann) 1837 from the eastern Sudan, *maculilabris* (Gray) 1845, *wingatii* Werner 1908, *perrotetii* (Duméril & Bibron) 1839 [in the form *mongallensis* Werner 1908], *varius* (Peters) 1867, and *striatum* (Peters) 1844, from the southern Sudan, and *septemtaeniatus* (Reuss) 1834 from Eritrea and from Arabia.

The word *Mabuya*, mabouya or mabouia, is said to be a Carib name for a demon or evil spirit, used by the natives and negroes of the West Indies for anything that they have a horror of, including Geckoes, Skinks and Anolis Lizards (see F. M. Daudin, Hist. Nat. Rept. 4, pp. 132, 239, 243 & 246, 1802).

### 30. Bridled Skink.

MABUYA VITTATUS (Olivier), 1804.

*Scincus vittatus* G. A. Olivier, Voy. Emp. Othom. 3, p. 103, footnote, 1804.

*Type-locality*.—Rosetta, Egypt.

*Distribution*.—North Africa and south-west Asia: Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Palestine, Transjordan, Syria, Cyprus, Asia Minor and Mesopotamia.

*Literature.*—*Mabuia vittata*. G. A. Boulenger, 1887, p. 176. J. Anderson, 1898, pp. 193–195, pl. 24, fig. 4. D. Vinciguerra, 1927, p. 330.

*Mabuia vittata*. R. Mertens, 1929, pp. 294 & 308.

*Occurrence in Egypt.*—Recorded by A. Andres (1908, p. 5) from Gabari and Ramleh (Alexandria), and by F. Werner (1909, p. 610) from Mex and San Stefano (Alexandria) and from Medun, near Wasta. A specimen was collected by J. L. Bonhote in April 1915 at Sidi Gabar (Alexandria). I only met this species three times: 1. At Temai el Amdid, Simbellawin district, Daqahlia Province, 2 August, 1917, three specimens. 2. At a few miles east of Beltim, Brullos district, Gharbia Province, I found one in the same hole as a *Chalcides ocellata*. 3. By a ditch between the village of Sidi Shata and Gheit el Nassara, near Damietta, 30 August, 1918.

There is no evidence of this, or in fact of any, species of *Mabuia* in Sinai. In Palestine *Mabuia vittatus* appears to be widely distributed.

### 31. Bean Skink.

MABUYA QUINQUETAENIATUS (Lichtenstein), 1823.

*Scincus quinquetaeniatus* H. Lichtenstein, 1823, p. 103.

*Type-locality.*—Egypt and Nubia.

*Distribution.*—Tropical Africa and Egypt: from Senegambia and Angola on the west to Portuguese East Africa, Tanganyika Territory, Kenya Colony, Uganda, Eritrea and the Sudan, thence following down the Nile through Nubia to Egypt.

It is doubtful if this species occurs anywhere in Palestine or Syria, but that an occasional individual should now and then be accidentally imported on a ship from Egypt to Cyprus or to a sea-port on the main-land is quite possible.

*Literature.*—*Mabuia quinquetaeniata*. G. A. Boulenger, 1887, p. 198. J. Anderson, 1898, pp. 187–193, pl. 24, figs. 1–3. L. G. Andersson, 1904, p. 8. F. Werner, 1908, p. 1851 and 1919, p. 489.

*Occurrence in Egypt.*—Diurnal and unafraid of man, frequenting the banks, bridges and quays of waterways, running in and out of the verandahs and dwelling rooms of houses on land as freely as about the decks and cabins of steamers and sailing craft, the distribution of this species, the Bean Skink, African Blue-tailed Skink, or Five-lined Skink, is observed easily and points to its being a tropical African form which has entered Egypt by the Nile and is still extending its distribution when opportunity offers.

It is numerous at Wadi Halfa and along the Nile northwards through the Upper Egyptian Provinces of Aswan, Qena, Girga, Assiut, Minia, Beni Suef and Giza. It has followed the Nile waters into the Fayum and is common along the canals in that Province. In the Cairo area, including Qaliub and the Delta Barrage (in Ashmun district, Menufia Province), it is also numerous particularly in gardens and on canal banks.

North of Cairo and the Delta Barrage there appear to be three separate lines of distribution:—

1st, the longest is in the west of the Delta and is the Rosetta branch of the Nile to as far as Atf (in Rosetta district, Beheira Province) and thence by the Mahmudia Canal to its tail at the docks in Alexandria.

2nd, in the central Delta along the banks of the Rayah Menufia and the Bahr Shebin to, as far as I know up to 1922, Birket el Sab (Quesna district, Menufia Province), about forty miles north of Cairo.

3rd, in the eastern Delta, where in 1919 and 1920, I noted it at two places

in Sharqia Province, both on waterways leading from the Nile near Cairo ; these localities were near Mashtul (Bilbeis district) and near Fakus (Fakus district).

I did not see this species anywhere in Daqahlia Province or in the Suez Canal Zone.

*Sudan.*—This species is numerous on both banks of the Nile, but seldom appears to venture more than about 200 yards from the water, though the Provinces of Halfa, Dongola, Berber and Khartoum, and along the Blue and White Niles and their tributaries. It also occurs outside the Nile Valley to the east in the Red Sea Province, and to the west in several localities in Kordofan.

*Young specimens.*—T. Barbour (1913, p. 147) writes of this species:—“The brilliant blue tail of the young is very striking, recalling that of certain American species of *Eumeces* and East Indian species of what may be called for convenience *Lygosoma*. This blue tail-colour is probably of ancient ancestral character, since it can certainly have no protective or other value to the young which it would not have equally for the adult.”

Many newly hatched young ones, with *most brilliant blue tails* were seen in the Giza Gardens in the summer months, especially between the middle of July and the middle of August. But in the Sudan, at Singa on the Blue Nile, I noted that there were very many small specimens about in mid-winter—for instance, in early January 1921.

Individuals of a head-and-body length of 57 mm. may still have the tail blue (noted at Giza, 23 September, 1899).

*Arabs and the Bean Skinks.*—In the Dongola Province the Shagia Arabs call the Skinks “Sahliya.” These people do not dread *Mabuza* as they do the Gecko, *Tarentola annularis*, but they are afraid to touch the Skinks and tried to prevent my doing so. Whenever I wanted to pick up a Bean Skink, an Arab generally prevented my doing so, as he managed with a stick or stone to hit it first. My friends were determined that, however rash or foolish I might be, it was up to them to see that I came to no harm.

The Blue Nile Arabs also call this species “Sahliya,” but do not worry about it, because, probably, they are so used to it on board their boats as they travel up and down stream, whereas the Shagia travel by land.

Genus ABLEPHARUS L. J. Fitzinger, Verh. Ges. naturf. Fr.  
Berlin, 1, p. 297, 1824.

*Type-species.*—*Ablepharus pannonicus* Fitzinger, *l. c.* = *Ablepharus kitaibelii* Bibron & Bory de St. Vincent, Exp. Sci. Morée, Rept. p. 69, 1833. The specific name *pannonicus* being preoccupied by *pannonicus* Lichtenstein, 1823 : see Mertens & Müller, 1928, pp. 43, 44.

The type-species is known from Sinai and Palestine. Another species, *Ablepharus wilsoni*, was described from the Sudan by F. Werner in 1914.

### 32. Hungarian Skink.

ABLEPHARUS KITAIBELII Bibron & Bory, *l. c.*

*Type-locality.*—“Ruinen von Pylos, Messenien” (Mertens & Müller, 1928, p. 43).

*Distribution.*—South-east Europe and west Asia : Hungary, Rumania, Albania, Greece, Xanthus, Asia Minor, Syria, Palestine, North Arabia and Sinai.

*Literature.*—*Ablepharus pannonicus*. G. A. Boulenger, 1887, p. 354.

*Occurrence in Sinai.*—Discovered by Dr. J. C. Phillips and Mr. W. M. Mann, "Two specimens from Wady Gharbeh, Sinai" (T. Barbour, 1914, p. 87).

*Palestine.*—Recorded by F. Werner (1898, p. 8). In 1919 Major Maurice Portal, D.S.O., collected two of these little lizards on Mount Carmel.

Genus *EUMECES* A. F. A. Wiegmann, *Herp. Mexico*, p. 36, 1834.

*Type-species.*—*Eumeces pavimentatus* Wiegmann, *l. c.*, see *Scincus pavimentatus* I. Geoffroy, *Descr. Egypte, Rept.* p. 138, 1827, a synonym or, according to some authors, a subspecies of *Scincus schneiderii* Daudin, 1802.

This one species occurs in Egypt.

### 33. Gold Skink.

*EUMECES SCHNEIDERII* (Daudin), 1802.

*Scincus schneiderii* F. M. Daudin, *Hist. Nat. Rept.* 4, p. 291, 1802.

Named after Johann Gottlob Schneider, 1750–1822, Saxon zoologist.

*Type-locality.*—West Asia (R. Mertens, 1924, p. 183).

*Distribution.*—North Africa and west Africa: the species, including more or less well-marked local forms, is known from Morocco, Algeria, Tunisia, Cyrenaica, north-west Egypt, north-east Sinai, Palestine, Cyprus, Syria, north Arabia, Asia Minor, Armenia, Mesopotamia, Persia, Transcaspia and Baluchistan.

*Literature.*—*Eumeces schneideri*. G. A. Boulenger, 1887, p. 383. J. Anderson, 1898, pp. 196–199, pl. 25. D. Vinciguerra, 1927, p. 331.

*Eumeces schneiderii*. R. Mertens, 1924, p. 182.

*Occurrence in Egypt.*—Dr. J. Anderson (1898, p. 197) recorded the Gold Skink from Mersa Matruh and Mariut. Herr A. Andres (1908, p. 5) from Mariut. Personally I did not meet this species in Egypt, but saw specimens that had been collected in the Mariut district by Dr. Lewis H. Gough in March 1914 and by Mr. J. Lewis Bonhote in April 1915.

It was discovered in north Sinai, between Romani and El Arish, by Capt. A. W. Boyd, M.C., 1/7th Lancashire Fusiliers, towards the end of 1916.

*Occurrence in Palestine.*—Canon H. B. Tristran (1888, p. 152) and Prof. F. Werner (1898, p. 4) mentioned several localities, and Dr. F. Barbour (1914, p. 86) described a series of specimens from Petra, between the Dead Sea and Akaba. In 1918 Major M. Portal, D.S.O., sent to the Giza Zoological Gardens one individual from Bir Salem and two from Ramleh, and Capt. Charles Mellows one caught "not ten miles from Medjeh Yaba in the hills." One from near the Sea of Galilee, April 1920, and two from Saron, near Jaffa, July 1920, were collected by Brigadier General F. FitzH. Lance, M.C., one of these was in the interesting sub-adult colour phase. The following notes on its colour and markings in life were made by me 31 July, 1920:—

At first sight if seen just slipping away among vegetation this lizard might be taken to be a large *Chalcides ocellata*, especially about the tail.

*Iris* golden. *Tongue* red. *Head* uniform brown above, except the actual snout which is very pale pinkish brown or yellow. The sides of the head are light primrose-yellow, with brown markings, and a small patch of orange in front and behind the ear. The underneath of the head and neck are pure white. *Body* rich dark brown above, regularly variegated with black and dark red, with eight strongly marked longitudinal lines of more or less elongated yellow spots. Sides of body light primrose-yellow, with an irregularly outlined dark brown line extending behind the ear to the insertion of the hind limb.

Underneath of body pure white. *Tail*: basal part, the dark brown and yellow lines of the black are continued: main part, dark brown in rings, alternate rings composed of plain-coloured and rather lighter-brown scales and of darker brown scales with light yellow spots. This ringed and spotted tail gradually fades into pale reddish brown which forms the distal part. The underneath of the tail is plain buff, getting redder towards the distal part. *Limbs* reddish brown above, profusely spotted with pale lemon-yellow. Toes and fingers uniform pale reddish. Claws practically white. Underneath of limbs uniform, white at base, then shading into buff, which shades into pale red on the digits.

Genus *SCINCUS* J. N. Laurenti, Syn. Rept. p. 55, 1768.

*Type-species*.—*Scincus officinalis* Laurenti, *l. c.* = *Lacerta stincus* Linnaeus, 1758.

The type-species occurs in Egypt, other species are known from Arabia.

### 34. Skink.

*SCINCUS STINCUS* (Linnaeus), 1758.

*Lacerta stincus* Linnaeus, 1758, p. 205.

*Type-locality*.—"Habitat in montosis Lybiae, Aegypti, Arabiae petrae."

*Distribution*.—North Africa: in sandy deserts from the Trarza country in Mauritania, through Algeria, Tunisia, Tripoli and Cyrenaica to Egypt.

A. L. Butler told me that he found this species at Bara, Kordofan, in the Sudan.

I obtained no evidence of its occurrence in Sinai or Palestine.

*Literature*.—*Scincus officinalis*. G. A. Boulenger, 1887, p. 391. J. Anderson, 1898, pp. 204–207, pl. 27. D. Vinciguerra, 1931, p. 255.

*Occurrence in Egypt*.—Dr. J. Anderson (1898, pp. 205, 206) mentioned two localities—Giza and Baharia Oasis in western Upper Egypt. The only information that I could gather about its occurrence was:—

1. Edge of desert in Giza and Embaba districts, Giza Province. From 1899 to 1923 the local Bedawin brought to the Giza Zoological Gardens *hundreds* of specimens which they said they caught among tufts of vegetation on the border of the desert near Aburoash. Neither Michael J. Nicoll nor myself ever saw one of these Skinks wild there, though we often looked for them.

2. A specimen was presented to the Giza Z. G. by Mrs. T. W. Russell, 7 December, 1913, which had been brought "from the Fayum."

3. Ismailia, Suez Canal. On 10 April, 1915, we caught two when laying out horse-lines on the sand near the cemetery, and in August 1915 two more in the sand at the edge of Lake Timsah. On 22 January, 1917, Capt. A. W. Boyd, M.C., 1/7th Lancashire Fusiliers, presented one "from Canal Zone" to the Giza Z. G.

*Habits*.—Newly caught individuals will bite fiercely when handled, their bite is strong enough to draw blood from one's fingers. In captivity they soon learn not to resent being picked up.

*Food in captivity*.—The keepers at Giza asserted that these skinks eat fruit, such as ripe dates and chopped up melons, readily: personally I have seen them often licking and examining bits of fruit but have never actually seen them eat any. Their regular food was live insects, especially cockroaches and mealworms.

Genus *CHALCIDES* J. N. Laurenti, Syn. Rept. p. 64, 1768.

*Type-species*.—*Chalcides tridactyla* Laurenti, *l. c.*, from south Europe and north Africa.

Two species occur in Egypt, *ocellata* and *sepsoides*. Two other species are recorded from neighbouring countries, *guentheri*, in which the limbs are reduced to minute conical rudiments, from Syria, and *delislii* from the Red Sea Province of the Sudan.

### 35. Eyed Skink.

*CHALCIDES OCELLATA* (Forskål), 1775.

*Lacerta ocellata* P. Forskål, Descr. Anim. p. 13, 1775.

*Type-locality*.—Egypt.

*Distribution*.—North Africa, south-west Asia and south Europe: being known from Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Eritrea, Abyssinia, Somaliland, Sinai, Palestine, Syria, Arabia, Persia, Baluchistan, Sind, Asia Minor, Cyprus, Rhodes, Chios, Crete, Sardinia, Sicily, Malta, Pantellaria, Limosa, Lampedusa, Greece and southern France (probably introduced at Marseilles).

*Literature*.—*Chalcides ocellatus*. G. A. Boulenger, 1887, p. 400. J. Anderson, 1898, pp. 210–219, pl. 28, fig. 1. F. Steindachner, 1901, p. 330. F. Werner, 1908, p. 1859, and 1909, p. 612, and 1931, pp. 293–296. E. G. Boulenger, P. Z. S. 1920, pp. 77–83. R. Mertens, Senckenbergiana, 3, pp. 116–120, 1921, & 1929, pp. 293, 294, 308 etc. D. Vinciguerra, 1927, p. 331, and 1931, p. 225. G. Scortecci, 1928, pp. 324–332, pl. 8.

*Occurrence in Egypt*.—The "Shoof-shah," or Eyed Skink, is very widely distributed in Egypt wherever there is water, but not necessarily fresh or perennial water. In suitable spots it is numerous, and any number of specimens may be obtained by digging in the earth or sand. In the west it occurs at Mersa Matruh, Mariut, Alexandria, Abukir, Edku, etc., near Bir Hooker in the Wadi Natron, in all three districts of the Fayum (I found it even at Ezbet Gallûl, about five miles west of Gharak), and it is known from the Oases of Siwa, Dakhla, Kharga and Berys.

In the Delta I know this species from at least twelve localities along the course of the Damietta Nile and the lands irrigated by it to as far north as Kafr el Battikh in Gharbia Province and Gheit el Nassara in Daqahlia Province, in 1918 and in 1923 I caught specimens at Beltim in the north of the central Delta, but on the Rosetta Nile I have only seen a single individual on a single occasion.

In the Cairo-Giza area it is fairly numerous in the irrigated alluvium, on the desert edge and along the drainage line of valleys among desert hills. The only instance of its occurrence, to my knowledge, in the Canal Zone is that in March 1915 Michael J. Nicoll and I caught three specimens at Ezbet el Sahara, a few miles south of Ismailia, and it was recorded from Suez by F. Steindachner (1901, p. 330). In Upper Egypt it occurs here and there along the Nile Valley to the Sudan frontier at Wadi Halfa.

The only record of the Eyed Skink from Sinai is that of H. C. Hart (1891, p. 210), no definite locality in Sinai is given.

*Sudan*.—In the Sudan, besides Wadi Halfa, I only met this species myself at Khartoum, at Eifalûn on the Blue Nile, and in the Shaṭa Gardens near Suakin. A. L. Butler collected it at Mogatta on the Atbara River, J. Anderson

(1898, p. 212) recorded it from Durrur, Suakin and Tokar, and F. Werner (1919, p. 499) from Kordofan.

*Palestine*.—It is well known from Palestine and from the Ghôr, by the Dead Sea, the Wadi Araba, Petra and Akaba (H. B. Tristram, 1888, p. 152; H. C. Hart, 1891, p. 210; F. Werner, 1898, pp. 3, 4 & 8; T. Barbour, 1914, p. 86). Major M. Portal, D.S.O., collected it near Gaza in 1917, and Dr. Lewis H. Gough at Ramleh in 1921.

*Colour*.—In Egypt one finds great variation in the general ground-colour of this species, which may be pale—even golden—or quite dark. These individual differences appear, when large numbers are seen, to have no relation to locality or to the kind of soil in which the lizard is living.

### 36. Audouin's Sand-Skink.

CHALCIDES SEPSOIDES (Audouin), 1829.

*Scincus sepsoides* J. V. Audouin, in Savigny, Descr. Égypte, 1 (1) (Expl. pls. Rept.), p. 180, 1827, v. C. D. Sherborn, Index Anim. 2, p. 5882, 1930.

*Type-locality*.—"Egypt."

*Distribution*.—North Africa and south-west Asia: from Senegambia, through Algeria, Tunisia, Cyrenaica and Egypt to Sinai and Palestine.

*Literature*.—*Chalcides sepsoides*. G. A. Boulenger, 1887, p. 407. J. Anderson, 1898, pp. 220-222, pl. 28, fig. 2. D. Vinciguerra, 1931, p. 256. W. Mosauer, 1932, p. 75, fig. 2.

*Chalcides sepsoides*. E. Hartert, 1913, p. 82.

*Occurrence in Egypt*.—This elegant little lizard appears to be numerous in suitable places in the desert, or on the edge of the desert, on both sides of the Nile Valley, but not to occur anywhere in the actual Delta. The localities from which it is known are:—

West of the Nile.

1. Alexandria, Ramleh, Abukir and Edku.
2. Giza Province, on the west (desert) side of the districts of Embaba, Giza and El Ayat. Both Michael J. Nicoll and I collected specimens from time to time, they may be found by digging in likely spots or may be come upon by chance—as, for instance, one I obtained, 3 July, 1922, which a camel had trod on accidentally.
3. *Fayum*.—Many were found when turning over large stones and when digging in earth banks about five miles west of Gharak in December 1917.

East of Nile.

4. Ma'adi, Cairo. A young one caught by Lewis H. Gough, 27 December, 1911.
  5. Cairo-Suez Road. One caught about 21 miles east of Cairo by M. J. Nicoll in April 1923.
  6. Fakus district, Sharqia Province. On the desert near Sahlia and near Tel Abu Ekeim, June 1917 and December 1923 (S. S. F.).
  7. Canal Zone. J. Anderson (1898) recorded this species from Serapeum. M. J. Nicoll and I found it at Ezbet el Sahara, south of Nefisha, 20 March, 1915, and I came across specimens a little to the north of Ismailia in August 1915.
- N.B.—J. Anderson (1898) also recorded this species from Tel el Amarna in Assiut Province, Upper Egypt.

*Sinai*.—According to J. Anderson (1896, p. 71) this species was recorded from Sinai by W. C. H. Peters in 1864. H. C. Hart (1891, pp. 8 & 210)



mentions it, under the name of *Sphaenops capistratus*, and writes: "Wady Ghurundel, on the western side of Sinai. I found this skink hidden in an anthill of *Camponotus*." Two specimens were received alive at the Giza Z. G. from Romani, north Sinai, one 10 December, 1916, presented by Capt. A. W. Boyd, M.C., 1/7th Lancashire Fusiliers, and one 26 January, 1917, presented by Lieut. H. A. Storey.

*Palestine*.—Already known from Jaffa and Jerusalem (G. A. Boulenger, 1887, p. 407), the range of this species in Palestine was extended farther south by Major Maurice Portal, D.S.O., obtaining a specimen near Gaza in 1917.

*Habits*.—In captivity at Giza *Chalcides sepsoides* fed readily on mealworms, and frequently bred both in indoor and outdoor cages, sea-shells were provided as sleeping quarters. The histories of the young ones could not be followed, or their dates of birth ascertained, they grew so rapidly in size that they could soon be mistaken for their parents. Very small specimens, both in captivity and when wild, were noted most often in the autumn months—say, August to December inclusive. Some individuals lived in captivity for probably at least four years, but I could not be certain owing to the children growing up so fast.

The family GERRHOSAURIDAE is not represented in Egypt, but one species, the **Yellow-throated Plated Lizard**, *Gerrhosaurus flavigularis*, has been reported from the southern Sudan, on the Blue Nile towards the Abyssinian frontier.

Family LACERTIDAE A. C. L. G. Günther, Rept. Brit. Ind. p. 68, 1864,  
and E. D. Cope, Proc. Acad. Nat. Sci. Philad. 16, p. 228, Oct. 1864.

Lacertinidae J. E. Gray, 1825, p. 200, and 1827, p. 55.

*Type-genus*.—*Lacerta* Linnaeus, 1758.

Eight species are now known from Egypt, belonging to the four following genera :—

1. <i>Latastia</i> .....	1 species.
2. <i>Acanthodactylus</i> .....	3 ,,
3. <i>Ophisops</i> .....	1 ,,
4. <i>Eremias</i> .....	3 ,,

The genus *Lacerta* must be referred to also.

Genus LACERTA Linnaeus, 1758, p. 200.

*Type-species*.—*Lacerta agilis* Linnaeus, *o. c.* p. 203. Europe.

No true *Lacerta* is known from Egypt, but in Palestine two species are distributed widely, *viridis* var. *strigata* and *laevis*, the latter is said to be numerous at Jaffa, is well known at Jerusalem and extends to as far south as Petra. A third species, *fraasii*, has been found in the Lebanon between 1900 and 2000 metres (6234 and 6561 feet) above sea-level, and a fourth, from Beharré in the Lebanon, has been described as *kulzeri* by L. Müller & O. Wettstein, Zool. Anz. 98, p. 219, 1932.

Genus LATASTIA J. de Bedriaga, Ann. Mus. Stor. nat.  
Genova, 20, p. 307, 1884.

*Type-species*.—*Latastia doriai* Bedriaga, *o. c.* p. 313=*Lacerta longicaudata* Reuss, 1834.

### 37. Long-tailed Lizard.

LATASTIA LONGICAUDATA (Reuss), 1834.

*Lacerta longicaudata* A. Reuss, Mus. Senckenb. 1, p. 29, 1834.

*Type-locality*.—Tor, Sinai; described from one specimen collected near Tor by Dr. E. Rüppell on his first journey to North Africa and Arabia, and three other specimens that he sent later from Abyssinia.

*Distribution*.—Tropical Africa and south-west Asia: being known from Senegal, northern Nigeria, the Lake Chad area, Upper Egypt, Nubia, Sudan, Eritrea, Abyssinia, Gallaland, Somaliland, the Lake Stephanie area, Kenya Colony, Tanganyika Territory, Sinai and Arabia (in south-west Arabia to near Aden).

*Literature*.—*Latastia longicaudata*. J. Anderson, 1898, pp. 143–146, pl. 19. F. Steindachner, 1901, pp. 329, 330. G. A. Boulenger, 1921, pp. 25–32 & 410.

*Occurrence in Egypt*. Although no *Latastia* appears to have been found in Sinai since Rüppell discovered it there in 1817, the fact that this species can be included definitely in the fauna of Egypt is established by the officers of the 'Pola' having caught two specimens on 17 November, 1895, in a dry river-bed on the west coast of the Red Sea near Halaib, about 22° 12' N. by 36° 40' E.

*Sudan*.—In the Berber Province the late Hon. N. Charles Rothschild obtained two specimens from Shendi. In the Red Sea Province the presence of *Latastia longicaudata* is well established by J. Anderson's specimens from Tokar, Akik, Durrur and Suakin, and by others collected by W. P. Lowe at Sinkat and by A. L. Butler at Erkowit, at an elevation of 4000 feet. On the Blue Nile I met this species first on 24 July, 1909, at Abu Usha and at various other localities in later years, and T. Barbour (1913, p. 146) recorded it from Singa. In Kordofan it was first found at Bara by A. L. Butler, and later by myself at Um Ruaba.

Genus ACANTHODACTYLUS A. F. A. Wiegmann, Herp. Mex. p. 10, 1834.

*Type-species*.—*Acanthodactylus boskianus* Wiegmann, l. c. = *Lacerta boskiana* Daudin, 1802.

Three species, *boskiana*, *pardalis* and *scutellata*, are known to occur in Egypt. A fourth species, *savignyi*, known from Algeria may also perhaps be found in Egypt according to G. A. Boulenger (1921, pp. 57–62).

Three other forms, *tristrami*, *grandis* and *schreiberi* var. *syriacus*, occur in Syria; the first two in the north, the third coming right down into Palestine. And a fourth form, *robustus*, has been recorded from Transjordan by K. P. Schmidt (1930, p. 225).

### 38. Bosc's Lizard.

ACANTHODACTYLUS BOSKIANA (Daudin), 1802.

*Lacerta boskiana* F. M. Daudin, Hist. Nat. Rept. 3, p. 188, 1802.

Named after Prof. Louis Augustin Guillaume Bosc, 1759–1828, of Paris, in whose collection of reptiles the type-specimen was found.

*Type-locality*.—"L'île Saint-Domingue." Prof. Bosc was very interested in the fauna and flora of the West Indies—possibly this locality was an imposition on him, perhaps a transposed label.

*Distribution*.—North Africa and south-west Asia: eastern Morocco,

Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Eritrea, Sinai, Palestine, Arabia (apparently from Midian southwards to near Aden), and Mesopotamia.

*Literature*.—*Acanthodactylus boskianus*. J. Anderson, 1898, pp. 148–151, pl. 20. L. G. Andersson, 1904, p. 7. A. Andres, 1920, p. 19. G. A. Boulenger, 1921, pp. 82–91 & 415–417. R. Mertens, 1929, pp. 295–309. D. Vinciguerra, 1931, p. 252.

*Acanthodactylus boskianus*. T. Barbour, 1914, p. 85.

*Occurrence and habits in Egypt*.—Bosc's Lizard is one of the most attractive and certainly the most amusing of the species of reptiles to be seen in Egypt. It indulges in a sort of dance, the main characteristic antics being to drop its chest on the ground, stretch out its arms backwards and upwards, wave its arms in the air above its back and then standing up on arms and legs do a "display" with its tail, waving and curling it about in the air, and now and then bending almost into a circle with the tail-tip close to its nose and the whole of the underneath of the tail showing. It is diurnal and extremely agile and active, running very quickly and being very clever, even for a lizard, in dodging in and out of clumps of vegetation and in disappearing into holes in the ground. Prickly pear hedges are a favourite home for this species, and they particularly like the big guns in the forts along the Mediterranean coast; I noted in Forts No. 1, 2, 3 and 4, and in Fort el Nawa, that each gun was in charge of a large male *boskiana*, the females and immature lizards scampered about anywhere, but each male kept to his own post running over and round the gun to catch insects and retiring under the carriage if alarmed—if one male pursued anything out of his own territory the owner of the invaded territory dashed out at him and the invader fled back to his own gun. At Fort No. 5, however, in September 1922 no lizards could be found, the whole fort and surroundings were covered with crab-tracks.

Although very numerous in some places, Bosc's Lizard is not generally distributed over Egypt, its occurrence is interesting and not easy to explain.

1. It occurs along the Mediterranean coast wherever there is cover for it in the shape of vegetation or buildings, one sees it on the actual sea-shore, on the sand-dunes and on the edges of cultivation, where there is any, at Mariut, Alexandria and its suburbs, Adukir, Edku Sidi Ali el Nadilt, Rosetta, Beltim and all the Brullos Mamuria, the neighbourhoods of Kafr el Battikh and Damietta, and at Port Said. This is practically a continuous distribution and characterized by the lizards being of the form called by G. A. Boulenger in his Monograph (1921) *Forma typica*.

2. In the Delta there are a few (I came across five) isolated colonies, all on the ruined sites of ancient cities; in some of these, for instance Tel Yusef, near Barankim, and Temai el Amdid, both in the Simbellawin district of Daqahlia Province, these lizards appear to attain a larger size and to assume brighter colours than I have seen in any other place.

3. This species appears to be entirely absent from the central portion of the Canal Zone, including Kantara, Ismailia and Serapeum; though, as mentioned above, it occurs at Port Said, and both J. Anderson (1898) and F. Steindachner (1901) have recorded it from Suez. I found it also on the borders of desert and cultivation near Fakus and at Salhia, in the Sharqia (Eastern) Province of the Delta.

4. Along the south side of the Beheira Province, where irrigated lands and sandy wastes mingle, I met this species in the districts of Kafr el Dawar, Damanhur and Delingat. Though generally these might be referred to the form called by G. A. Boulenger (1921) var. *asper*, one caught at Delingat,

11 March, 1920, had the subocular shield bordering the mouth, this is unique in my experience of Egyptian *boskiana*, and, in this feature, agrees with var. *euphraticus* of Boulenger's Monograph (1921).

5. In the Cairo-Giza area *boskiana* is numerous both east and west of the Nile, on deserts and edges of deserts, on plains and hills and on sandy strips of the Nile banks. It is equally common in the Wadi Hof, Helwan, the Mokattam Hills, along the Cairo-Suez Road, and on the whole line of the western desert though the districts of Embaba, Giza and El Ayat, to the Fayum, where I found it plentiful in all three districts. Along the Nile Valley it occurs in suitable localities south to at least Aswan. The majority at any rate of the Cairo-Giza and Upper Egyptian specimens are definitely referable to var. *asper* as defined by G. A. Boulenger (1921).

6. Other localities from which we have isolated records of this species are :—  
Wadi Natron, Lower Egypt. M. J. Nicoll, March 1910.

Dakhla Oasis, Upper Egypt. Col. Sir Henry G. Lyons, R.E. (recorded by Anderson, 1898), and, in recent years, Lewis H. Gough.

Wadi Gul'an, Upper Egypt, circa 24° 22' N. by 35° 17' E. Three specimens, G. W. Murray, M.C., January 1924.

Halaib, Upper Egypt, c. 22° 12' N. by 36° 40' E. (F. Steindachner, 1901, p. 330).

7. In Sinai the occurrence of *boskiana* is well known (F. Werner, 1893, p. 359; F. Steindachner, 1901, p. 330; L. G. Andersson, 1904, p. 7; T. Barbour, 1914, p. 85). I found it numerous and widely distributed in south, central and north Sinai from the Suez Canal to the frontier of Palestine, and met it within a few yards of the sea-water, at sea-level, on both the Mediterranean and Gulf of Suez coasts, up to at least 1800 feet in the hills of central Sinai and up to 5300 feet (1615 metres) in the southern mountains.

*Colour in life in Egypt.*—Juvenile specimens may have the distal two-thirds of the tail, above and below, pale greenish blue, but adult females in summer, in some localities, have the whole lower surface of the tail coloured bright red, the corresponding surface of adult males being white, but in other localities this sexual difference appears not to exist, and adult males have more or less red colour, sometimes in the form of a central line, under their tails.

*Palestine.*—Dr. J. Anderson obtained a female *boskiana* at "Neby Musa, hills to west of Dead Sea." Dr. T. Barbour (1914, p. 85) mentions: "sixteen from Petra and five from Akaba, in Arabia; and two from Wady Kerak, near the Dead Sea." In 1918 I met this species at Gaza and at Auga.

*Sudan.*—In Dongola Province in June 1920 I found this species numerous on the left bank of the Nile at Uli (4th Cataract) and at Merowe. Some that I caught near Khartoum in 1909 were assigned to var. *asper* by G. A. Boulenger, as were also specimens from Duem on the White Nile collected by R. M. Hawker, and from Erkowit in the Red Sea Province received from W. P. Lowe. In Kordofan Bosc's Lizard appears to be common and widely distributed.

### 39. Egyptian Leopard-Lizard.

ACANTHODACTYLUS PARDALIS (Lichtenstein), 1823.

*Lacerta pardalis* H. Lichtenstein, 1823, p. 99.

*Type-locality.*—Egypt.

*Distribution.*—East Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, north-west Egypt and southern Palestine.

*Literature.*—*Acanthodactylus pardalis*. J. Anderson, 1898, pp. 151–161, pl. 21. G. A. Boulenger, 1921, pp. 62–76 & 413–415. D. Vinciguerra, 1927, p. 339, and 1931, p. 253.

*Occurrence in Egypt.*—Known only from the neighbourhood of Alexandria (near Kafr el Dawar and Mex, A. Andres, 1908, p. 5) where it is rare, and in the district of Mariut where it is numerous (J. Anderson, A. Andres, J. L. Bonhote and S. S. F.), and has been found as far west as Daba in 1916 by the Rev. S. H. Hare, Chaplain, Suffolk Yeomanry.

*Palestine.*—F. Werner (1898, p. 3) mentions a large male caught in a vineyard at Jaffa. G. A. Boulenger (1921, p. 65) writes: "The specimens from Palestine are referable to the typical form from Egypt, differing only in the average larger size," and (1921, p. 413) mentions three specimens from Jerusalem and two from Beersheba. A Beersheba specimen is figured in P. Z. S. 1881, pl. 63, fig. 1. In 1917 Major Maurice Portal, D.S.O., caught three specimens near Gaza. In 1918 at Beersheba I found these Leopard-Lizards numerous, many individuals were larger and fatter than any *Acanthodactylus* spp. I saw in Egypt.

#### 40. *Nidua* Lizard.

*ACANTHODACTYLUS SCUTELLATA* (Audouin), 1829).

*Lacerta scutella* J. V. Audouin, in Savigny, Descr. Egypt, 1 (1) (Expl. pls. Rept.), p. 172, 1827, v. C. D. Sherborn, Index Anim. 2, p. 5832, 1930.

*Type-locality.*—"Egypt."

*Distribution.*—North Africa and south-west Asia: Senegal, Mauretania, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia and Nubian Provinces of the Sudan, Sinai, Palestine, Arabia and Mesopotamia.

*Literature.*—*Acanthodactylus scutellatus*. J. Anderson, 1898, pp. 161–168, pl. 22. G. A. Boulenger, 1921, pp. 97–111, 418–420. D. Vinciguerra, 1927, p. 340, and 1931, p. 253.

*Occurrence in Egypt.*—The *Nidua* Lizard is active, agile and diurnal, to be seen in sandy places in spring and autumn, on fine warm days in winter and occasionally in summer, it is neither as active nor as clever as Bosc's Lizard, from which it is distinguished in life by its different actions, usually smaller size and the general sandy colour of its upper surfaces with indistinct small brownish spots, especially on the legs. The lower surfaces are white, except the underneath of the tail which may be pale coral-red. G. A. Boulenger (1921) recognizes two forms as occurring in Egypt—*Forma typica* and var. *audouini*. The latter, in my experience, is a rare individual variation and not a subspecies.

*Nidua* has not been found anywhere in the cultivated parts of the Delta, nor at Alexandria, Damietta, Port Said or in the Fayum, places where Bosc's Lizard is numerous; but at Edku, Sidi Ali el Nadilt, Rosetta, the Brullos Mamuria, the Salhia desert (Fakus district) and in the deserts east and west of the Cairo–Giza area both species are found together. On the other hand, about Ferdan and Ismailia, in the central part of the Canal Zone, where Bosc's is absent, *Nidua* is very abundant: and on the west side of Lower Egypt *Nidua* is numerous at Bir Victoria and very numerous round Bir Hooker in the Wadi Natron. I have found *Nidua* in the desert north of Birket Karun, the big lake at the north of the Fayum, and Major E. A. T. Bayly, D.S.O., caught a specimen in the Sollum–Siwa desert.

In Sinai this species is common from the Suez Canal to the frontier of Palestine, and from near the Mediterranean coast southwards into the Peninsula. I saw no specimens from Palestine, but it has been recorded from Jaffa and from Jerusalem (F. Werner, 1898, p. 3; G. A. Boulenger, 1921, pp. 107 & 418).

In the Sudan I met this species only at Wadi Halfa, at Merowi (Dongola Province) and at Abu Hamed (Berber Province).

Genus OPHISOPS E. Ménétriés, Cat. Rais. Obj. Zool. p. 63, 1832.

*Type-species.*—*Ophisops elegans* Ménétriés.

The type-species has been recorded from Sinai and from Palestine, and also from Cyrenaica, where another closely allied form, *Ophisops occidentalis* also occurs.

#### 41. Ménétriés's Lizard.

Edouard Ménétriés, 1802–1861, French zoologist attached to the St. Petersburg Museum, made this animal known.

*Ophisops elegans* E. Ménétriés, Cat. Rais. Obj. Zool. p. 63, 1832.

*Type-locality.*—Near Baku, Eastern Transcaucasia.

*Distribution.*—South-east Europe, south-west Asia and north-east Africa: Turkey, Greece, Samos, Southern Sporades, Cyprus, Asia Minor, Transcaucasia, Persia, north-western Punjab, Mesopotamia, Syria, Palestine, Transjordan, Sinai and Cyrenaica.

*Literature.*—*Ophisops elegans*. G. A. Boulenger, 1921, pp. 211–222, 426–428. D. Vinciguerra, 1927, p. 15.

*Occurrence.*—*Ophisops elegans* was an addition to the fauna of Egypt made by Dr. J. C. Phillips and Mr. W. M. Mann in their visit to southern Sinai in March and April 1914, as recorded by Dr. T. Barbour (1914, p. 85).

In Palestine this species is distributed widely from the hills near the Dead Sea and the vineyards of Jaffa (F. Werner, 1898, p. 3) to 3000 metres (9843 feet) above the sea on Mount Hermon.

Genus EREMIAS A. F. A. Wiegmann, Herp. Mex. p. 9, 1834.

*Type-species.*—*Lacerta velox* Pallas, 1771, from north of the Caspian Sea.

Three species occur in Egypt, *mucronatus*, *guttulata* and *rubropunctata*. The area of distribution of a Punjab species *brevirostris* extends to Northern Syria (G. A. Boulenger, 1921, pp. 273–276, and 1923, p. 51), and an East African species *spekii* (*sextaeniata*) was recorded by F. Werner (1908, p. 1845) from Gondokoro, and I obtained one specimen, 16 June, 1914, at Mongalla, which, as far as I know, is the farthest north locality for *spekii*.

#### 42. Anseba Lizard.

EREMIAS MUCRONATUS (Blanford), 1870.

*Acanthodactylus mucronatus* W. T. Blanford, Zool. Abyss. p. 453, 1870.

*Type-locality.*—Anseba Valley, Eritrea.

*Distribution.*—West coast of the Red Sea from Upper Egypt and the Sudan to Eritrea and Somaliland.

*Literature.*—*Eremias mucronata*. J. Anderson, 1898, pp. 169–174, pl. 23, figs. 1, 2. G. A. Boulenger, 1921, pp. 244–247, 429, 430.

*Occurrence in Egypt.*—The officers of the 'Pola' on 17 November, 1895, obtained one individual at Halaib (=Alaïbo, G. A. Boulenger, 1921, p. 247) about 22° 12' N. by 36° 40' E. (F. Steindachner, 1901, p. 330).

Its occurrence in Sinai (*Eremias brenneri* G. A. Boulenger, 1887, p. 87, not *brenneri* of W. C. H. Peters, 1869) is doubtful, as the single specimen was received at the British Museum with a specimen of the Helmeted Terrapin, *Pelomedusa galeata*. This is the only record from Sinai of either the terrapin or the lizard, but both species occur in large numbers locally in the Red Sea Province of the Sudan. It is possible that some traveller in the Red Sea may have obtained specimens of natural history on both the African and Asiatic coasts, perhaps at Suakin and at Tor, and subsequently mixed them up.

In the Red Sea Province of the Sudan *Eremias mucronatus* was found to be abundant on the great maritime plain by J. Anderson, and in later years by A. L. Butler, and also by F. Werner (1919, p. 489); it also ascends the hills as on 23 May, 1912, I caught a specimen at Summit Station about 3800 feet (or 1158 metres) above sea-level.

### 43. Small-spotted Lizard.

EREMIAS GUTTULATA (Lichtenstein), 1823.

*Lacerta guttulata* H. Lichtenstein, 1823, p. 101.

*Type-locality.*—Egypt and Nubia.

*Distribution.*—North Africa and south-east Asia: Rio de Oro, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Eritrea, Somaliland, Socotra, several islands in the Red Sea, Sinai, Palestine, Transjordan, Arabia (north to Akaba, south to Aden), Transcaspiya, Persia, Turkestan, Afghanistan, Baluchistan and Sind.

*Literature.*—*Eremias guttulata*. J. Anderson, 1898, pp. 174–182, pl. 23, figs. 3 & 4. G. A. Boulenger, 1921, pp. 258–271, 430–433. D. Vinciguerra, 1927, pp. 336, 337, and 1931, p. 254.

*Occurrence in Egypt.*—This active, diurnal, little animal is distributed widely in the deserts and on the edges of the deserts, both west and east of the Nile, it occurs in the Sollum–Siwa district, at Mersa Matruh, in Mariut, at Abukir (east of Alexandria), in the country just east of Cairo (Helwan, Wadi Hof, Ma'adi, Mokattam Hills, Kafr el Gamus, and Cairo–Suez Road), and was numerous between Salhia and Tel Abu Ekeim (Fakus district, Sharqia Province), but I failed to find it in the Wadi Natron, in the Fayum, anywhere in Giza Province or on the Suez Canal. The only instance of this species occurring in the Delta that I know of is of a specimen caught by Michael J. Nicoll, 6 January, 1908, at Gheit el Nassara, near Damietta. Along the Nile in Upper Egypt J. Anderson (1898) has recorded it from Beni Hassan, Luxor, Karnak, Medina Habu, Aswan and Philae, and I caught one specimen at Shellal (Aswan) 5 September, 1917. In Upper Egypt east of the Nile G. W. Murray, M.C., obtained a specimen in 1914 at Wadi Helal, in the Edfu district, Aswan Province, and two specimens in January 1924 at Wadi Gul'an, c. 24° 22' N. by 35° 17' E.; D. MacAlister collected three specimens in "the neighbourhood of the Emerald Mines on the coast of the Red Sea, in nearly the same latitude as Assuan," *i. e.*, 24° N. (J. Anderson, 1900, p. 425); and F. Steindachner (1901, p. 330) records it from Halaib, c. 22° 12' N. by 36° 40' E.

Well known from Sinai (H. C. Hart, 1891, pp. 8 & 210; F. Steindachner, 1901, p. 330; L. G. Anderson, 1904, p. 7; T. Barbour, 1914, p. 85; A. Andres, 1920, p. 19), I found this species numerous in the north, central and south, and up to at least 5300 feet (1615 metres) above sea-level.

*Sudan*.—J. Anderson, A. L. Butler and F. Werner found *guttulata* in the Red Sea Province—it occurs both on the maritime plain and in the hills at Erkowit, 4000 feet (1218 metres). I met it near the Nile in the Provinces of Halfa and Dongola.

*Subspecies*?—G. A. Boulenger (1921) recognizes three varieties as occurring in Egyptian territory—*typica*, *olivieri* and *martini*. *Forma typica* is certainly the ordinary form in Egypt, from Sollum in the west to El Arish in the east, and south to the Red Sea Province of the Sudan. Var. *olivieri* and var. *martini*, at any rate in Egypt, appear to be individual variations and not geographical races.

#### 44. Red-spotted Lizard.

EREMIAS RUBROPUNCTATA (Lichtenstein), 1823.

*Lacerta rubropunctata* H. Lichtenstein, 1823, p. 100.

*Type-locality*.—Egypt and Nubia.

*Distribution*.—Algerian Sahara, Tripoli, Cyrenaica, Egypt and Sinai.

*Literature*.—*Eremias rubropunctata*. J. Anderson, 1898, pp. 183–186, pl. 23, figs. 5 & 6. G. A. Boulenger, 1921, pp. 276–280, 433, 434. D. Vinciguerra, 1927, p. 335, and 1931, p. 254. F. Angel, Bull. Mus. Hist. nat. Paris (2) 4, p. 385, 1932.

*Occurrence in Egypt*.—Desert Arabs consider this animal a Gecko and not a Lizard and so call it “Bors,” while *Eremias guttulata* is to them a “Sahlya.” The Bedawin and other natives who used to be continually calling at the Giza Zoological Gardens offering live reptiles for sale either ignored or were afraid of this species. In 25½ years only five or six specimens were so obtained, all others were caught by M. J. Nicoll, myself or our friends.

This agile, diurnal, little lizard was fairly common in the Wadi Natron, and at Bir Victoria, and all along the edge of the desert through Giza Province to the Fayum, where I found it on desert edges in all three districts. East of the Nile it was equally common at Helwan, Ma’Adi, Kafr el Gamus etc., and on the Cairo–Suez Road, at least to as far as No. 3 Tower. The only other locality in Egypt in Africa from which I saw specimens was Mahsama, between Kassassin and Ismailia, eastern Lower Egypt, where two were collected by M. J. Nicoll 6 March, 1910.

J. Anderson (1898) mentions specimens from the Cairo–Giza area, from the Oasis of Kharga, from Tel el Amarna in Assiut Province, Upper Egypt, and from Ras Gharib, Gulf of Suez. F. Steindachner (1901, p. 330) records one from Zafarana, Gulf of Suez, 17 March, 1895.

The occurrence of *rubropunctata* in Sinai is well known (H. C. Hart, 1891, p. 4; J. Anderson, 1898; T. Barbour, 1914, p. 85; A. Andres, 1920, p. 19; G. A. Boulenger, 1921, p. 279). I met this species on the central plateau; one was caught 16 October, 1918, at about 1000 feet above sea-level on the edge of the broad open Wadi el Bruk, just east of Gebel el Bruk and about twenty miles north of Nakhl Fort; and also saw a few individuals in the northern part of south Sinai between Suez and Bir Haleifia. I did not see it south of the Wadi Garundel.

*Tail*.—*Eremias rubropunctata*, compared to other Egyptian species of *Eremias* and *Acanthodactylus*, appears to have a comparatively non-deciduous tail. When working at variation in this species in the summer of 1922 I had



24 specimens available for study and was surprised to find that every one of them had a tail. On looking up Anderson's measurements (1898) I found:—

*E. guttulata*.—101 individuals: 34 tails measured, 67 not, *i. e.* about 34 per cent. non-deciduous.

*E. rubropunctata*.—36 individuals: 20 tails measured, 16 not, *i. e.* about 55 per cent. non-deciduous.

No representative of the family AMPHISBAENIDÆ is known from Tripoli, Cyrenaica, Egypt, Nubia, Sudan or Sinai, but one species, **Strauch's Amphisbaena**, *Blanus strauchii*, has been recorded from Syria and from Palestine.

Family VARANIDÆ A. C. L. G. Günther, Rept. Brit. Ind. p. 63, 1864; and E. D. Cope, Proc. Acad. Nat. Sci. Philad. 16, p. 227, October 1864.

Uaranidae J. E. Gray, 1827, p. 54.

*Type-genus*.—*Varanus* Merrem, 1820.

Genus VARANUS B. Merrem, Tent. Syst. Amphib. p. 58, 1820.

*Type-species*.—*Lacerta varia* Shaw, 1790, from Australia.

Two species occur in Egypt—*griseus* and *nilotica*. A third, *ocellatus*, in the Sudan, where it is not uncommon on the Blue Nile and on the White Nile and its tributaries. An immature *ocellatus*, caught on Sud block, No. 15, in the Bahr el Gebel in the early summer of 1905, fed freely on cockroaches, locusts, grasshoppers and other insects, later as it grew larger on young rats which it seized and then swallowed whole; it died suddenly, 14 December, 1905, when its total length was 460 mm.

#### 45. Grey Monitor, or Desert Monitor.

VARANUS GRISEUS (Daudin), 1803.

*Tupinambis griseus* F. M. Daudin, Hist. Nat. Rept. 8, p. 352, 1803.

*Type-locality*.—Egypt.

*Distribution*.—North Africa and west Asia: from western Algeria, Tripoli, Cyrenaica, Egypt, the Nubian and Red Sea Provinces of the Sudan, Sinai, Palestine, Transjordan, Arabia, Mesopotamia, Persia, and the Caspian Sea area to north-west India, Rajputana and the extreme north of the Indian Central Provinces.

*Literature*.—*Varanus griseus*. G. A. Boulenger, 1885, p. 306. J. Anderson, 1898, pp. 134–137, pl. 16. L. G. Andersson, 1904, p. 8. D. Vinciguerra, 1927, p. 335, and 1931, p. 252. K. P. Schmidt, 1930, p. 225.

*Occurrence in Egypt*.—The desert "Waral" being diurnal and growing to a total length of over 1067 mm. (3½ feet) is very conspicuous, and not uncommon in desert and scrub country throughout Egypt from the Mersa Matruh district in the west to the Palestine frontier in the east and south to the borders of the Sudan at Wadi Halfa. Though it appears to run very swiftly, it is caught easily by a mounted man, in a few moments one can gallop round it, "head it," dismount and pick it up, the lizard will be unharmed though, naturally, very indignant. I have never seen this species in the actual Nile Delta, but found it on the edges of cultivation to west, east and south. Several individuals from Mariut, 1898–1909, tended to be darker in colour than similar-sized specimens caught in the Cairo–Giza area. It occurs in the Wadi Natron, is numerous in the Fayum, and Dr. Lewis H. Gough

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obtained an adult male in April 1917 at Raschida in Dakhla Oasis. It is to be seen on the Cairo-Suez Road, and, 1915-1918, was numerous on both sides of the Suez Canal, from Ballah southwards, and was distributed widely in Sinai.

*Sudan*.—Lord Rothschild, F.R.S., has in his Museum at Tring the skin of a *Varanus griseus* collected, 25 March, 1901, by his brother, the late Hon. N. Charles Rothschild, at Shendi in the Berber Province. This is the farthest south locality, as far as my knowledge goes, for this species along the Nile Valley.

*Palestine*.—Recorded, as *Psammosaurus scincus*, by Canon H. B. Tristram (1888, p. 148). Prof. F. Werner (1898, p. 2) mentions a full-grown specimen from the sandhills between Asdod and Khan Yunas, south of Gaza, which had swallowed a Gold Skink, *Eumeces schneiderii*, a second specimen from east of the Jordan and a third from Messra on the Dead Sea. Major Maurice Portal, D.S.O., collected two specimens near Gaza in 1917, and Capt. R. J. Williams one near Beersheba in 1918.

*Colour*.—On 3 July, 1922, just north of Sheikh Fadl, El Ayat district, Giza Province, I happened to manage to dig out and catch alive a large male *Varanus griseus*, and noted that when first caught the upper surfaces were a uniform bright pale yellow, in marked contrast to a small Giza specimen obtained 25 March, 1922, which was handsomely marked with black transverse bands. Of another Giza specimen, length, head and body about 127 mm., tail about 175 mm., on 7 November, 1922, I noted:—Upper surfaces bright reddish buff, with bright lemon-yellow spots and very conspicuous rich dark cinnamon-brown markings: these marks comprise five narrow transverse bars across the front part of the head; three longitudinal lines on each side of the neck, the uppermost of which passes through the eye; six broad bands across the back, each finishing on each side in two narrow bands; two narrow dark bands across loins; twenty-three dark bands across the tail, these are much narrower than the yellow interspaces. Labials white with narrow vertical dark lines. Limbs spotted, with small dark and large light spots. Lower surfaces immaculate white. Tongue pink.

*Habits*.—Only once have I seen a *Varanus griseus* in water, this was on 22 August, 1901, the lizard was seen swimming in the Selamlik Canal in the Giza Gardens. Arthur L. Butler, who was with me, wrote at the time:—“It did not seem quite at home in the water, and made no attempt to dive when it saw us.”

*Food*.—*Varanus griseus* does well in captivity, one individual lived in the Giza Zoological Gardens for 9 years 4 months 11 days (P. Z. S. 1925, p. 947), its length at death of head and body was 377 mm. (1' 2·8"), the tail was imperfect. Their food in captivity was usually raw meat, and such offal as the entrails of fowls, but when they got the chance they would eat live lizards (including small individuals of their own species), especially *Scincus stincus*, and also snakes such as *Natrix natrix*, *Coluber florulentus*, *Spalerosophis diadema* and *Psammodphis sibilans*.

NOTE.—On 18 May, 1918, when crossing the plain of El Markha, between Abu Zenima and Seh Baba, close to the sea-coast in south Sinai, I caught a very nicely marked and coloured young *Varanus griseus*. The Tuwâri Bedawin who were with me were very frightened of this animal, much more so than they were of snakes: even when I was holding it in my right hand and it bit firmly into my left thumb, these Arabs would not believe in the harmlessness of the lizard, they simply said that I personally evidently had a charm against its venom but that if it bit one of them he would die.

## 46. Nile Monitor.

VARANUS NILOTICA (Linnaeus), 1766.

*Lacerta nilotica* Linnaeus, 1766, p. 369.

*Type-locality*.—Egypt.

*Distribution*.—South and tropical Africa, extending north along the Nile into Egypt: being known from Mauritania, Senegambia, Sierra Leone, Liberia, Ashantiland and Nigeria to Cape Colony, and up through Zambesia, Tanganyika Territory and Kenya Colony to Eritrea, the Sudan, Nubia and Egypt.

*Literature*.—*Varanus niloticus*. G. A. Boulenger, 1885, p. 317; J. Anderson, 1898, pp. 140–142, pl. 18.

*Occurrence in Egypt*.—The River Waral-Lizard, the “Baranta” of the Blue Nile, is, as often as not, called “Timsah” (*i. e.* Crocodile) in Egypt, and at Luxor and at Aswan I have seen live young lizards of this species offered for sale to tourists as “young crocodiles.” In the El Derr district of Aswan Province *Varanus nilotica* was fairly numerous along the Nile banks, I have seen many near Abu Simbel and between Korosko and Kalabshi. As one travelled down stream they became rarer, and the most northern locality I know of was a fairly large specimen caught off Giza, just upstream of Cairo, 11 December, 1911.

*Sudan*.—From my personal observations *Varanus nilotica* was not uncommon along the Nile in the Sudan Provinces of Halfa, Dongola, Berber and Khartoum, and along the Blue Nile from Khartoum to as far south as Roseires (between Wad Medani and Roseires it is really numerous, I noted seeing over fifty individuals in a few weeks). On the main White Nile I failed to see it, but found it common on the Bahr el Zeraf and on the Bahr el Gebel to, at any rate, as far south as Lado.

*Colour in life*.—Even large specimens may be brilliantly marked and coloured—for instance, one, between 5 and 5½ feet long, on the Bahr el Zeraf, 29 May, 1914, had the head, neck and body very black with golden-yellow markings and the tail suffused with a brick-red wash, and my wife made a note of the lovely yellow colour of a specimen which she watched by the Nile bank near Wadi Halfa, 9 December, 1920.

*In captivity*.—Very small individuals grow rapidly in size. One in the Giza Zoological Gardens, which died 7 February, 1916, had in 6½ years reached a head and body length of 622 mm. (2' 0½"). Some, even if full grown when caught, become very tame, other specimens remain very fierce and hiss and lash their tails violently from side to side when anyone comes near them.

*Palestine*.—Canon H. B. Tristram (1888, p. 148) states:—“The Nilotic Monitor inhabits the region to the south of the Dead Sea, and the Southern Judæan desert.” This statement remains unconfirmed, and the account by Mr. C. G. Danford (‘Notes on Sport and Ornithology, by H.I. & R.H. the late Crown Prince Rudolf of Austria,’ pp. 360 & 390, 1889) of “one of the great Waran Lizards . . . Lace Lizard, 96 centim. long,” being shot in the Jordan Valley may apply to *Varanus griseus*.

The family ANGUIDAE is not represented in Egypt, but one species **Pallas's Glass-Snake**, *Ophisaurus apodus*, occurs in Palestine, and is known from the marshes of the Wadi Rubin, a few miles south of Jaffa, from the Judæan Hills (up to 2700 feet above the sea) and from near Nazareth (Major M. Portal, D.S.O., Major A. G. L. Sladen, M.C., and Capt. C. R. S. Pitman, D.S.O., M.C.), and from Mount Hermon (Canon H. B. Tristram, 1888, p. 151).

## Order SERPENTES Linnaeus, 1758, p. 214.

Thirty species of Snakes are known definitely to occur in Egypt, these represent six families :—

1. Typhlopidae .....	1 species.
2. Glauconiidae .....	1 „
3. Boidae .....	2 „
4. Colubridae .....	18 „
5. Elapidae .....	3 „
6. Viperidae .....	5 „

Family TYPHLOPIDAE J. E. Gray, 1825, p. 203.

*Type-genus*.—“*Typhlops*, Schneider,” Gray, *l. c.* = *Typhlopes* J. G. Schneider, Hist. Amphib. 2, p. 339, 1801 = *Typhlops* Opper, 1811.

Genus TYPHLOPS M. Opper, Ord. Rept. p. 54, 1811.

*Type-species*.—*Anguis lumbricalis* Linnaeus, 1758, p. 228 = *Typhlops lumbricalis* (Linnaeus), 1758, from the West Indies.

One species, *vermicularis*, is known from Egypt, another, *simoni*, occurs in Palestine, and two others, *punctatus* and *schlegelii*, have been recorded from the southernmost (Mongalla) Province of the Sudan.

## 47. Greek Blind-Snake.

TYPHLOPS VERMICULARIS B. Merrem, Tent. Syst. Amphib, p. 158, 1820.

*Type-locality*.—Greek Islands.

*Distribution*.—South-east Europe, western Asia and north-east Africa : including the Ionian Islands, Greece, Bulgaria, Cyclades, Cyprus, Asia Minor, Sinai, Palestine, Syria, Caucasia, Transcaspia, Persia, Turkestan, Afghanistan and Lower Egypt.

*Literature*.—*Typhlops vermicularis*. G. A. Boulenger, 1893, p. 21.

*Occurrence in Egypt*.—Specimens in the Leyden Museum from the foot of Mount Sinai were recorded by Duméril and Bibron (Erp. gén. 6, p. 306, 1844), as mentioned by J. Anderson (1896, p. 70), and two individuals from Lower Egypt, east of the Nile, have been recorded by myself (P. Z. S. 1923, p. 1079).

Family GLAUCONIIDAE G. A. Boulenger, Fauna Ind. Rept. p. 242, 1890.

*Type-genus*.—*Glauconia* J. E. Gray, Brit. Mus. Cat. Liz. p. 139, 1845.

*Type-species*.—*Glauconia nigricans* = *Typhlops nigricans* Schlegel.

*Glauconia* is antedated by *Leptotyphlops* L. J. Fitzinger, Syst. Rept. p. 24, 1843, though *Leptotyphlops* has priority over *Glauconia* as a generic name, *Glauconia* stands as a true synonym and the family-name Glauconiidae has priority over Leptotyphlopidae L. Stejneger, Proc. U.S. Nat. Mus. 14, p. 501, 1891. This case is comparable to that in Mammals where the family-name Hyracidae J. E. Gray, 1821, stands, although the generic name *Procvavia* was found to antedate *Hyrax*, and in 1892 Oldfield Thomas thought the family-name must be altered to Procaviidae—we now know that such a change is not necessary (*cp.* P. Z. S. 1932, p. 430).

The family-name Stenostomidae has also been used for this group of snakes by E. D. Cope, Proc. Amer. Phil. Soc. Philad. 23, p. 481, 1886, the type-genus being *Stenostoma* Wagler, in Spix, Serp. Bras. p. 68, 1824. *Type-species*.—*Stenostoma albifrons*, but this is untenable as a generic name on account of *Stenostoma* having been used for a genus of beetles by P. A. Latreille in 1810.

Genus LEPTOTYPHLOPS L. J. Fitzinger, Syst. Rept. p. 24, 1843.

*Type-species*.—*Typhlops nigricans* Schlegel.

One species, *cairi*, occurs in Egypt. One, *phillipsi*, from Petra, Arabia, has been described by T. Barbour (1914, p. 87), and two other species, *macrorhynchum* and *dissimile*, have been recorded from the Sudan.

#### 48. Cairo Earth-Snake.

LEPTOTYPHLOPS CAIRI (Duméril & Bibron), 1844.

*Stenostoma cairi* Duméril & Bibron, Erp. gén. 6, p. 323, 1844.

*Type-locality*.—Cairo, Egypt.

*Distribution*.—North Africa: Mauritania, Egypt, Nubia, Sudan, Abyssinia, Somaliland, and recorded from Dahalak Island, off Massawa, southern Red Sea, by F. Steindachner (1901, p. 333).

*Literature*.—*Glauconia cairi*. G. A. Boulenger, 1893, p. 65. J. Anderson, 1898, pp. 233–235, pl. 32, fig. 1, text-fig. 9. F. Werner, 1908, p. 42, and 1919, p. 501. L. G. Anderson, 1916, p. 23.

*Leptotyphlops cairi*. H. W. Parker, P. Z. S. 1932, p. 362.

*Occurrence in Egypt*.—Dr. J. Anderson (1898) gave two localities for this species—Cairo and Luxor. Prof. Franz Werner (1919, p. 501, and 1928, pp. 76–79) recorded specimens from Elephantine Island and from Kitchener's Island, both near Aswan, Upper Egypt.

I saw seventy-five individuals from the Cairo–Giza area, all caught in gardens in the years 1899–1922, but no specimens from anywhere else in Egypt.

In the Sudan this species is known from Khartoum (A. L. Butler), both Blue and White Niles (S. S. F.), Kordofan (F. Werner, 1919) and Durrur in the Red Sea Province (J. Anderson, 1898).

*Habits*.—Of 68 individuals found wild in the Giza Gardens, I noted that they were caught in the following months:—Jan., 6; Feb., 14; March, 18; April, 12; May, 4; June, 1; July, —; Aug., 1; Sept., 3; Oct., —; Nov., —; Dec., 9; this appears to suggest that these snakes are most active, or at any rate come most often to the surface of the ground, in the spring months.

Specimens found at Giza have been come across when men were digging up earth or turning over piles of dry grass or heaps of stones, other specimens have been met above ground at night and a few found in the early morning on hard paths where the metalled surface has prevented the snakes from hiding themselves by "digging in."

The shiny pink and grey colour makes this species look very like an earth-worm, but the frequently protruded pale-coloured tongue, which is used to examine every object, shows it to be a snake. In life the eyes appear as two minute black spots. Although when it wants to do so this tiny snake can open its mouth *very widely*, when handled, it never attempts to bite but wriggles a great deal, pressing its sharp-pointed tail against the skin of one's hand.

On an apparently quite healthy specimen, found A.M., 10 September, 1920,

which lived in a cage in my room till P.M., 3 December, 1920, I made the following notes :—

Absolutely quiet all day. Not crepuscular. Becomes active some hours after sunset. Very active for several hours at night. Takes readily to water. At night, when the electric light was switched on suddenly, the snake was often found resting or swimming in the water. When crossing shallow water it seemed to prefer crawling on the bottom of the pond to swimming on the surface.

I saw no small specimens, fourteen individuals measured in total length, in millimetres, respectively: 175, 189, 200, 200, 202, 209, 218, 227, 236, 238, 239, 240, 247 and 253 (=9.96 inches).

Family BOIDAE J. E. Gray, 1825, p. 209.

*Type-genus.*—*Boa* Linnaeus, 1758, p. 214, from America.

The African Python, *Python sebae*, is common on the Blue and White Niles and their tributaries. The Royal Python, *Python regina*, was found to occur in the Bahr el Ghazal Province of the Sudan by Arthur Lennox Butler in 1907, and in the Nuba Mountains Province (southern Kordofan) by Franz Werner in 1914.

In Egypt the Boidae are represented only by the genus *Eryx*.

Genus ERYX F. M. Daudin, Hist. Nat. Rept. 7, p. 251, 1803.

*Type-species.*—*Boa turcica* A. G. Olivier, Voy. Emp. Othom. 2, p. 200, footnote, 1801, which is a form of *Eryx jaculus* (Linnaeus), 1758.

Two species of *Eryx*, the Ethiopian *colubrina* and the Palaearctic *jaculus*, occur in Egypt. A third and apparently very rare species, *Eryx muelleri* (G. A. Boulenger), 1892, occurs in the Sudan Province of Kordofan and also probably on the Blue Nile, while an Arabian species, *Eryx jayakari* G. A. Boulenger, 1888, has on one occasion been seen by me alive in Cairo in the hands of a "snake-charmer."

#### 49. Theban Sand-Boa.

ERYX COLUBRINA (Linnaeus), 1758.

*Anguis colubrina* Linnaeus, 1758, p. 228.

*Type-locality.*—Egypt.

*Synonym.*—*Eryx thebaicus* A. Reuss, Mus. Senckenb. 1, p. 134, 1834.

*Type-locality.*—Egypt: restricted to Thebes, Qena Province, Upper Egypt.

*Distribution.*—Africa: Egypt, Sudan, Eritrea, Tanganyika Territory, Somaliland, and reported from Arabia (G. Scortecci, 1932, p. 40).

*Literature.*—*Eryx thebaicus*. G. A. Boulenger, 1893, p. 125; J. Anderson, 1898, pp. 236–240, pl. 32, fig. 2.

*Occurrence in Egypt.*—I did not meet this species myself. Twenty specimens that I saw alive in Egypt had been purchased from natives, the reputed locality being often "Luxor."

*Habits.*—Some specimens that I had in captivity were very apt to bite anyone who put their hands near them. The bite of this Boa is not a stab making clean, simple punctures in one's flesh, but appears to consist of a rapid series, faster than the eye can follow, of somewhat sidelong movements, resulting

in deep scratches or slashes which bleed profusely. On several occasions I have seen a man try to pick up a Theban Sand-Boa and almost before he realized what was happening his hands were *streaming* with blood.

*Size*.—An individual belonging to Mr. G. H. Gurney, which I examined 4 April, 1910, weighed .6 kilos. (1.32 lbs.), and was in total length 770 mm. (2 foot 6½ inches).

Reasons for adopting the specific name *colubrina* Linnaeus, 1758, in place of *thebaicus* Reuss, 1834 :—

1. Only two species of *Eryx* occur in Egypt.
2. Hasselquist found two species of *Eryx* in Egypt.
3. Linnaeus in 1758 gave names to these two species and references to his description of both of them published in Hasselquist, "Iter Palaestinum," 1757.
4. One Linnean species *jaculus* is accepted by everyone.
5. Of the other species, though the type-specimen appears to be lost, the description in Hasselquist, p. 320, fixes *colubrina* as the earliest name for the species usually called *thebaicus*.
6. Although at the time it may appear unpleasant to have to alter a well-known name, it really simplifies the synonymy by fixing definitely an older name instead of "leaving it with an eternal query."

Dr. K. Jordan, F.R.S., has been so kind as to enquire into this question with me, and we both came to the same conclusion.

Dr. Robert Mertens, in a letter from Frankfurt-a.-M. of 29 April, 1933, also agrees to the change. Dr. Malcolm A. Smith wrote to me from the British Museum, 18 May, 1933: "I have been into the question of *Eryx colubrina* and am entirely in agreement with your conclusions. So is Parker."

#### 50. Javelin Sand-Boa.

*ERYX JACULUS* (Linnaeus), 1758.

*Anguis jaculus* Linnaeus, 1758, p. 228.

*Type-locality*.—Egypt.


*Distribution*.—South-east Europe, north Africa and west Asia: being known from Corfu, Greece, the Cyclades, Rumania, Bulgaria, Algeria, Tunisia, Egypt, Palestine, Syria, Asia Minor, Mesopotamia, Caucasia, Transcaucasia, Armenia, Persia, Turkestan and Afghanistan, where it is represented by the closely allied form *Eryx miliaris* (Pallas), 1773.

*Literature*.—*Eryx jaculus*. G. A. Boulenger, 1893, p. 125. J. Anderson, 1898, pp. 240–244, pls. 33, 33 A.

*Occurrence in Egypt*.—A. Andres (1908, p. 6) recorded this species from "Moharrem Bey, Ramleh, Mariut"—that is to say, from the east and west environs of Alexandria. I only met it in alluvial ground near the Nile in the Cairo-Giza area, and obtained no evidence of its occurrence farther south. The late Major C. M. Ingoldby, R.A.M.C., wrote of *Eryx jaculus* in Mesopotamia (J. Bombay Nat. Hist. Soc. 27, p. 347, 1920):—"Very common along the Tigris within a mile or so of the river, especially near villages. Excepting *Trop. tessellatus*, the most commonly killed snake owing to its frequent appearance above ground in daylight and his sluggish movements." Ingoldby's experience confirms mine that this is not a desert snake.

*Eryx jaculus* is not known from Sinai, but is numerous in south Palestine. I examined eight specimens caught between Rafa and Gaza in 1917 by Major P. H. Manson-Bahr, D.S.O., R.A.M.C., and Major M. Portal, D.S.O.

*Habits*.—When moving underground this snake expands its ribs laterally

and contracts the underneath of its body into a longitudinal concavity, so, in section, its shape is something like , as in the so-called "flying-snakes" of quite different genera in south-east Asia. This problem has been discussed by H. Hediger, Bâle Museum, in Rev. Suisse Zool. Genève, 39, pp. 239-246, 1932.

It is a very gentle snake—I have had ninety-two different individuals in captivity and never known one to attempt to bite, but some newly caught specimens have appeared to "strike" with their tails.

*Breeding season.*—Very small specimens were purchased from natives at Giza on 22 February, 1923, 3 September, 1910, 27 September, 1921, and 20 November, 1909 (this one was in total length 185 mm.). An old Bedawin friend of mine, Mohamed Mabruk of Aburoash, said he caught a large individual in September 1922 and put it in a box in his house where it gave birth to six young ones: I saw the mother and her six children 18 September, 1922.

*Size.*—One which had lived in the Giza Zoological Gardens for 5 years and 5 days, which died 21 October, 1904, was in total length 838 mm., or 2 feet 9 inches.

*Artificial horns.*—L. J. F. J. Fitzinger (1802-1884) recorded ("Versuch Gesch. Menag." p. 141, 1853) that two of these Sand-Boas presented to the Menagerie of the Imperial Hof-Naturalien-Cabinete in Vienna by Schiade, a Trieste merchant, in 1823, were found to have tufts of hair set artificially in their heads; both died within a few weeks.

#### Family COLUBRIDAE J. E. Gray, 1825, p. 207.

*Type-genus.*—*Coluber* Linnaeus, 1758, p. 216.

The following three subfamilies are represented in Egypt: Colubrinae by 10 spp., Rhachiodontinae by 1 sp. and Boiginae by 7 spp.

#### Subfamily COLUBRINAE.

Represented in Egypt by the following six genera:—

<i>Natrix</i> .....	1 species.
<i>Lycophidion</i> .....	1 "
<i>Coluber</i> .....	4 "
<i>Spalerosophis</i> .....	1 "
<i>Lytorhynchus</i> .....	1 "
<i>Contia</i> .....	2 "

The following genera of Colubrine snakes should be mentioned also, as, though they are not known at present from Egypt, they occur in the Nile Valley in the Sudan, and as specimens of both an apparent *Lycophidion* and an undoubted *Dasypeltis* have turned up in the Fayum there is always the possibility of other Tropical African snakes being found either in the Fayum or in the Delta of Egypt.

*Boaedon lineatum* appears to be not uncommon on the White Nile and its tributaries, I obtained a specimen at Mongalla, 20 June, 1914. *Boaedon fuliginosus* has also been recorded from the Sudan. *Simocephalus butleri* discovered by A. L. Butler in the Bahr el Ghazal was described by G. A. Boulenger in 1907. The common green snakes of the Blue and White Niles have been referred to two species, *Chlorophis irregularis* and *Chlorophis emini*, but from the Sudan specimens that I have seen I am unable to distinguish



these as "species," as the "keels" on the ventral shields may be perceptible, just perceptible, or not perceptible. Another green snake common on the Blue and White Niles is *Philothamnus semivariiegata*. Both *Chlorophis* and *Philothamnus* have occurred in Khartoum, possibly brought there accidentally on board steamers or sailing boats, but, in my experience, have not been found anywhere north of Khartoum. The East African *Coronella semiornata* may come as far north as the Sudan, the West African *Prosymna meleagris* certainly does; in September 1907 I obtained a specimen at Singa on the Blue Nile. *Scaphiophis albopunctatus* has been recorded from the "Upper Nile," and I obtained a specimen of *Grayia tholloni* at Mongalla on the Bahr el Gebel, 14 June, 1914.

The cases of *Elaphe situla* and *Oligodon melanocephalum*, both Palaearctic snakes that have been said to occur in Egypt, are mentioned later (pp. 815, 816).

Genus *NATRIX* J. N. Laurenti, Syn. Rept. p. 73, 1768.

*Type-species*.—*Natrix vulgaris* Laurenti, o. c. p. 75 = *Coluber natrix* Linnaeus, 1758, p. 220.

This the well-known European species, *Natrix natrix*, has been reported from Palestine, but its occurrence there is doubtful.

One species, *tessellata*, occurs in Egypt, and another, *olivacea*, in the southern Sudan.

### 51. Diced Water-Snake.

*NATRIX TESSELLATA* (Laurenti), 1768.

*Coronella tessellata* J. N. Laurenti, Syn. Rept. p. 87, 1768.

*Type-locality*.—Karst country, southern Carniola.

*Distribution*.—Central, southern, and south-eastern Europe, and from Sinai, Palestine, Syria and Asia Minor through Transcaucasia, Mesopotamia and Persia to the north-west of India and the extreme west of China. It also occurs locally in the north-east of the Nile Delta in Egypt.

*Literature*.—*Tropidonotus tessellatus*. G. A. Boulenger, 1893, p. 233, and 1923, p. 54. J. Anderson, 1898, pp. 246, 247, pl. 34, fig. 1.

*Occurrence in Egypt*.—The only localities from which I have seen specimens are the neighbourhood of Mansura, in Daqahlia Province, on the Damietta branch of the Nile, and the estate of Constantinia, near Bessandilla, in the Sherbin district of Gharbia Province, which estate is about fifteen miles north of Mansura, and where in March 1923, thanks to the kind assistance of Major G. O. Way, D.S.O., I obtained eight individuals in six days, and others later. In these localities this snake inhabits low-lying land and the banks of canals and drains.

T. Barbour (1914, p. 88), writing of this species as *Natrix hydrus* (Pallas), says:—"A young specimen was secured at Fuweila in Sinai. So far as I can learn, this is the first record for this species in the Sinaitic peninsula."

*Food*.—A specimen caught soon after sunset, 15 March, 1923, at Constantinia, disgorged a recently swallowed toad, *Bufo regularis*. A. Andres (1908, p. 6) had recorded that this species of snake in his terrarium fed on *Bufo regularis*.

Genus *LYCOPHTIDION* L. J. Fitzinger, Syst. Rept. p. 27, 1843.

*Type-species*.—*Lycodon horstokii* Schlegel, 1837 = *Lycophidion horstokii* Fitzinger, 1843, a synonym of *Lycodon capensis* Smith, 1831.

**52. Cape Wolf-Snake.**

LYCOPHIDIUM CAPENSIS (A. Smith), 1831.

*Lycodon capensis* A. Smith, S. Afr. Quart. Journ. (1) no. 5, p. 18, 1831.

*Type-locality*.—South Africa.

*Distribution*.—Africa from the Cape of Good Hope and Natal, northward by Angola, Nyassaland, Zanzibar, Congo, Kenya Colony, Abyssinia, Eritrea and the Sudan to Egypt, and reported from Arabia (G. Scortecchi, 1932, p. 33).

*Literature*.—*Lycophidium capense*. G. A. Boulenger, 1893, p. 339. S. S. Flower, P. Z. S. 1923, pp. 1080, 1081.

*Occurrence in Egypt*.—One specimen, apparently of this species, was collected by the Rev. Father Teillard in the Fayum in 1904.

Personally I only met this snake in the Sudan, at Deesa and at Roseires on the Blue Nile and at Mongalla on the Bahr el Gebel.

Genus COLUBER Linnaeus, 1758, p. 216.

*Type-species*.—*Coluber constrictor* Linnaeus, *l. c.* North America.

Regarding the fauna of Egypt, eight species must be taken into consideration as having been reported to occur, as being known definitely to occur or as being likely to occur; these are:—

1. *jugularis*. Reported from Egypt in error, occurs in Palestine.
2. *najadum*. " " " "
3. *rhodorachis*. Occurs in Upper Egypt, Sinai and Palestine.
4. *ventromaculatus*. Occurs in Palestine, and may yet be found in Sinai.
5. *rogersi*. Occurs in Egypt, Sinai and Palestine.
6. *elegantissimus*. Reported from Sinai, occurs in Palestine.
7. *florulentus*. Occurs in Egypt and the Sudan.
8. *ravergieri*. Occurs in Egypt and Palestine.

**Syrian Black-Snake.**

COLUBER JUGULARIS Linnaeus, 1758, p. 225.

"*Zamenis gemonensis* var. *asiana* Boettger, Ber. Senck. nat. Ges. 1879–80, p. 151," of J. Anderson, 1898, pp. 248–250, pl. 37 A, fig. 1, should be known, it appears, as *Coluber jugularis jugularis* Linnaeus, 1758, the type-specimen having been collected by Hasselquist and the type-locality given as "Egypt."

Hasselquist may have purchased his specimen in Egypt, but there can be little doubt that its country of origin was Palestine or Syria. Once in 1913 and once in 1922 I saw live specimens of this species offered for sale in Cairo, and was able to find out that they had been imported into Egypt.

The statement that this species occurs in Egypt is, in my opinion, erroneous. For many years, at any rate since before 1898, there was a bottle in the Cairo School of Medicine Museum containing two snakes clearly labelled as "*Zamenis gemonensis*. Egypt." These snakes had labels tied to them, the larger "12712695," the smaller "14412695"; reference to Dr. Innes's manuscript catalogue showed that both were from Dr. Gaillardot's collection from Syria.

In Palestine this species is well known (H. B. Tristram, 1888, p. 143; H. C. Hart, 1891, pp. 60 & 209; F. Werner, 1898, p. 9; T. Barbour, 1914, p. 89). In 1918 Major Maurice Portal, D.S.O., obtained two specimens that

I examined, both were black, the first killed at Yebnah, near Ramleh, was 1854 mm. (6' 1") in total length, the second caught near Jericho was 2007 mm. (6' 7").

#### Dahl's Whip-Snake.

COLUBER NAJADUM (Eichwald), 1831.

*Tyria najadum* E. von Eichwald, Zool. Spec. 3, p. 174, 1831, *vide* R. Mertens & L. Müller, 1928, p. 46.

*Type-locality*.—Baku, Transcaucasia.

N.B.—*Tyria dahlia* L. J. Fitzinger, Neue Classif. Rept. p. 60, 1826, is a *nomen nudum*, from Dalmatia.

*Literature*.—*Zamenis dahlia*. G. A. Boulenger, 1893, p. 397. J. Anderson, 1898, pp. 250, 251, text-fig. 10.

This very beautiful, distinctively marked and coloured snake, known from south-east Europe, Cyprus, Asia Minor, Syria, Palestine, Mesopotamia, Transcaucasia and Persia, is stated in many herpetological works to occur in Egypt, but so far I have failed to find any evidence of its occurrence in Egypt, in Africa or in Sinai. Savigny's specimen attributed to Egypt may have been brought from Syria or Palestine. In Palestine this species is well known (H. B. Tristram, 1888, p. 143; F. Werner, 1898, pp. 5 & 9; T. Barbour, 1914, p. 89). Six specimens from Palestine were received at the Giza Z. Mus. 1918–1920: the first from Major M. Portal, D.S.O., the second from Brig. General Goland v. H. Clarke, C.M.G., D.S.O., had been killed at Sarona, near Jaffa, was remarkable for having only 199 ventral shields, and four which were caught alive at Sarona by Brig. General F. FizH. Lance, M.C.

#### 53. Jan's Desert-Racer.

COLUBER RHODORACHIS (Jan.), 1865.

*Zamenis rhodorachis* G. Jan, in F. De Filippi, Viagg. in Persia, p. 356, 1865.

*Type-locality*.—Persia.

*Distribution, as far as known*.—Upper Egypt (east of Nile), Eritrea, Somaliland, Sinai, Palestine, Syria (?), Arabia, Transcaspia, Persia, Baluchistan and Western Himalayas.

*Literature*.—*Zamenis rhodorachis*. G. A. Boulenger, 1893, p. 398. J. Anderson, 1898, pp. 252–254, pl. 35. A. Andres, 1920, p. 20. D. Vinciguerra, 1931, p. 101.

*Occurrence in Egypt*.—Dr. J. Anderson received two specimens, one from Beni Hassan and one from Tel el Amarna, both from Upper Egypt, and, if the localities are definite, from east of the Nile. Dr. J. C. Phillips "met with this snake but once, when a large example was secured at Wadi Feiran [Sinai]" (T. Barbour, 1914, p. 88). Only two individuals came to my notice, 1898–1924. One I collected myself, 20 May, 1918, at the upstream end of the perennial water in the Wadi Firan, south Sinai, at about, or over, 2000 feet above sea-level, and one collected and sent to me in January 1924 by Capt. G. W. Murray, M.C., which he had caught at Wadi Abu Ghusum in Upper Egypt, about latitude 24° 20' N. and just east of longitude 35° E., *i.e.*, roughly about 135 miles east of Aswan and about 20 miles west of the Red Sea coast, it was in total length 1359 mm. (snout to vent 987, tail 372), or 4' 5½".

**Gray's Desert-Racer.**

*COLUBER VENTROMACULATUS* J. E. Gray, Illustr. Ind. Zool. 2, pl. 80, fig. 1, 1834.

*Type-locality*.—India.

*Distribution*.—Western Asia: from Palestine, through Mesopotamia, Persia, Baluchistan and Afghanistan to western India and Kashmir.

*Literature*.—*Zamenis ventrimaculatus*. G. A. Boulenger, 1893, p. 399, and J. Bombay Nat. Hist. Soc. 27, p. 348, 1920.

*Coluber ventromaculatus*. K. P. Schmidt, 1932, p. 226 [Kish, Iraq].

Not known from Egypt, but may yet be found in Sinai, as a snake that Major M. Portal, D.S.O., caught in southern Palestine, between the Egyptian frontier and Gaza, which arrived in the Giza Z. G., 16 July, 1917, was of this species. This snake agreed with the description given by Boulenger (1893) in every way, except that in the colour (in spirits) the transverse dark bars are much wider than the pale interspaces between.

Ventrals 207. Anals 2. Subcaudals, *circa* 114 or 115 pairs.

	mm.	per cent.
Length: snout to vent . . . . .	650	100
„ tail . . . . .	260	40
„ total . . . . .	910	140
Head, length . . . . .	17	2.6
„ width . . . . .	10	1.5
„ depth . . . . .	6	-.92

Scales mid-body 19 rows, and at the last ventral about 13 rows.

N.B.—On comparing this snake with three specimens of *C. rhodorachis*, a noticeable difference is that the chin-shields, both front and back pairs, are well developed in *rhodorachis* but comparatively small in this animal.

**54. Rogers's Snake.**

*COLUBER ROGERSI* (Anderson), 1893.

*Zamenis rogersi* J. Anderson, Ann. & Mag. Nat. Hist. (6) 12, p. 439, Dec. 1893.

Named after Colonel Sir John Godfrey Rogers, K.C.M.G., D.S.O., Royal Army Medical Corps (1850-1922).

*Type-locality*.—Desert to the east of Helwan, near Cairo.

*Distribution*.—Cyrenaica, Egypt, Sinai, Palestine and Arabia.

*Literature*.—*Zamenis rogersi*. G. A. Boulenger, 1896, p. 623. J. Anderson, 1898, pp. 254-256, pl. 36. S. S. Flower, P. Z. S. 1925, p. 967 [duration of life]. D. Vinciguerra, 1927, p. 341.

*Zamenis rogersii*. F. Steindachner, 1901, p. 333.

*Occurrence in Egypt*.—An active diurnal snake, inhabiting stony or rocky hill-country, where there is a certain amount of scrub-vegetation, both east and west of the Nile.

Dr. J. Anderson (1893) founded *rogersi* on five specimens: one, the type, from desert to the east of Helwan, two said to be from "Beltime" which, however, did not come from there, and two from "Shaloof, near Suez"; in 1898 (p. 254) he mentions a specimen from Mersa Matruh.

I examined ten individuals collected in the years 1912-1923. One presented in 1920 by Lt.-Col. R. S. Wilson, Lancashire Fusiliers, had been

collected by a Light Car Patrol sent out from Mersa Matruh. Four were from the desert hills east of Cairo, including one caught by J. Lewis Bonhote, 28 October, 1916, in the Wadi Hof, and one found by Michael J. Nicoll, 5 April, 1923, about 21 miles east of Cairo, on the Cairo-Suez Road. In October, 1918, I met this species at four localities in Sinai—Wadi el Gedeirat (near Kossaima), in the Maghara Hills, at Sudr el Haitan and near Ras el Jaifi, at elevations of from 700 to 1600 feet above the sea. On 1 October, 1918, I caught a specimen at Birein in south Palestine, about 50 miles due south of Gaza and within two miles to the east of the frontier of Sinai.

#### Most Beautiful Snake (Günther).

COLUBER ELEGANTISSIMUS (Günther), 1878.

*Zamensis elegantissimus* A. C. L. G. Günther, P. Z. S. 1878, p. 977, pl. 62.

*Type-locality*.—Mountains east of El Muwayláh in Midian, north-western Arabia. The type-specimen was collected and presented to the British Museum by Major Sir Richard Francis Burton (1821–1890).

*Distribution*.—Arabia, Palestine, and probably Sinai.

*Literature*.—*Zamensis elegantissimus*. G. A. Boulenger, 1893, p. 402.

*Occurrence in Sinai*.—H. C. Hart (1891, pp. 21 & 209) states that in December 1883, when on his way from Mount Sinai to Akaba, he shot a snake in the Wadi Zelegah, which was identified later by Dr. Günther as *Zamensis ventrimaculatus*. Hart (*o. c.*, pp. 28 & 209) states that in December 1883 Dr. Hull caught "a handsome little snake" at Akaba, which Hull gave to Hart, who sent it to the British Museum, where it was identified by Dr. Günther as *Zamensis elegantissimus*. The British Museum Catalogue mentions only one snake of this group from Hart. This, presumably, is one of the two above specimens mentioned by H. C. Hart, from whose figure (pl. 11) it may be the latter, and if so not from the "Sinaitic Peninsula" but from Akaba.

#### 55. Flowered Snake.

COLUBER FLORULENTUS H. Schlegel, Phys. Serp. 1, p. 149, 2, p. 166, 1837.

*Type-locality*.—Egypt.

*Distribution*.—North-east Africa: Egypt, Nubia, Sudan, Eritrea, and Somaliland (G. A. Boulenger, P. Z. S. 1919, p. 302). Its reported occurrence in Cyrenaica is an error; D. Vinciguerra (1927, p. 342) shows how this error started.

N.B.—*Coluber keniensis* H. W. Parker, J. Linn. Soc. London, 38, no. 258, p. 220, 18 October, 1932 (*Type-locality*: Lake Baringo, Kenya Colony), appears to be a southern representative form of *C. florulentus*.

*Literature*.—*Zamensis florulentus*. G. A. Boulenger, 1893, p. 402. J. Anderson, 1898, pp. 256–259, pl. 37, fig. 1. F. Werner, 1908, p. 1870. G. Scortecchi, 1930, p. 17.

*Occurrence in Egypt*.—The "Asrûd" appears to be an Ethiopian species that has followed the Nile down to Egypt, where it is found only along the Nile and the waterways taking off from the Nile, with one exception a single record from the Wadi Natron to be mentioned later.

It is the species of snake seen most often in Egypt and in every month of the year, it lives among trees and bushes near canals and permanently cultivated land, especially in gardens, from which it freely enters houses and may be seen in doorways or resting along window-sills. It attempts to defend

itself by biting viciously, so usually gets killed when encountering mankind at close quarters: it is the "fiercest" snake I know in Egypt or in the Sudan, and the most ready to bite.

I failed to find this species at Alexandria, but J. Anderson (1898, p. 256) recorded one specimen from Mandara and A. Andres (1908, p. 6) obtained a single individual in the garden of Mr. Mors, sen., at Bacos-Ramleh.

It is widely distributed in the Delta, I know it personally from the six Provinces—Beheira, Gharbia, Daqahlia, Sharqia, Menufia and Qaliubia, but obtained no evidence of its occurrence in the Suez Canal Zone.

I examined twenty-two specimens caught in Cairo, from the centre of the city, from up in the Citadel and from the suburbs, and fifty more specimens from Giza town and gardens. In the Fayum I caught nine specimens; it occurs in suitable places in the three districts of Fayum, Etsa and Sennures.

The exception mentioned above of *Coluber florulentus* being found away from water flowing direct from the Nile occurred on 15 April, 1923, when Michael J. Nicoll came on a small individual, recently killed, near Bir Hooker in the Wadi Natron, which he passed on to me for identification. As the railway trucks from the Nile Valley are unloaded at Bir Hooker there is the possibility that this snake had been introduced by accident by train.

In the Sudan this species is known from Wadi Halfa (J. Anderson and S. S. F.), and I found it not uncommon on the Blue Nile, from Khartoum to Roseires, 1906, 1909, 1910, 1912, and it has been recorded from the Sennar Province also by T. Barbour (1913, p. 147).

*Colour*.—Both Egyptian and Sudanese specimens may exhibit great differences in colour. These individual variations from the normal leaden-grey with olive-brown reflections range from a red ground-colour with distinct blackish spots to a black ground-colour on which the usual spots and cross-bars become obsolete.

*Food*.—A wild-killed "Asrûd" at Giza had in its stomach a recently swallowed frog, *Rana mascareniensis*. Individuals in captivity were noted to eat mice, sparrows, lizards and small snakes of their own species.

#### 56. Ravergier's Whip-Snake and the Coin-marked Snake.

COLUBER RAVERGIERI E. Ménétriés, Cat. Rais. Obj. Zool. p. 69, 1832.

*Type-locality*.—Georgia.

Named after Monsieur Ravergier, attaché French embassy at St. Petersburg.

*Coluber nummifer* A. Reuss, Mus. Senckenb. 1, p. 135, 1834.

*Type-locality*.—Egypt.

*Distribution*.—Western Asia: true *ravergieri* occurring in Transcaucasia, Mesopotamia, Persia, Transcaspia, Turkestan, Afghanistan, and possibly in northern Syria, the southern, or south-western, race *nummifer* occurring in Asia Minor, Cyprus, southern Syria (?), Palestine, Transjordanian, Sinai, and apparently just entering north-east Africa in Egypt.

*Literature*.—*Zamenis caudaelinatus* and *Zamenis ravergieri*. H. B. Tristram, 1888, pp. 143, 144.

*Zamenis ravergieri* and *Zamenis nummifer*. G. A. Boulenger, 1893, pp. 405, 407. F. Werner, 1898, p. 9.

*Zamenis ravergieri* var. *nummifer*. J. Anderson, 1898, pp. 260–266, pl. 37, fig. 2.

*Zamenis ravergieri*. Joan B. Procter, J. Bombay Nat. Hist. Soc. 28, p. 241, 1921.

*Occurrence in Egypt.*—Dr. J. Anderson did not meet this species himself, but obtained two specimens, one said to be from "Belim" which had probably been purchased in Cairo, and one from Helwan, Cairo, received from Dr. Adalbert Fényes. A. Andres (Mém. Soc. Hist. Nat. Alex. no. 1, p. 6, 1908) wrote that the only locality where he had obtained *Zamenis nummifer* was in the garden of the native hospital at Moharrem Bey, Alexandria. I never met this species myself, but saw eight individuals that at various times had been caught in houses or stables in Cairo, of one of these sent to the Giza Zoological Museum by Dr. Lewis H. Gough, 6 July, 1921, M. J. Nicoll noted "contained a young pigeon." In captivity at Giza snakes of this species ate sparrows, white mice and gerbils.

The first and, as far as I know, only record of *nummifer* from Sinai, is the specimen collected in the Wadi Feiran (Firan) by Dr. J. C. Phillips and Mr. W. M. Mann in March or April 1914 (T. Barbour, 1914, p. 88).

*Palestine.*—To the known localities for *nummifer*, i. e. Jerusalem, Nazareth, Haifa, Tyre, Sidon and El Kerak (east of the Dead Sea), can be added Jaffa, where in January 1918 a specimen was collected by Major Maurice Portal, D.S.O.

*Size.*—Two Egyptian specimens that I measured were in total length, respectively, 1050 and 1138 mm., or 3' 8.8".

Genus *SPALEROSOPHIS* G. Jan, in F. De Filippi,  
Viagg. in Persia, p. 356, 1865.

*Type-species.*—*Spalerosophis microlepis* G. Jan, l. c., from Persia. One species, *diadema*, occurs in Egypt.

### 57. Clifford's Snake.

*SPALEROSOPHIS DIADEMA* (Schlegel), 1837.

*Coluber diadema* H. Schlegel, Phys. Serp. 2, p. 148, 1837.

*Type-locality.*—"Environs of Bombay," India.

*Synonym.*—*Coluber cliffordii* Schlegel, o. c. p. 163.

Named after Mr. Clifford Cocq van Breugel, Netherlands Consul, who discovered this species in Tripoli.

*Distribution.*—North Africa and south-west Asia: Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubian and Red Sea Provinces of the Sudan, Sinai, Palestine, Arabia, Mesopotamia, Persia, Turkestan, Baluchistan, Afghanistan, Gilgit, Kashmir, Sind and northern India to at least as far east as Ajmir and Agra.

*Literature.*—*Zamenis diadema*. G. A. Boulenger, 1893, p. 411. J. Anderson, 1898, pp. 267–270, pl. 38. F. Werner, 1908, p. 1870. D. Vinciguerra, 1931, p. 257.

*Spalerosophis diadema*. K. P. Schmidt, 1932, p. 226.

*Occurrence in Egypt.*—Dr. J. Anderson (1898, p. 267) recorded a specimen from the Oasis of Siwa. Major E. A. T. Bayly, D.S.O., Royal Welsh Fusiliers, in 1921, gave me three specimens that he had caught in the Sollum-Siwa district. One caught in August 1919 at Mersa Matruh was presented to the Giza Zoological Museum by Lieut.-Col. R. S. Wilson, Lancashire Fusiliers. We know it from the Mariut district from Herr A. Andres (1908, p. 6) and from specimens collected by Mr. J. Lewis Bonhote in 1915. I obtained one myself in November 1923 at Edku, about 23 miles east of Alexandria. Individuals were collected in the Wadi Natron by Signor A. I. Balboni in 1912 and

by Mr. Michael J. Nicoll in 1917. In the Cairo-Giza area it is common on the desert edges both west and east of the Nile, at Aburoash, Giza Pyramids, Abusir Pyramids, Helwan, Tura, Ein el Shams, etc., etc. On 23 December, 1917, I caught a small individual at Ezbet Gallul, about five miles west of Gharak, in the Etsa district of the Fayum. Anderson (1898, p. 267) recorded specimens from Beni Hassan and from Tel el Amarna in Upper Egypt. It is common in the deserts bordering the Suez Canal from Kantara southwards to Suez. On 30 September, 1918, I caught one at Kossaima in north-eastern Sinai.

So, though there is no evidence of Clifford's Snake occurring in the cultivated part of the Nile Delta, it is widely distributed throughout the rest of the Kingdom of Egypt.

*Palestine.*—H. B. Tristram (1888, p. 142) recorded this species from Palestine. H. C. Hart (1891, pp. 41 & 210) met it in December 1883 on his way from Akaba to the Dead Sea. During 1917 and 1918 Major Maurice Portal, D.S.O., collected about four specimens in the neighbourhood of Gaza.

*Habits and Food.*—In captivity at Giza Clifford's Snakes were usually quiet to handle, but a very few individuals were vicious and apt to bite. They eat mice and sparrows: when seizing a mouse they throw at least two coils round it. They do well in captivity (P. Z. S. 1925, p. 967). A specimen received in the Giza Zoological Gardens 29 August, 1910, lived there for 15 years 9 months 16 days, having died 15 June, 1926 (*vide* Major F. W. Borman, in letter of 24 November, 1926).

*Size.*—Individuals over 1500 mm. in total length are rare in Egypt, the largest specimen I have note of, at Giza 28 March, 1906, was 1545 mm., or 5' 0 $\frac{3}{4}$ ".

*Abnormal scalation.*—Out of 29 specimens of *Spalerosophis diadema* from Egypt in Africa, Sinai and south Palestine that I critically examined:—

1. 28 had the upper labials excluded from the eye by suboculars, but one caught at Giza, 1 July, 1918 (ventrals 237, anal 1, subcaudals 69 pairs, scales 26 rows), had, on both right and left sides of the head, 12 upper labials, the *sixth entering the eye*: the subocular being absent or fused with the labials.

2. 28 had a single anal shield, but a female, purchased alive from local Bedawin 19 June, 1916, which died 3 December, 1916 (Giza Z. Mus. no. 6519), had, as usual, about 19 scales round body at about the last ventral shield, but had *two anal shields*.

NOTE.—Behaviour of Larks with a Snake.

On 10 June, 1917, amongst scrub on sandy desert on the right bank of the Bahr el Bagar, about twenty miles due west of Kantara, Suez Canal, I happened to be walking alone when two Crested Larks, *Galerida cristata*, literally called my attention to something, both of the birds came eventually to within six feet of me—and they showed me a snake, it was a fine specimen of *Spalerosophis diadema*, and while the bold little birds were making it take notice of them I was able to catch the snake in my hand. The larks appeared to know that the man would help them against their enemy the snake, but this was in a practically uninhabited district—any way, if a stranger had told me of the incident I would not have believed it.

Genus LYTORHYNCHUS W. C. H. Peters, Mon. Kön. Preuss.  
Akad. Wiss. Berlin, 1862, p. 272.

*Type-species.*—*Heterodon diadema* Duméril & Bibron, 1854.



**58. Diademed Sand-Snake.**

LYTORHYNCHUS DIADEMA (Duméril & Bibron), 1854.

*Heterodon diadema* Duméril & Bibron, Erp. gén. 7, p. 779, 1854.

*Type-locality*.—Algeria.

*Distribution*.—North Africa and west Asia: Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Sinai, Palestine, Arabia, Mesopotamia, Persia.

*Literature*.—*Lytorhynchus diadema*. G. A. Boulenger, 1893, p. 415. J. Anderson, 1898, pp. 271–273, pl. 37, fig. 3. D. Vinciguerra, 1931, p. 257.

*Occurrence in Egypt*.—Dr. J. Anderson (1898) recorded three Egyptian specimens: from west bank of Suez Canal, from Aburoash and from margin of desert Giza, respectively. Besides individuals offered for sale from time to time by the Aburoash (Giza Province) Bedawin, in the years 1898–1924 I saw only ten specimens:—

1. Caught about  $1\frac{1}{2}$  miles north-west of Bir Hooker, on desert sloping down to the Wadi Natron, 27 February, 1923.—S. S. F.

2. Killed about 31 miles west of the Giza Pyramids by Mr. H. J. L. Beadnell in October 1921.

3, 4. Caught in desert at Ein el Shams, north-east of Cairo, by Capt. J. Scott, R.A.M.C., in June 1916.

5. Killed at Ezbet el Zeitun, north-east of Cairo; received in May 1923 from Miss J. S. Jameson on behalf of Mr. J. G. Logan.

6. Caught at Abu Zabal, north-east of Cairo, in August 1918, by Mr. W. Raw, R.N.

7. Caught near Kantara, Suez Canal, in February 1915.—S. S. F.

8. Caught at Ismailia, Suez Canal, 26 May, 1915, by the late Capt. H. B. Suter, Egyptian Camel Transport Corps.

9. Caught near Mahadat, north-west Sinai, 12 October, 1915.—S. S. F.

10. Caught near Mohammadia, north Sinai, in November 1916, by Capt. A. W. Boyd, M.C., 1/7th Lancashire Fusiliers.

The occurrence of this species in Palestine was proved by Major Maurice Portal, D.S.O., who sent me two specimens from near Gaza in 1917, and one from Ramleh in 1918.

Genus ELAPHE L. J. Fitzinger, in Wagler, Descr. Incon.

Amphib. pt. 3, text to plate 27, 1833.

*Type-species*.—*Elaphe parreysii*, 1. c.=*Coluber quatuor-lineatus* Lacépède, 1789=*Elaphe quatuorlineatus* (Lacépède), the well-known Aldrovandi's Snake of south Europe.

**Leopard-Snake.**

ELAPHE SITULA (Linnaeus), 1758.

*Coluber situla* Linnaeus, 1758, p. 223.

*Type-locality*.—"Egypt," possibly in error for Asia Minor.

*Distribution*.—South Europe and west Asia: from Malta, Sicily and south Italy to Istria, the Balkan States, the Crimea, Caucasia and Asia Minor.

*Literature*.—*Coluber leopardinus*. G. A. Boulenger, 1894, p. 41.

*Coluber situla*. J. Anderson, 1898, pp. 274–276, pl. 37 A, fig. 2.

*Elaphe situla*. R. Mertens, Senckenbergiana, 5, p. 208, 1923.

As Anderson stated, this species has not been met with in Egypt, and was not mentioned by Hasselquist as being found in Egypt.

Proc. Zool. Soc.—1933.

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Genus OLIGODON F. Boie, Isis, 20, p. 519, 1827.

*Type-species*.—"Col. bitorquatus Reinw."=*Oligodon bitorquatus* Boie, l. c., from Java.

**Palestine Black-headed Snake.**

OLIGODON MELANOCEPHALUM (Jan), 1862.

*Homalosoma melanocephalum* G. Jan, Arch. Zool. Anat. Phys. Genova, 2, p. 34, 1862.

*Type-locality*.—"Bairut," o. c., p. 33.

*Distribution*.—Palestine and Syria, said to have been found near Cairo, Egypt (this is doubtful), and in Sinai (this also is doubtful).

*Literature*.—*Homalosoma melanocephalum*. "ang. Cairo v. F. M. [1]." F. Müller, Verh. nat. Ges. Basel, 7, p. 678, 1885.

*Oligodon melanocephalus*. G. A. Boulenger, 1894, p. 246. J. Anderson, 1898, p. 277, pl. 34, fig. 2.

*Rhynchocalamus melanocephalus*. T. Barbour, 1914, p. 91.

Recorded from Sinai on Hart's specimen in the British Museum being entered as from the "Sinaitic Peninsula," but H. C. Hart (1891, pp. 41 & 209) states that he only brought back one specimen, which was captured by Laurence in December 1883 at Petra (about fifty miles south of the Dead Sea and not in Sinai).

Mr. G. A. Boulenger informed me, in a letter of 13 August, 1918, that Hart's reptiles had no labels or numbers, and were originally named by Günther and registered, in 1884, all as "Sinaitic Peninsula." The localities appeared much later, in 1891, in Hart's book.

Mr. W. M. Mann also obtained a single specimen among the ruins of Petra (T. Barbour, 1914, p. 91).

Major Maurice Portal, D.S.O., sent three live specimens from Palestine to the Giza Zoological Gardens: two, received 24 June, 1917, he caught in the Wadi Guzzee, between the Red House and the sea, the third, received 27 May, 1918, had no definite locality, but was remarkable as having, on each side, 6 upper labials of which the 3rd and 4th enter eye, and as being nearly 500 mm. in total length. Capt. the Hon. W. Lindsay also presented the Giza Z. G., 28 July, 1917, with a specimen of this species from southern Palestine.

Genus CONTIA S. F. Baird & C. Girard, Cat. N. Amer. Rept. pt. 1, p. 110, 1853.

*Type-species*.—*mitis=tenuis*, from western North America, v. L. Stejneger & T. Barbour, Check-List N. Amer. Amphib. Rept. ed. 2, p. 102, 1923.

This genus is not mentioned by J. Anderson (1898). So far no species has been recorded from Egypt in Africa, but two, *fasciatus* and *coronella*, occur in Sinai.

Four other species *decemlineatus*, *collaris*, *modesta* and *rothi* are known from Palestine, and one species, *africana*, occurs in the Red Sea Province of the Sudan and in Eritrea.

There is a great deal more to learn about specific variation in this genus; as an example I may mention a snake obtained near Jericho, Palestine, by Major Maurice Portal, D.S.O., in 1918, to identify which I asked the help of Mr. G. A. Boulenger, who wrote from the British Museum, 22 July, 1918:—"Your snake is a puzzle, which I cannot solve. It is certainly a *Contia* and

very near *C. collaris*. I have, however, never seen an Old-World *Contia* with 4th and 5th upper labials entering the eye and the species described by others since the issue of the Catalogue also have 3rd and 4th, or 3rd only, bordering the eye. Your notes agree otherwise with *C. collaris* and it is just possible that your specimen represents an individual exception."

### 59. Banded Peace-Snake.

*CONTIA FASCIATUS* (Jan), 1863.

*Eirenis fasciatus* G. Jan, Arch. Zool. Anat. Phys. Genova, 2, p. 260, 1863.

*Type-locality*.—"Tiberias," *o. c.*, p. 257

*Distribution*.—Sinai, Palestine, Syria, Persia, Transcaspia.

*Literature*.—*Contia fasciata*. G. A. Boulenger, 1894, p. 262. F. Werner, 1898, p. 9.

*Occurrence in Sinai*.—On 29 September, 1918, at about 900 feet above sea-level on the north flank of Gebel Dhalfa, about 34 miles south-east of the town of El Arish, north Sinai, I caught a snake which can be referred to this species: the specimen was registered as No. 7153 in the Giza Zoological Museum.

On 6 December, 1918, I sent the following description to Mr. G. A. Boulenger:—

Rostral much broader than deep, well visible from above (length of portion visible from above exceeds length of suture between internasals, but is not more than half as long as its distance from the frontal); suture between internasals shorter than that between the praefrontals; nasal undivided; frontal rather more than once and a half as long as broad, not much broader than the supraocular, longer than its distance from the end of the snout, shorter than the parietals; no loreal; one praecocular; two postoculars; temporals 1+1; seven upper labials, third and fourth entering the eye; four lower labials in contact with the anterior chin-shields, which are in contact with each other nearly their whole length; second pair of chin-shields much smaller and separated by a scale. Scales, smooth, in 15 rows. Ventrals 162. Anal divided. Subcaudals 48, or 49, pairs.

*Colour* (in spirits).—Above sandy yellow, with fifty-three brown transverse bands, the yellow spaces broader than the brown bands. The anterior band is on the neck in the shape of a chevron pointing backwards. Head sandy yellow, except the posterior edges of the third and fourth upper labials which are partly dark brown, thus forming two vertical lines from eye to lip. The posterior border of the fourth lower labial is also marked with brown. Lower parts sandy yellow, each ventral scale outlined in brown.

*Size*.—Total length *circa* 227 mm. : snout to vent *c.* 186, tail 41.

So this specimen appears to differ from:—

1st, *Contia africana* in larger rostral, broader frontal, absence of loreal, and markings.

2nd, typical *C. fasciatus* in shorter frontal and absence of loreal.

Mr. Boulenger kindly wrote to me from the British Museum, 8 January, 1919:—"On comparing your description of the *Contia*, 7153, with Jan and Sordelli's figure of the type of *C. fasciata*, I am much inclined to refer it to that species. The only important difference lies in the absence of a loreal, but as the shield is very small in *C. fasciata* its loss in some specimens would not be very surprising (see *C. walteri*)."

## 60. Crowned Peace-Snake.

CONTIA CORONELLA (Schlegel), 1837.

*Calamaria coronella* H. Schlegel, Phys. Serp. 2, p. 48, 1837.

*Type-locality*.—Not stated by Schlegel. The type-specimen was collected by Olivier.

*Distribution*.—Sinai, Palestine, Syria, Mesopotamia and Persia.

*Literature*.—*Contia coronella*. G. A. Boulenger, 1894, p. 264, and J. Bombay Nat. Hist. Soc. 27, p. 348, 1920.

*Eirenis coronella*. T. Barbour, 1914, p. 90.

*Occurrence in Sinai*.—Prof. L. A. Jägerskiöld's expedition obtained one specimen in "the interior of the Sinaitic Peninsula, June 1901" (L. G. Anderson, 1904, p. 3). Dr. J. C. Phillips's expedition caught two "under stones at the Monastery of St. Catherine on Mount Sinai" (T. Barbour, 1914, p. 90).

In Palestine this species is distributed widely (H. B. Tristram, 1888, p. 141. F. Werner, 1898, pp. 5 & 9), and a live specimen from the Jordan Valley was presented to the Giza Z. G. by Brig.-Gen. F. FitzH. Lance, M.C., 30 August, 1918. Dr. T. Barbour (1914, pp. 89, 90) recorded three specimens from Petra, and gave reasons for supposing that *fasciatus* and *coronella* are one species, which should be combined under the older name of *coronella*.

Subfamily RHACHIODONTINÆ G. A. Boulenger, 1894, p. 353.

Rhachiodontidae A. C. L. G. Günther, Brit. Mus. Cat. Col. Sn. p. 141, 1858.

One genus, *Dasypeltis*.

Genus DASYPELTIS J. Wagler, Syst. Amphib. p. 178, 1830.

*Type-species*.—*Coluber scaber* Linnaeus, 1758.

## 61. Rough-keeled, or Egg-eating Snake.

DASYPELTIS SCABER (Linnaeus), 1758.

*Coluber scaber* Linnaeus, 1758, p. 223.

*Type-locality*.—"in Indiis," meaning received via the Cape, so in this case may be read as "South Africa."

*Distribution*.—Africa: widely distributed from the Cape Province northwards to the Belgian Congo, Liberia and Sierra Leone on the west, and on the east, through Portuguese East Africa, Tanganyika Territory, Kenya Colony, Somaliland, Uganda, Abyssinia, Eritrea, the Sudan (Blue Nile), to Upper Egypt, and has been reported from south Arabia.

*Literature*.—*Dasypeltis scabra*. G. A. Boulenger, 1894, p. 354, and 1896, p. 648. J. Anderson, 1898, pp. 278-280, pl. 34, fig. 3, & pl. 39.

*Occurrence in Egypt*.—I have nothing to add to Anderson's record.

Subfamily BOIGINÆ (or *Dipsadomorphinae*).

Represented in Egypt by seven species of the following genera:—

1. <i>Tarbophis</i> .....	2 species.
2. <i>Malpolon</i> .....	2 "
3. <i>Psammophis</i> .....	2 "
4. <i>Macroprotodon</i> .....	1 "

Snakes of genera of this subfamily not known from Egypt but occurring in the Nile Valley in the Sudan are:—*Leptoderia* (or *Crotaphopeltis*) *hotamboeia*, of which on 5 November, 1910, I got two specimens at Barankwa on the Blue Nile, and which F. Werner has recorded from Gondokoro and from the Nuba Mountains Province. *Leptodeira degeni*, which, as *Leptodira attarensis*, was made known from the White Nile by F. Werner in 1907. *Amplorhinus nototaenia* and *Rhamphophis rubropunctata* were obtained for the first time in the Sudan in 1907, in the Bahr el Ghazal Province by A. L. Butler. *Dromophis lineatus* and *Aparallactus concolor* were collected near Lado by Emin Pasha. *Chilorhinophis butleri* from Mongalla, 30 March, 1905, was described by F. Werner in 1908. *Dispholidus typus* was recorded from Gondokoro by F. Werner in 1908, and a very fine specimen was obtained alive at Singa on the Blue Nile by Lieut.-Col. Angus Cameron, Cameron Highlanders, which lived in the Giza Zoological Gardens from 8 September, 1916, to 3 May, 1917; in colour it was bright grass-green, in disposition amiable, and in total length 1720 mm. (head and body 1300, tail 420) or 5' 7 $\frac{3}{4}$ ".

Another genus of the subfamily *Boiginae* not yet known from Egypt is *Micrelaps*. A species, *Micrelaps muelleri*, is known from Palestine: I saw only one specimen, it was caught by Brigadier-General F. FitzH. Lance, M.C., at Jenin, Palestine, in 1920.

Genus *TARBOPHIS* F. L. Fleischmann, Dalm. nov. Serp.

Gen. p. 17, 1831.

*Type-species*.—*Tarbophis fallax* Fleischmann, *o. c.*, p. 18.

Four species have to be considered, *savignyi*, *fallax*, *guentheri* and *obtusus*, but, as far as my knowledge goes, only the two last should be numbered in the fauna of Egypt.

#### Savigny's Cat-Snake.

*TARBOPHIS SAVIGNYI* G. A. Boulenger, Brit. Mus. Cat. Snakes, 3, p. 48, 1896.

Named after Marie Jules César Lelorgne de Savigny, 1777–1851, French zoologist.

*Type-locality*.—Southern Syria.

*Distribution*.—Palestine and Syria (*not found in Egypt*).

*Literature*.—*Tachymenis vivax*. H. B. Tristram, 1884, p. 145.

*Tarbophis savignyi*. J. Anderson, 1898, p. 282, text-fig. 11.

*Note on food and effects of poison*.—In June 1920 Brigadier-General F. FitzH. Lance, M.C., at Saron, near Jaffa, Palestine, caught a large specimen, about 819 mm. (2' 8 $\frac{1}{4}$ " in total length, which he gave me and which for a few weeks gave me opportunities of detailed observations which may be summarized thus:—Quiescent by day but lively at night, the snake had a great appetite for lizards, it would eat several *Acanthodactylus scutellata* in succession but always in the same fashion—approaching the lizard the snake looked at it intently and then, rather deliberately, seized the lizard across the hind quarters in front of the insertion of the hind limbs (sometimes, but not always, at the moment of biting the snake threw a double coil of its body over the lizard). Then the snake remained quite still with its teeth in the lizard for about five to fifteen minutes (allowing time for the poison to act?). When the snake let go with its teeth, the lizard was always quite dead. A few minutes later the snake would take the lizard's snout into its own mouth, and then quickly

swallow the whole lizard, head foremost. On three different evenings, with intervals of four or five days, in July 1920, I put a live sparrow, *Passer domesticus niloticus*, in this snake's cage. A different sparrow each time, on the first two days a hen, on the third a cock. The snake did not attempt to bite these birds, but seemed rather afraid of them. The sparrows took no notice of the snake. The cock selected the snake as a place to perch on, and the snake, in vain trying to shake it off, hid its head under the coils of its body and submitted. Later I put in the cage a large male *Acanthodactylus scutellata*; this at once interested the snake, it bit, killed and swallowed the lizard in its usual way, in spite of the fact that the sleepy sparrow was all the time perched on the snake's back.

### European Cat-Snake.

TARBOPHIS FALLAX F. L. Fleischmann, Dalm. nov. Serp. Gen. p. 18, 1831.

*Type-locality*.—Trieste.

*Distribution*.—South-east Europe and west Asia: Istria, Dalmatia, Greece, Malta, Cyclades, Cyprus, Asia Minor and, possibly, northern Syria.

*Literature*.—*Tarbophis fallax*. G. A. Boulenger, 1896, p. 48.

This species is *not* found in Egypt, and, as far as I know, the only authority for including it in the fauna of Syria is that Boulenger (*o. c.*, p. 49) mentions a specimen in the British Museum from "Beyrout" of unknown origin. R. Mertens (1922, p. 181) writes that the type-specimen of *Tarbophis vivax* f. *syriaca* Boettger, 1880, from Jaffa, is identical with *Tarbophis savignyi* G. A. Boulenger.

### 62. Günther's Cat-Snake.

TARBOPHIS GUENTHERI J. Anderson, P. Z. S. 1895, p. 656, pl. 36, fig. 3.

Named after Dr. Albert Carl Ludwig Gotthilf Günther, F.R.S., 1830-1914.

*Type-locality*.—Lahej, about twenty miles from Aden, South Arabia.

*Distribution*.—Sinai, Syria, Arabia and East Africa.

*Literature*.—*Tarbophis guentheri*. G. A. Boulenger, 1896, p. 52. J. Anderson, 1898, pp. 284 & 287. F. Werner, 1898, p. 10 [Syria].

*Occurrence in Sinai*.—On 19 May, 1918, I found a specimen at El Heswa, Wadi Firan, south Sinai, at between 1000 and 2000 feet above sea-level, total length about 837 mm. (head and body 707, tail 130) or 2' 9": the first record of this species from Egyptian territory.

### 63. Egyptian Cat-Snake.

TARBOPHIS OBTUSUS (Reuss), 1834.

*Coluber obtusus* A. Reuss, Mus. Senckenb. 1, p. 137, 1834.

*Type-locality*.—Egypt.

*Distribution*.—Northern Africa: Mauritania, northern Nigeria, Egypt, Nubia, Sudan, Eritrea and Somaliland, and reported from Arabia (G. Scortecci, 1932, p. 46).

*Literature*.—*Tarbophis obtusus*. G. A. Boulenger, 1896, p. 52. J. Anderson, 1898, pp. 283-287, pl. 34, fig. 4. F. Werner, 1908, p. 52, and 1919, p. 503.

*Occurrence in Egypt*.—The most noticeable point in life about this snake are the large prominent eyes, with bright golden-yellow irides and narrow vertical pupils, so it is well called "Abu Uyun"—literally "Father of Eyes."

I examined about fifty specimens in Egypt, all from the banks of the Nile or from canals taking off from the Nile, it frequents gardens and sometimes enters houses: it is numerous in the Cairo-Giza area, and I also met it in the Fayum and at Beni Suef in Upper Egypt.

In the Sudan I obtained specimens in gardens at Khartoum and at Wad Medani, and 27 July, 1909, caught one on board a steamer between Wad Medani and Sennar on the Blue Nile.

*Habits.*—Aviculturists in Egypt found this snake a great pest—both in zoological gardens and in private houses, it would enter cages and eat the birds. From the stomachs of snakes that have actually been caught inside aviaries I have found the following newly swallowed birds:—1 Redstart, 1 White-collared Flycatcher, 2 Indigo-Finches, 2 Firefinches, 2 Weavers (*Hyphantornis*), 2 Java Sparrows, 1 Weaver *Quelea*, 1 Paradise Whydah, 1 Canary, 1 Linnet and 1 Bunting (*Emberiza caesia*). In captivity this snake would kill and swallow Sparrows (*Passer domesticus niloticus*).

Genus MALPOLON L. J. Fitzinger, Isis, 19, p. 892, 1826.

*Type-species.*—*Natrix lacertina* J. Wagler, in Spix, Nov. Sp. Serp. Brasil, p. 18, pl. 5, 1824=*Malpolon lacertinus*. L. J. Fitzinger, Neue Class. Rept. p. 59, 1826=*Coluber monspessulanus* Hermann, 1804.

The two species, *monspessulanus* and *moilensis*, occur in Egypt.

#### 64. Montpellier Snake.

MALPOLON MONSPESSULANUS (Hermann), 1804.

*Coluber monspessulanus* J. Hermann, Obs. Zool. 1, p. 283, 1804.

*Type-locality.*—Montpellier, France.

*Distribution.*—Western Palaearctic region of south Europe, north Africa and west Asia: including southern France, Portugal, Spain, Italy, Sicily, Lampedusa, Dalmatia, Bulgaria, Greece, Rio de Oro, Mauritania, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Lower Egypt, Chios, Cyprus, Caucasia, Persia, Sinai (?), Palestine, Transjordan, Syria, Arabia and Mesopotamia.

*Literature.*—*Coelopeltis lacertina*. H. B. Tristram, 1888, p. 145, pl. 14 [Palestine].

*Coelopeltis monspessulana*. G. A. Boulenger, 1896, p. 141. J. Anderson, 1898, pp. 288–292, pl. 37, fig. 4. F. Werner, 1898, p. 10 [East of Jordan]. D. Vinciguerra, 1927, p. 343.

*Coelopeltis monspessulana* var. *insignata*. A. Andres, Mém. Soc. Hist. Nat. Alex. no. 1, p. 6, 1908.

*Coelopeltis monspessulanus*. D. Vinciguerra, 1931, p. 258.

*Occurrence in Egypt.*—I found definite evidence of the occurrence of this species in six localities only, all in northern Lower Egypt and mostly within a few miles of the Mediterranean Sea.

1. Alexandria and neighbourhood, from Mariut to Abukir, where this appears to be the commonest species of snake. I saw about seventeen specimens that had been collected by Dr. J. Anderson, Herr Adolf Andres, Mr. J. Lewis Bonhote, Dr. Walter F. Innes, and others.

2. Lake Edku. Mr. R. E. Moreau, Army Audit Dept., picked up a shed skin on an island in this lake in November 1922; he passed the skin to me for identification, it was nearly perfect except for part of the tail.

3. Kafr el Dawar district, Beheira Province. One caught a little over two miles south-west of Kom el Hanash Delta Light Railway Station, 27 December, 1922, near a small canal.—S. S. F.

4. Abu Hommos district, Beheira Province. On 29 April, 1917, Mr. E. Van Lennep gave me the heads, in spirit, of two specimens killed on his well-irrigated estate at El Rico, near Hosh Isha.

5. Shirbin district, Gharbia Province. Between Kafr el Battikh and Fort No. 3 this species appeared to be numerous near freshwater ditches. In September 1922 I secured five specimens within a week and found shed skins of two more individuals.

6. Kabuti, on Lake Menzala, near Port Said. On 23 March, 1920, I picked up a shed skin of this species.

The only evidence of the Montpellier Snake occurring in Sinai appears to be F. Werner's (1893, p. 359) statement that one was collected there by W. Schlüter, and the remarks by H. C. Hart (1891, pp. 25 & 210) which suggest a possible error in identification.

In Palestine this species is numerous and widely distributed; thanks to Brigadier-General F. FitzH. Lance, M.C., and Major Maurice Portal, D.S.O., I was able to examine fifteen specimens from near Gaza, El Futnari, Ludd, Ramleh, Saroná (near Jaffa), from the lower Jordan Valley and from Tiberias.

*Tail.*—A peculiarity of *Malpolon monspessulanus*, not mentioned by G. A. Boulenger (1896) or by J. Anderson (1898), is the end of the tail. In specimens from Lower Egypt and Palestine the extreme tip is often missing (in five specimens out of fourteen taken at random), but when present it ends in a sharp point—in one individual from Saroná I could only describe this feature as a *very fine sharp point*.

*Eye.*—As is well known the expression, one may say *expressing expression*, of the eye of *Malpolon monspessulanus* is almost the easiest way of identifying this snake from other species. Dr. Gordon L. Walls (1931) has explained that the lens of the eye is yellow "about the colour of olive oil," and matches "Noviol," grade "O," glass, as used for spectacles and goggles, which "very markedly increases visual acuity."

### 65. Moila Snake.

MALPOLON MOILENSIS (Reuss), 1834.

*Coluber moilensis* A. Reuss, Mus. Senckenb. 1, p. 142, 1834.

*Type-locality.*—Near Moila, on the Red Sea coast of Arabia, where the type-specimen was collected by Dr. E. Rüppell in 1826.

*Distribution.*—North Africa and west Asia: Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Arabia, Mesopotamia, Persia.

*Literature.*—*Coelopeltis moilensis*. G. A. Boulenger, 1896, p. 143. J. Anderson, 1898, pp. 292-294, pl. 40. D. Vinciguerra, 1931, p. 258.

*Occurrence in Egypt.*—Dr. J. Anderson mentioned one locality only—Aburoash, which is on the edge of the desert in the Embaba district of Giza Province. Only once have I personally met this species, on 3 January, 1918, I caught one in the desert south of Kalamshah, Etsa district, Fayum Province. In the years 1899-1922 about twenty-eight specimens were brought in alive by local Bedawin to the Giza Z. G.: one of these, purchased 25 October, 1921, which died 14 March, 1922, measured in total length 758 mm. (head and body 623, tail 135) or 2' 5.84".

*In the Sudan.*—J. Anderson (1898) recorded this species from the Red Sea Province, and its presence in north Kordofan is indicated by F. Werner (1919, p. 506) as his *Coelopeltis cordofanensis*.



Genus PSAMMOPHIS F. Boie, Isis, 20, p. 521, 1827.

*Type-species*.—*Coluber sibilans* Linnaeus, 1758.

Two species occur in Egypt, the Palaearctic *schokari* and the Ethiopian *sibilans*.

Three other species are known from the Sudan:—*punctulatus*, of which I obtained a specimen on the Blue Nile in 1909, which has been recorded from Gebel Moya by F. Werner (1919, p. 506), and of which D. Vinciguerra (1931, p. 101, pl. 1) has published a remarkably beautiful coloured picture by A. Baliana of an example from Eritrea; *subtaeniata* first discovered in the Sudan by C. M. Wenyon, C.M.G., C.B.E., F.R.S., F.Z.S.; and *biseriatus* known from Khartoum, Kordofan and the Bahr el Gebel.

## 66. Schokari Sand-Snake.

PSAMMOPHIS SCHOKARI (Forskål), 1775.

*Coluber schokari* P. Forskål, Descr. Anim. p. 14, 1775.

*Type-locality*.—Yemen, Arabia. "Schokari" being the Arab name for this species, according to Forskål.

*Distribution*.—North Africa and west Asia: Rio de Oro, Mauritania, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Red Sea Province of the Sudan, Eritrea, Somaliland, Sinai, Palestine, Syria, Arabia, Mesopotamia, Persia, Afghanistan, Baluchistan, Sind.

*Synonym*.—*Coluber lacrymans* A. Reuss, Mus. Senckenb. 1, p. 139, 1834.

The type-specimen collected by Dr. E. Rüppell in 1826 was from near Tor in Sinai.

*Literature*.—*Psammophis schokari*. G. A. Boulenger, 1896, p. 157. J. Anderson, 1898, pp. 295–302, pls. 41, 42, and 1900, p. 425 [D. MacAlister coll., Upper Egypt, circa 24° N.]. L. G. Andersson, 1904, p. 4 [Wadi Hebran, Sinai]. T. Barbour, 1914, p. 91 [Wadi Firan, Sinai, and from Akaba and from Petra]. D. Vinciguerra, 1927, p. 343, and 1931, p. 257.

*Occurrence in Egypt*.—This snake is spread widely over Egypt and Sinai from east to west and from the Mediterranean Sea to the Sudan frontier. Not found in the Nile Delta, nor in cultivated or marshy land, it inhabits dry deserts, especially tracts with a certain amount of scattered vegetation. It appears to be diurnal; all the individuals that I have met were in the open in full sunlight, and were hunting about among the small desert bushes for their prey, which is probably lizards, mostly of the genera *Acanthodactylus* and *Eremias*. It occurs in suitable terrain from sea-level up to at least 5300 feet (1615 metres) in the mountains of southern Sinai.

The localities that I have examined specimens from are:—A, from west of the Nile, Mersa Matruh, Mariut, the Wadi Natrun, the desert of Giza, and the Etsa and Sennures districts of the Fayum. B, from east of the Nile, the desert hills near Cairo, the Cairo–Suez road, the Salhia desert in the Fikus district of Sharqia Province, places on the west bank of the Suez Canal near Kantara, Ismailia and Suez, Abu Shah on the Egyptian coast of the Red Sea (R. Douglas Vernon, 1918), Wadi Hellal in the Edfu district of Aswan Province (G. W. Murray, 1914), Wadi Um Tundeaba, about 120 miles due east of Edfu, just south of Lat. 25° N. and west of Long. 35° E. (G. W. Murray, Jan. 1924), and Wadi Halfa (obtained from natives, 1901).

I met this snake in north, central and south Sinai—it occurs from the Suez

Canal to the frontier of Palestine. The Sinai Arabs appeared to have a particular fear and hatred of this species, whenever a specimen was seen they tried to knock it to pieces with whips and sticks.

In Palestine 1918-1920, specimens were obtained near Gaza and near Jaffa.

*Scales.*—Though there are usually 17 rows of scales round the body, both in Egypt in Africa and in Sinai, some individuals have 19 scale-rows.

*Food, in captivity in Giza Zoological Gardens.*—Lizards only. On 5 November, 1912, to see if desert mammals would be acceptable as food for these snakes, some Gerbils were placed in a cage with two *P. schokari*. During the night the Gerbils killed both the snakes, which being diurnal were probably asleep when attacked.

NOTE.—Snakes of this species seem to "go bad" in spirits much more readily than do other snakes, e. g., *Coluber* spp.

### 67. African Beauty Snake.

"SERPENS AFRICANA Seba, 1735."

*PSAMMOPHIS SIBILANS* (Linnaeus), 1758.

*Coluber sibilans* Linnaeus, 1758, p. 222.

*Type-locality.*—"Asia," which presumably should be read as Africa.

*Distribution.*—Africa: on the west from Senegambia, Gambia, Sierra Leone, Liberia, Lagos, Nigeria and the Gaboon to Angola; on the east from Zambesia and Nyassaland its range extends northwards through Kenya Colony, Uganda, Somaliland, Abyssinia, Eritrea and the Sudan right up to Egypt.

*Literature.*—*Psammophis sibilans*. G. A. Boulenger, 1896, p. 161. J. Anderson, 1898, pp. 302-307, pl. 43 & text-fig. 12. F. Werner, 1908, p. 1879, and 1919, p. 503. T. Barbour, 1913, p. 148.

*Occurrence in Egypt.*—This beautiful animal is found only along the Nile and in places irrigated by the Nile, as the Fayum and Delta. It spends most of its time in gardens, but sometimes ventures out into cultivated fields and may even resort to a dry prickly pear hedge as a convenient place in which to shed its skin. In the Delta Provinces of Beheira, Gharbia and Sharqia I met this species in many localities, but always near water.

In the Cairo-Giza area it is a regular garden inhabitant, but is not as numerous as it might be, as owing to its diurnal habits and conspicuous appearance it is so easily seen and killed. Fortunately the snake spends a good deal of its time high up in trees where people do not see it or molest it. For elegance of motion and beauty of colour few sights in Egypt can equal that of a *Psammophis sibilans* gliding from branch to branch among the trees in an orange grove.

This species occurs in the cultivated parts of all three districts of the Fayum, and in suitable localities along the Nile Valley in Upper Egypt to as far south as the Aswan Province. I saw no specimens from anywhere between the 1st and the 6th cataract, but in the Sudan one meets this species again in gardens at Khartoum, and along the Blue Nile, and on the White Nile and its tributaries.

*Size.*—The largest Sudan specimen, one I caught at Lado, 7 June, 1914, was in total length 1325 mm.; some Egyptian specimens are larger, one from Giza, that I measured, was 1445 mm. or 4' 8 $\frac{3}{4}$ ".

Genus MACROPROTODON A. Guichenot, Explor. Sc. Alg. Rept. p. 22, 1850.

*Type-species*.—*Macroprotodon mauritanicus* Guichenot, 1850=*Coluber cucullatus* I. Geoffroy, 1827.

### 68. Mediterranean Hooded Snake.

MACROPROTODON CUCULLATUS (I. Geoffroy), 1827.

*Coluber cucullatus* I. Geoffroy, Descr. Égypte, Rept. p. 151, 1827.

*Type-locality*.—Lower Egypt.

*Distribution*.—South Europe, north Africa and south-west Asia: being known from Portugal, Spain, Majorca, Minorca, Lampedusa, Rio de Oro, Mauritania, Morocco, Algeria, Tunisia, Tripoli, Cyrenaica, Lower Egypt and south Palestine.

*Literature*.—*Macroprotodon cucullatus*. G. A. Boulenger, 1896, p. 175. J. Anderson, 1898, pp. 308–311, pl. 34, fig. 5. D. Vinciguerra, 1927, p. 342, and 1931, p. 257.

*Occurrence in Egypt*.—Dr. J. Anderson (1898, pp. 309, 310) obtained four individuals from the neighbourhood of Alexandria—Mariut, Ramleh, Mandara and Abukir. Herr A. Andres (1908, p. 7) says that it is rare, but has been found under stones at Bulkeley (Ramleh) and at Mariut. I did not meet this species myself, but saw ten specimens from the Alexandria neighbourhood—Mariut, Mex, Montaza and Abukir, and two from Daba, about 80 miles west of Alexandria, which were presented to the Giza Z. G. by the Rev. S. H. Hare, Chaplain, Suffolk Yeomanry, 31 October, 1916, and one from El Rico, near Hosh Isha, Abu Hommos district, Beheira Province, collected by Mr. E. Van Lennep, who sent the head and neck for identification, 29 April, 1917—this locality is only about 30 miles south-east of Alexandria.

I obtained no evidence of the occurrence of this species in any other part of Egypt in Africa, or in Sinai, but saw four specimens that had been caught in southern Palestine in 1917. One from Rafa, collected by Major Philip H. Manson-Bahr, D.S.O., R.A.M.C., two from near Gaza, collected by Major Maurice Portal, D.S.O., and one, without precise locality, received from Capt. J. Chapman, Devonshire Regiment. These four specimens constituted the first record of *Macroprotodon cucullatus* occurring in any part of Asia.

### Family HYDROPHIIDÆ.

No real Seasnakes are known from Egyptian waters. The so-called "Seasnake" of the Gulf of Suez is a fish, a Muraenoid Eel.

A specimen from Gemzah, Gulf of Suez, presented to the British Museum by Dr. A. J. Hayes in 1912, is identified by Mr. J. R. Norman as *Echidna nebulosa*.

A. Loveridge (P.Z.S. 1925, p. 74) mentions that "an interesting minute-eyed Muraenid," *Moringua abbreviata*, has been mistaken for a "Seasnake" at Pemba on the East African coast.

### Family ELAPIDÆ F. Boie, Isis, 20, p. 510, 1827.

*Type-genus*.—"Elaps Cuv.", read *Elaps* Schneider, 1801.

Two genera, *Naja* and *Walterinnesia*, occur in Egypt. A third genus of this family is known from the Sudan, F. Werner (Anz. Akad. Wiss. Wien, 51, no. 13, p. 280, 1914) recorded, as *Elapechis niger*, a specimen of *Elapsoidea nigra* from southern Kordofan, later Werner (1919, p. 507, text-fig. 8) made this the type of a new species as *Elapechis laticinctus*.

Genus NAJA J. N. Laurenti, Syn. Rept. p. 90, 1768.

*Type-species*.—*Naja lutescens* Laurenti, 1768=*Coluber naja* Linnaeus=*Naja naja* (Linnaeus), 1758. The Indian Cobra.

Two species of Cobra, *haje* and *nigricollis*, occur in Egypt and a third, *melanoleuca*, has been found in the southern Sudan (S. S. Flower, Ann. & Mag. Nat. Hist. ser. 10, 7, p. 499, May 1931).

### 69. Egyptian Cobra.

NAJA HAJE (Linnaeus), 1758.

*Coluber haje* Linnaeus, 1758, p. 225.

*Type-locality*.—Lower Egypt.

*Distribution*.—The east side of Africa, and Arabia.

Known definitely from Egypt, Sudan, Eritrea, Somaliland, Kenya Colony, the Transvaal and Zululand.

Specimens have been reported (but had been possibly imported) from Morocco, Tunisia, Tripoli and Cyrenaica.

I failed to obtain any evidence of this species being a native of either Sinai or Palestine.

*Literature*.—*Naja haje*. G. A. Boulenger, 1896, p. 374. F. Werner, 1908, p. 1882.

*Naja haje*. A. Andres, Mém. Soc. Hist. Nat. Alex. no. 1, p. 7, 1908.

*Naja haje*. J. Anderson, 1898, pp. 312–322, pl. 44. L. G. Andersson, 1904, p. 5. A. Andres, Nat. Haus, p. 168, 1908. F. Werner, 1909, p. 623. H. W. Parker, A. M. N. H. (10) 8, p. 517, 1931.

*Occurrence in Egypt*.—

I found Cobras in only two localities :—

1. Giza-Cairo area, where they were not uncommon in gardens and cultivated fields and sometimes entered houses. In the period 1898 to 1912 about one cobra a year was killed in the Giza Gardens, but after 1912 very few were seen.

2. Fayum, four specimens, *i. e.*, one caught in each of the following years :—1907, 1911, 1918 and 1923.

All individuals, both from Giza-Cairo and from the Fayum were found near water, and all were large, about or over four feet in length. I saw no young cobras, nor were any ever offered for sale by native, or other, collectors or dealers.

*Size*.—Fifteen Giza-Cairo specimens measured by me were in total length, in millimetres, respectively :—1245, 1300, 1371, 1420, 1520, 1555, 1582, 1587, 1690, 1705, 1712, 1727, 1750, and the two largest individuals that I met were a ♀, Giza Gardens, 6 February, 1901, of 1803 (5' 11") and a ♂, Giza Gardens, 3 March, 1911, of 1940 (6' 4½").

*Food*.—The stomach of a Cobra caught in Cairo, 25 December, 1908, contained a toad, *Bufo regularis*. In captivity in the Giza Zool. Gardens cobras readily eat sparrows, *Passer domesticus niloticus*.

### 70. Black-necked Cobra.

NAJA NIGRICOLLIS Reinhardt, 1843.

*Naja nigricollis* J. T. Reinhardt, Kong. Danske Vidensk. Selsk. Afhand. 10, p. 269, 1843.

*Type-locality*.—Guinea, West Africa.

*Distribution*.—Africa: widely distributed from Senegambia to Upper Egypt, the Sudan, Eritrea, Lake Rudolph, Somaliland and Kenya Colony, and south to Angola, the Transvaal and Natal.

*Literature*.—*Naia nigricollis*. G. A. Boulenger, 1896, p. 378. F. Werner, 1908, p. 1883.

*Naja nigricollis*. J. Anderson, 1898, pp. 322, 323, pl. 45. A. Loveridge, 1929, p. 36.

*Occurrence in Egypt*.—J. Anderson obtained one specimen from Aswan, and a second, from Kitchener's Island, Aswan, 4 August, 1904, has been recorded by F. Werner (1928). Personally I did not meet this species in Egypt, but saw one killed in the evening, 29 October, 1910, on the bank of the Blue Nile at Khartoum.

L. G. Andersson (1904, p. 5) and F. Werner (1919, p. 507) have also recorded the Black-necked Cobra from Khartoum.

In the southern Sudan *Naja haje* has been found at Khor Attar and on the Sobat by F. Werner, and by myself at Mongalla, and *Naja nigricollis* at Gondokoro by Werner and at Kiro by myself (A. M. N. H. ser. 10, 7, p. 500, 1931).

Genus WALTERINNESIA F. Lataste, Le Naturaliste, Paris, 1887, p. 411.

*Type-species*.—*Walterinnesia aegyptia* Lataste, l. c.

This genus was named in honour of the discoverer of the species, Dr. Walter Francis Innes Bey, C.M.Z.S., M.B.O.U., who was for many years Curator of the Zoological Museum, School of Medicine, Kasr el Aini, Cairo.

According to G. A. Boulenger (1896, pp. 311, 312, 373 & 392) *Walterinnesia* differs from *Naja* (*Naia*):—

1st, in having *no* small maxillary teeth following the poison-fangs, while *Naja* has one to three such teeth.

2nd, in having non-oblique body-scales, these scales in *Naja* being oblique.

If, through *Naja morgani* (see p. 829), *Walterinnesia* has to be merged into the genus *Naja*, the specific name *aegyptia* Lataste, 1887, has priority over *morgani* Mocquard, 1905.

#### 71. Walter Innes's Snake.

WALTERINNESIA AEGYPTIA F. Lataste, Le Naturaliste, Paris, 1887, p. 411.

*Type-locality*.—Egypt.

*Distribution, as far as known*.—Egypt, east of the Nile.

*Literature*.—*Walterinnesia aegyptia*. J. Anderson, 1898, pp. 324, 325, pl. 46. S. S. Flower, P. Z. S. 1923, pp. 1081–1083. R. Mertens, Bull. Antivenin Instit. America, Philadelphia, Pa., 3, 2, p. 41, July 1929.

*Occurrence in Egypt*.—Six specimens are known; the type-specimen and three others had no locality, they were purchased in Cairo; the fifth definitely established the fact that this species occurs in Egypt, it was shot on 5 April, 1923, by Mr. Michael J. Nicoll about 21 miles east of Cairo, on the Cairo–Suez road, and handed to me for examination the same day; the sixth, as recorded by Dr. R. Mertens, was caught by Dr. Lotsy on the Cairo–Suez road “between the sixth and seventh watch-towers . . . about 50 kilometres [31¼ miles] east of Cairo,” snake was crossing road at night and was seen by the head-lights of a motor-car.

*Some comparative details of the known specimens of Walterinnesia aegyptia.*

Specimen .....	1st. British.	2nd. British.	3rd. Giza.	4th. British.	5th. Giza.	6th. Senckenberg.
Museum in which preserved .....						
Sex .....	♀.	♂.	"♀"	♂.	♂.	♂.
Ventrals .....	197	189	191	190	190	191
Anal .....	1/1	1/1	1/1	..	1/1	1/1
Subcaudals (see note below) .....	45	48	51	48	51	46
Scales, rows .....	27, 23, 17	23	c. 26, 23, 17	23	c. 29, 23, 17	27, 23, 19
Length in mm., snout to vent .....	940	1019	?	?	843	1100
"    tail .....	135	168	..	..	143	180
"    total .....	1075	1187	..	..	986	1280
Per cent. of tail to snout-vent length .....	14.36	13.57	..	..	16.9	16.36
Diameter (greatest), body, in mm. ....	27	..	..	..	c.23	
Per cent. of diameter to snout-vent length .....	2.89	..	..	..	2.72	
Head, length in mm. of shielded portion in median line. ....	..	..	30	32	24	
"    total length .....	..	..	c. 43	43	32	
"    width .....	..	..	29	31	23	
"    depth .....	..	..	21	17	13	
Tail ends in a sharp-pointed scale .....	Yes.	Yes.	Yes.	Yes.	Yes.	

The 3rd specimen has two preocular scales on the right side of its head.

Details of subcaudal shields of known specimens of *Walterinnesia aegyptia*:—  
1st. ♀. 45: first a quadruple, then two entire scales, then forty-one pairs, and then two very small entire scales which precede the terminal pointed scale.

2nd. ♂. 48: nine entire at base and then thirty-nine pairs.

3rd. "♀." 51: first divided, then seven entire, then forty-two pairs and one entire subterminal.

4th. ♂. 48: first divided, then three entire, followed by about forty-four pairs. N.B.—Specimen in bad condition for examination, 17.7.1923.

5th. ♂. 51: first divided, then five entire, then one divided, then another entire, followed by forty-two and a half pairs.

6th. ♂. 46: first divided, then six entire, followed by thirty-eight pairs and one entire.

Mr. H. W. Parker, in a letter to me from the British Museum of 10 April, 1930, writing of *Walterinnesia aegyptia* and *Naja morgani*, said:—"These two things certainly seem very close to one another and I should not be in the least surprised to find that they are conspecific." See also the notes on "The Hoodless Cobra" by Dr. Norman L. Corkill, J. Bombay N. H. Soc. 35, 3, pp. 566, 567, Feb. 1932.

NAJA MORGANI M. F. Mocquard, Bull. Mus. Paris, 1905, p. 78.

*Type-locality*.—Persia.

Recorded from Mesopotamia by G. A. Boulenger, J. Bombay Nat. Hist. Soc. 27, p. 349, 1920.

*Atractaspis wilsoni* F. Wall, J. Bombay Nat. Hist. Soc. 18, pp. 804, 805, text-figs., 1908, is a synonym of *N. morgani* according to Boulenger, *l. c.*

Named after Lieut. A. T. Wilson, 32nd Sikh Pioneers.

*Type-locality*.—Persia.

If *Naja morgani* proves to be a synonym of *Walterinnesia aegyptia*, then the known distribution of *W. aegyptia* will be:—Egypt (east of the Nile), Mesopotamia and Persia.

Family VIPERIDAE J. E. Gray, 1825, p. 205.

*Type-genus*.—*Vipera* J. N. Laurenti, Syn. Rept. p. 99, 1768.

The Long-nosed Viper, *Vipera ammodytes*, is known from Syria, Daudin's Viper, *Vipera lebetina*, from both Tripoli and Palestine, while the Puff-Adder, *Bitis arietans*, and species of both Night-Vipers, *Causus* spp., and Mole-Vipers, *Atractaspis* spp., occur in the Sudan.

Five species of Vipers, representing three genera, are known definitely from the Kingdom of Egypt:—

1. *Pseudocerastes fieldi*.
2. *Cerastes cerastes*.
3. *Cerastes vipera*.
4. *Echis carinata*.
5. *Echis colorata*.

Genus PSEUDOCERASTES G. A. Boulenger, 1896, p. 501.

*Type-species*.—*Cerastes persicus* Duméril & Bibron, Erp. gén. 7, p. 1443, 1854=*Pseudocerastes persicus* (Duméril & Bibron) from Persia and Baluchistan.

### 72. Field's Horned-Viper.

PSEUDOCERASTES FIELDI K. P. Schmidt, Field Mus. Pub. Chicago, 273. Zool. 17, no. 6, p. 227, pl. 2, text-fig. 2, May 1930.

Named after Mr. Henry Field of the Field Museum of Natural History, Chicago.

*Type-locality*.—Bair Wells, Transjordania.

*Distribution*.—Transjordania (Bair Wells, and Um Muwal) and Sinai.

*Occurrence in Egypt*.—One caught, 15 Oct., 1918, at "White Ridges" in Central Sinai, nine miles south of Hassana and about twenty-nine miles north of Nakhil (S. S. Flower, Ann. & Mag. Nat. Hist. ser. 10, 6, p. 224, August 1930).

Genus CERASTES J. Wagler, Syst. Amphib. p. 178, 1830.

*Type-species*.—*Coluber cerastes* Linnaeus, 1758, p. 217.

Two species, *cerastes* and *vipera*, both occur in Egypt.

During the 25½ years that I was in north-east Africa, I knew of no case of a human being having died as the result of a bite from either of these species.

### 73. Greater Cerastes Viper.

CERASTES CERASTES (Linnaeus), 1758.

*Coluber cerastes* Linnaeus, 1758, p. 217.

*Type-locality*.—"In Oriente," which may be taken as Egypt, as it was through Hasselquist that this species became known.

*Distribution*.—North Africa and south-west Asia: Algeria, Tunisia, Cyrenaica, Egypt, Nubia, Sudan, Sinai, Palestine, Transjordania, Arabia, Mesopotamia.

*Literature*.—*Cerastes cornutus*. G. A. Boulenger, 1896, p. 502, and J. Bombay Nat. Hist. Soc. 27, p. 350, 1920. J. Anderson, 1898, pp. 330-335, pl. 48. T. Barbour, 1914, p. 91.

*Cerastes cerastes*. E. Hartert, 1913, p. 83.

*Occurrence in Egypt*.—Living Horned Vipers are offered for sale in large numbers in Egypt at the tourist-resorts, Cairo, Giza, Luxor, etc.; even if the tourist is conducted into the country and shown, with drama and charm, the actual "catching" of a *Cerastes*, it is no proof that the animal is really a native inhabitant of that spot. Snakes are caught over a large area of country and kept alive till required for exhibition and sale. The actual snake-catchers that I have met receive very little money, the profit is made by the "middle men," who know much more of human nature than of herpetology, and who are very clever at entertaining tourists.

Dr. E. Hartert (1913, p. 84), writing of this species in the Algerian Sahara, says:—"Stories are told of death resulting from the bite of these vipers, but I have not been able to learn of an authenticated case."

Definite localities for this Viper are:—

West of the Nile:—

1. Mersa Matruh district: one, horned, collected early in 1920 by Col. R. S. Wilson, Lancashire Fusiliers.

2. Wadi Natron: five in 1912 Signor A. I. Balboni and one in October 1914 Mr. Michael J. Nicoll.



3. Dakhla Oasis : three, all horned, June 1917, Bimbashi, A. T. Armstrong.
4. Kharga Oasis : one, horned, September 1919, Dr. Lewis H. Gough.

East of the Nile :—

1. Cairo : not uncommon in the desert by Heliopolis, Zeitun, etc. On 14 July, 1916, M. J. Nicoll and I caught one near No. 3 Tower on the Cairo-Suez Road.

2. Helwan : one, horned, caught alive near Al Hayat, 19 February, 1910, by the late Herr E. Kramer : one, horned, near the Observatory, 18 July, 1911, the late Mr. B. F. E. Keeling : one, hornless, found in the Wadi Sclater, which leads into the Wadi Hof, 13 March, 1912, by Mrs. S. S. Flower.

3. Ras Gharib, on the west coast of the Gulf of Suez : recorded by J. Anderson (1898, p. 331).

4. Desert near Berenice, just south of latitude  $24^{\circ}$  N. on west coast of Red Sea, Monsieur Reimadi (Kasr el Aini Collection, No. 29326598 : specimen examined March 1924.—S. S. F.).

5. Halaib, approximately  $22^{\circ} 12'$  N. by  $36^{\circ} 40'$  E. on west coast of Red Sea : one, recorded by F. Steindachner (1901, p. 334).

6. Sinai : recorded by F. Werner (1893, p. 359), L. G. Andersson (1904, p. 5) and A. Andres (1920, p. 20).

Andersson's Sinai specimen was hornless. Three from North Sinai that I saw alive were all horned, two of these from Abu el Tilûl, near the railway line, were obtained in 1922 by Bichara A. Razzouk Effendi, and one I caught myself, 23 December, 1918, on turning over a piece of old tamarisk-wood that was laying on the sand in the Wadi Hareidhin in sand-dune country about twenty miles south-east of the town of El Arish.

*Food.*—A full-grown horned specimen caught at Helwan, near Cairo, 19 February, 1910, was still living in the Giza Zoological Gardens when I left Egypt in April 1924 (P. Z. S. 1925, p. 974). During these fourteen years it fed only on Sparrows, *Passer domesticus niloticus*. During the warmer months of the year it ate about one sparrow a month, during the colder months it did not eat at all. About six to eight sparrows a year appeared to be as much as it required\*. Sparrows took less notice of the snake than of the keeper's hand. When the viper struck a sparrow, the bird hardly appeared to be aware of the fact : the stroke was so sudden that onlookers might think that the snake had missed its aim : 27 to 90 seconds later the sparrow would roll over—dead. Later, with much deliberation, the snake would swallow the bird.

Jerboas, *Jaculus jaculus*, placed in the same cage with *Cerastes* of either species, showed no sign of fear, hopping over and on to the vipers and placidly feeding close to them. However, some *Cerastes* will eat small mammals : Michael J. Nicoll noted, 28 September, 1919, that a newly caught *C. cerastes* from Kharga Oasis, Upper Egypt, vomited a Jerboa, *J. jaculus*.

A. Andres (1908, p. 7) mentions a Greater *Cerastes* caught at Zeitun near

\* Tracy I. Storer and Beryl M. Wilson (Copeia, 1932, pp. 169–173) give definite data on Rattlesnakes, of the semi-arid region of California, indicating the small amounts of food that are adequate not only for maintenance, but also for growth and moult, and how small this amount of food, compared to the weight of the snake, is in contrast to that which is necessary to keep "homiothermous birds and mammals" alive, "and would explain why so many of the snakes collected in natural surroundings have no recognizable food materials in the digestive tract, and likewise the apparent scarcity of serpents in many places. Taking food in relatively large units only at considerable intervals they may remain in retirement and inactivity much of the time, a condition decidedly in contrast to that of birds and mammals much of whose time must of necessity be spent in procuring food."

Cairo that disgorged a Wagtail, *Motacilla* sp. E. Hartert (1913, p. 84) writes of this species in the Algerian Sahara:—"In the stomachs of not less than seven specimens during the first days of March we found yellow Wagtails (*Motacilla flava thunbergi*) and Chiffchaffs (*Phylloscopus collybita*), in one both species together."

*Voice*.—When angry this Viper is very noisy, making at the same time a loud puffing-hissing noise from the mouth, and a grating "rushing" sound by rapidly rubbing the scales of its body over each other.

*Eggs*.—A specimen in the Giza Z. G. laid one egg 13 August, 1910, and twelve eggs 16 August, 1910.

*Size*.—On 11 December, 1907, I measured an Egyptian specimen in total length 720 mm. (or about 2' 4 $\frac{1}{3}$ " ), the same length as the maximum given by G. A. Boulenger (1896, p. 502), but J. Anderson (1898, p. 334) was able to record a larger one, a male from Upper Egypt of 735 mm.

*Colour in life*.—A stuffed *Cerastes cerastes* in a Museum can be exhibited as an example to prove some theory of "protective coloration" or "assimilation to surroundings," etc., etc., but a living *C. cerastes* in the daytime on the desert is a conspicuous and beautiful object. Actually these vipers appear to shun this publicity by remaining under cover during the hours of daylight. Notes taken on a small specimen, 205 mm. in total length, 12.40 P.M., 23 December, 1918, may be worth putting on record:—Pupil vertically contracted. Iris yellow, shading to chocolate in lower third. Tongue pale yellow. Horns whitish yellow, directed outwards and forwards. Above sandy yellow, the vertebral area covered with alternate and more or less irregular bands, of about equal width, of pale blue (or "French Grey") and golden brown. These bands extend from the back of the head to the tip of the tail. Sides of body sandy yellow, with two series of dark brownish blotches. Below immaculate yellowish white with blue-grey shades on ventral scales; underneath of tail yellowish brown. The head above is pale blue (or "French Grey") with irregular spots of golden brown, tending to form cross-bars posteriorly. Sides of head yellow-ochre, with bold dark brown markings, the principal of which are five in number, *i. e.* one below nostril, one in front of eye, one below eye, one on temporal region and one behind angle of mouth.

#### 74. Lesser Cerastes Viper.

CERASTES VIPERA (Linnaeus), 1758.

*Coluber vipera* Linnaeus, 1758, p. 216.

*Type-locality*.—Egypt.

*Distribution*.—North Africa and south-west Asia: Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Sinai and southern Palestine.

*Literature*.—*Cerastes vipera*. G. A. Boulenger, 1896, p. 503. J. Anderson, 1898, pp. 327–329, pl. 47. W. Mosauer, 1930, and 1932, p. 73 [locomotion].

*Occurrence in Egypt*.—Unknown in the Delta, this Viper has been found in the following localities:—

West of the Nile.

1. Sollum—Siwa desert: one specimen, May 1921, collected by Major E. A. T. Bayly, D.S.O., Royal Welsh Fusiliers.
2. Mariut: recorded by A. Andres (1908, p. 7).
3. Fayum: one specimen, December 1913, Mrs. T. W. Russell.
4. Giza desert: J. Anderson (1898, p. 328) and S. S. F.

East of the Nile.

1. Desert east of Cairo : J. Anderson (1898) and S. S. F.
2. Beni Hassan just south of Lat. 28° N. : near the borders of Minia and Assiut Provinces, Upper Egypt : J. Anderson (1898).
3. Ras Gharib, west coast of Gulf of Suez : J. Anderson (1898).
4. Both sides of Suez Canal : J. Anderson (1898).
5. *Sinai*.—A specimen was collected at Katia, north-west Sinai, 28 March, 1915, by Lieut.-Col. W. E. Peel, D.S.O. Egyptian Camel Transport Corps ; a second was found about twelve miles east of Lake Timsah, in May 1915, by Lieut. E. W. Ebsworth, E.C.T.C. ; a third I met at Mahadat, 12 October, 1915, and a fourth north Sinai example was obtained in August 1916 by Capt. A. W. Boyd, M.C., Lancashire Fusiliers. A fifth I caught after sunset, 11 October, 1918, in the sand-hills just north of Habal el Maskar, about 18 miles south of El Arish. The sixth *Cerastes vipera* from Sinai that I have seen was caught by the late Monsieur R. Fourtau, of the Egyptian Geological Survey, in May 1920 at Gebel Masheiti, north of Maghara, this specimen was only 127 mm. in total length and was remarkable in not having a black tip to its tail. F. Steindachner (1901, p. 334) recorded this species from Tor, south Sinai.

Among the specimens of *Cerastes vipera* that I have examined from south Palestine were four from near Gaza, 1917, three collected by Major Maurice Portal, D.S.O., and one by Col. Lord William Percy, C.B.E., D.S.O.

*Eggs*.—During the night 21/22 August, 1907, a *Cerastes vipera* in the Giza Z. G. laid eight eggs, they were yellowish brown in colour, like small dates. About 8 A.M., 22 August one young viper put its head out of an egg and another put its tail out of another egg. By 11 A.M. two young vipers had emerged alive from the other eggs, but the first two remained in the positions they had been three hours earlier and died before emerging. Nothing came of the remaining four eggs. One young one died 25 August, the second shed its skin entire 3 September, but disappeared (swallowed by adult specimen ?) on 13 September, 1907.

*Size*.—The two largest Egyptian specimens that I measured were in total length :—A female, 4 November, 1907, 396 mm., and one (sex not recorded), 22 April, 1905, 464 mm. (snout to vent 423, tail 41) or 1' 6½", but one of 490 mm., from Cyrenaica, has been recorded by D. Vinciguerra (1931, p. 258).

Genus *ECHIS* B. Merrem, Tent. Syst. Amphib. p. 149, 1820.

*Type-species*.—*Vipera (Echis) carinata*=*Pseudoboa carinata* J. G. Schneider, 1801.

The two species, *carinata* and *colorata*, are recorded from Egypt.

Georg Pfeffer (1889, p. 10, & 1893, p. 89) mentions a specimen " No. 60 " of *Echis frenata* from the Atak-Berg, or Gebel Ataka, near Suez which had been collected by Dr. Franz Stuhlmann. The question is whether this was a specimen of *E. carinata* or *E. colorata* ?

The following short table (compiled) may assist in distinguishing the two species :—

	<i>carinata.</i>	<i>colorata.</i>
Scales on snout and vertex.	More or less strongly keeled.	Smooth or obtusely keeled.
Series of scales between eye and upper labials . . . . .	2 (rarely 1 or 3).	3 or 4.
Ventrals . . . . .	132-192.	174-205.

## 75. Carpet-Viper.

*ECHIS CARINATA* (Schneider), 1801.

*Pseudoboa carinata* J. G. Schneider, Hist. Amphib. 2, p. 285, 1801.

*Type-locality*.—Not stated, but India is implied, as P. Russell is referred to.

*Distribution*.—Certain desert or semi-desert districts in Africa north of the Equator and in south-west and south Asia, including parts of Barbary, Algeria, Tunisia, Tripoli, Cyrenaica, Egypt, Nubia, Sudan, Eritrea, Abyssinia (?), Somaliland, Lakes Stephanie and Rudolph areas, Kenya Colony, Upper Senegambia, northern territories of Gold Coast, Togoland, Arabia, northern Syria, Transcaspia, Persia, Baluchistan, Afghanistan, India and northern Ceylon.

N.B.—There appears to be no record of this species in Sinai or in Palestine.

*Literature*.—*Echis carinatus*. G. A. Boulenger, 1896, p. 505. J. Anderson, 1898, pp. 336-344, pl. 49. F. Steindachner, 1901, p. 334. F. Werner, 1919, p. 509. F. Wall, Snakes of Ceylon, pp. 531-546, text-figs. 93-95, 1921 [habits, poison, etc.].

*Occurrence in Egypt*.—This Carpet-Viper is either rare or very local. Personally I did not meet it in Egypt, and a reward of P.T. 20 (four shillings) per head offered for live specimens delivered at the Giza Zoological Gardens had only to be paid twice in twenty-five years. Very different from the case in some parts of India; as a comparatively recent instance of which Mr. Hugh Whistler, F.Z.S., M.B.O.U., has recorded (J. Bombay Nat. Hist. Soc. 24, no. 3, p. 607, 20 June, 1916) how in four months, July to October 1915, 7281 individuals of *Echis carinata* were accounted for near Gujranwala in the Punjab.

In the Sudan the Carpet-Viper is of commoner occurrence than in Egypt, and is known from the Provinces of Dongola, Khartoum, Kordofan and the Red Sea.

*Colour in life*.—Carpet-Vipers vary so greatly in colour and markings that it may be worth while to put on record the following note I made on the appearance of a male *Echis carinata* killed about 7 A.M., 25 December, 1920, in bush country, south of the railway-line, near Um Ruaba, Kordofan, Sudan. The snake's stomach was empty, suggesting that it had had an unsuccessful night's hunting and accounting for its being out and about so early in the morning.

*Colour*.—Very handsome. Above tawny orange, with on neck and body about thirty more or less irregular cross-bars of pale yellow scales edged more or less with black. These cross-bars gradually fade away on the tail, on which about six can be counted. Upper labials and whole of lower surfaces white. Top of head tawny orange with indistinct dark brown V-shaped markings; the apices of the V's pointing forward. Iris sandy red with narrow gold rim to the black vertical pupil.

Ventrals 169. Anal 1. Subcaudals (single) 40. Body-scales 29 rows.

	mm.	per cent.
Length : snout to vent . . . . .	493	100
"    tail . . . . .	72	14.6
"    total . . . . .	565	114.6
Diameter (greatest), body . . . . .	22	4.46
Head, width . . . . .	18	3.65
Poison-fang, length . . . . .	9	1.82

**76. Burton's Carpet-Viper.**

*ECHIS COLORATA* A. C. L. G. Günther, P. Z. S. 1878, p. 978.

*Type-locality*.—Jebel Sharr, behind El Mewaylah, to the south of the entrance to the Gulf of Akaba, at an elevation of 1372 metres (4500 feet), in Midian, north-west Arabia. The type-specimen was collected and presented to the British Museum by Major Sir Richard Francis Burton (1821–1890).

*Distribution*.—Egypt (east of the Nile), Sinai, Palestine, Transjordan, Arabia (Midian, Hadramaut, Muscat), and a specimen in the British Museum is said to have come from Socotra.

*Literature*.—*Echis coloratus*. G. A. Boulenger, 1896, p. 507, pl. 25, fig. 1. J. Anderson, 1900, pp. 419–424.

*Occurrence in Egypt*.—The first occasion on which this species was met with on the African continent, as recorded by J. Anderson (1900), was the collecting by Mr. D. MacAlister of two female specimens in the country near the Wadis Nugrus and Saket "in the neighbourhood of the Emerald Mines on the coast of the Red Sea, in nearly the same latitude as Assuan," *i. e.* 24° N.

Next, on 25 March, 1909, Mr. M. J. Nicoll caught a small individual on the Mokattam Hills, Cairo. Later it was found that Burton's Carpet-Viper is not uncommon in the desert east of Cairo, and in the hills between Cairo and Suez.

The presence of this species in Sinai was established by the Swedish scientific expedition, led by Prof. L. A. Jägerskiöld, who in 1901 obtained a specimen in the Wadi Firan, in south Sinai (L. G. Andersson, 1904, p. 5). Dr. J. C. Phillips and Mr. W. M. Mann found one at sea-level near Akaba (T. Barbour, 1914, p. 91).

In Palestine in 1918 Major Philip H. Manson-Bahr, D.S.O., R.A.M.C., collected three specimens in the Jordan Valley (which he was so kind as to send to me for identification) and stated that one of these had killed three men.

Class **Amphibia** Linnaeus, 1758, p. 194.

Recent Amphibians are divided for convenience into three Orders:—

1. Apoda. No Coecilian is known in Egypt.
2. Gradientia. Not known from Egypt, but two species in Palestine.
3. Salientia. At least four species occur in Egypt, three others in Palestine, and many in the Sudan.

Order GRADIENTIA J. N. Laurenti, 1768

(or CAUDATA M. Oppel, *Ordn. Rept.* p. 72, 1811; or URODELA C. Gegenbauer, *Grundzüge Vergl. Anatomie*, ed. 2, 1870: "Urodeles" Latreille, 1804, only in French form; v. H. Gadow, *Cambridge Nat. Hist.* 8, p. 9, 1901).

Family SALAMANDRIDAE J. E. Gray, 1825, p. 215.

*Type-genus*.—*Salamandra* Laurenti, 1768.

The possible occurrence of any species of Newt or Salamander in Egypt appears to rest on two statements:—

1st. According to J. Anderson (1898, Introduction, pp. 37 & 54), in 1828, or about 1829, Alexandre Lefèbvre, a zealous entomologist who died at Sennaar in the commencement of 1840, one of the many Europeans who entered the service of Mohammed Ali, discovered the larva, or larvae, of a Salamander,

or a Triton, in the reedy marshes that occur in the neighbourhood of the springs and elsewhere in the oasis of Bahrieh (=Baharia) in the western desert of Egypt.

Anderson gives the following reference :—

P. Gervais, *Ann. Sc. Nat. Paris*, (2) 6, 1836, p. 312.

Gervais gives no further information.

The question must be left at that, neither my colleagues nor myself ever had the opportunity of visiting Baharia Oasis.

2nd. According to J. Anderson (1898, Introduction, pp. 47 & 57) : “ Only one species of the caudate batrachians is known to be present in the Delta. . . . The presence of a Salamander in the neighbourhood of Alexandria was pointed out in 1882 by Mr. G. A. Boulenger.”

G. A. Boulenger, 1882, p. 106, mentioned, on the authority of the late Monsieur F. Lataste, some larvae which were said to have been obtained near Alexandria, which Lataste had received from the collection of the late Monsieur Letourneux.

Letourneux was, I believe, a well-known French lawyer in Alexandria, who made some collections of natural history specimens, and, considering that it was then the custom for many European families in Alexandria to spend their holidays in the country near Beirut and the Lebanon, it seems probable that some specimens actually caught in Syria may have been included in Letourneux's Egyptian collection (*cp.* concerning Fresh-water Crabs, S. S. Flower, P. Z. S. 1931, p. 731).

J. Anderson mentioned (1898, p. 359) how he himself searched in vain for newts in Egypt, and “ employed an intelligent Syrian, who used to collect for M. Letourneux.”

The neighbourhood of Alexandria in the present century has been thoroughly examined in this special connection by several zoologists, including Adolf Andres, J. Lewis Bonhote, Michael J. Nicoll, Franz Werner, and myself, and, though some species of terrestrial lizards or snakes might have been overlooked, it is not probable that an animal with aquatic larvae could have escaped us all.

Neither newts nor salamanders are known from Sinai, but both occur in Palestine and Syria, representing the genera *Triturus* and *Salamandra*.

Genus TRITURUS C. S. Rafinesque-Schmaltz,  
Analyse de la Nature, Palermo, p. 78, 1815.

*Type-species*.—Not stated by Rafinesque, who introduces *Triturus* in place of “ *Triton* Dum.” So we can accept *Triton cristatus* J. N. Laurenti, Syn. Rept. p. 39, 1768, from Europe.=*Triturus palustris* (Linnaeus) 1758.

*Note on generic name*.—*Triton* J. N. Laurenti, Syn. Rept. p. 37, 1768, is preoccupied by *Triton* Linnaeus, 1758, p. 658, for a genus of marine invertebrate animals between *Holothuria* and *Sepia*. *Type-species*.—*Triton littoreus*, which is probably a Barnacle. *Molge* B. Merrem, Tent. Syst. Amphib. p. 185, 1820, is antedated by *Triturus* Rafinesque, 1815.

### Banded Newt.

TRITURUS VITTATUS (Jenyns), 1835.

*Triton vittatus* Jenyns, Manual Brit. Vert. Anim. p. 305, 1835.

*Type-locality*.—“ Ponds, near London.” The Rev. Leonard Jenyns

attributes this to Dr. J. E. Gray, who presented the type-specimens to the British Museum\*.

*Distribution*.—Asia Minor, Western Caucasus, Syria, Palestine.

*Literature*.—*Molge vittata*. G. A. Boulenger, 1882, p. 13.

*Triton vittatus*. H. B. Tristram, 1888, p. 159 [recorded from near Beirut, *vide* Dr. F. Müller].

Prof. F. S. Bodenheimer (1926, p. 76) says that *Triton vittatus* Jenyns, known previously from the western Caucasus, from Asia Minor and from near Beyruth (Beirut) in Syria, has been found in the Nar Rubin, south of Jaffa in Palestine, and also at Chuldah, east of Jaffa: the Chuldah specimens he describes as a new subspecies, *Triton vittatus chuldaensis*.

Later, in a letter of 25 Nov., 1932, from Jerusalem, Prof. Bodenheimer writes to me:—"Re *Triton vittatus*: I regard *T. v. chuldaensis* now as the most extreme member of the series of this species. In north Palestine *T. v. syriacus* Wolterstorff is quite common."

(Genus SALAMANDRA J. N. Laurenti, Syn. Rept. p. 41, 1768.

*Type-species*.—*Salamandra maculosa*=*Lacerta salamandra* Linnaeus, 1758.

### Spotted Salamander.

SALAMANDRA SALAMANDRA (Linnaeus), 1758.

*Lacerta salamandra* Linnaeus, 1758, p. 204.

*Type-locality*.—Nuremburg, Bavaria (Mertens & Müller, 1928, p. 14).

*Distribution*.—Europe (except British Isles and the extreme north of the Continent), Morocco, Algeria, and parts of western Asia including Asia Minor, Syria and Palestine. Several subspecies, colour varieties, or local forms exist.

*Literature*.—*Salamandra maculosa*. G. A. Boulenger, 1882, p. 3, and "Les Batraciens," Paris, p. 113, 1910, and E. G. Boulenger, P. Z. S. 1911, pp. 323-347, text-figs. & coloured plate.

Boettger received Spotted Salamanders from the Lebanon shortly before 1882 (G. A. Boulenger, 1882, p. 4).

Brigadier-General F. FitzH. Lance, M.C., wrote to me in November 1918:—"They appear fairly common about Mt. Lebanon," and on 22 November, 1918, I received a live specimen that he had caught himself, which lived in the Giza Z. G. till 15 September, 1922. It was a female, 206 mm. in total length with the tip of the tail missing, and appeared to belong to the typical form *Salamandra salamandra salamandra*.

A Syrian individual 285 mm. (nearly 11¼ inches) in total length is on record (G. A. Boulenger, "Les Batraciens," 1910, p. 114).

\* **British Newts**.—In the last sixty years only three species of Newts have been found to occur wild in the British Isles, these are:—

1. Crested Newt, *Triturus palustris* (Linnaeus), 1758. *Lacerta palustris* Linnaeus, 1758, p. 201. Synonym. *Triton carnifex* Laurenti, Syn. Rept. p. 38, 1876, of which *Triton cristatus* Laurenti, o. c. p. 39, is a subspecies.
2. Smooth Newt, *Triturus vulgaris* (Linnaeus), 1758. *Lacerta vulgaris* Linnaeus, 1758, p. 206.
3. Palmated Newt, *Triturus helvetica* (Razumovskii), 1789. *Lacerta helvetica* G. de Razumovskii, Count (died 1837). Hist. Nat. Jorat. 1, p. 111, pl. 2, fig. 5, Lausanne, 1789.

Prof. F. S. Bodenheimer (1927, p. 90) has recorded this species from the following localities :—

1. Near Metullah, the northernmost point of Palestine.
2. Near Safed.
3. Mount Carmel.
4. Terschicha, between Akko and Safed.
5. Wadi Misrarah, near Jaffa.

Order SALIENTIA J. N. Laurenti, Syn. Rept. p. 24, 1768.

Four families of Frogs and Toads are represented in Egypt and Palestine :—

1. Pelobatidae. One species in Palestine.
2. Bufonidae. At least three species in Egypt, of which one occurs in Palestine.
3. Hylidae. One species in Palestine.
4. Ranidae. One species in Egypt, another in Palestine.

Family PELOBATIDAE Fernand Lataste, C. R. Ass. franç.  
Av. Sci. for 1878, p. 761, 1879.

*Type-genus*.—*Pelobates* J. Wagler, Syst. Amphib. p. 206, 1830.

*Type-species*.—*Bufo fuscus* J. N. Laurenti, Syn. Rept. p. 28, 1768=*Pelobates fuscus* (Laurenti), typically from Austria.

#### Syrian Spade-foot Toad.

PELOBATES SYRIACUS O. Boettger, Zool. Anz. 12, no. 302, pp. 144-147, 1889.

*Type-locality*.—Haifa, Palestine.

*Distribution*.—Palestine, Syria, Asia Minor, Transcaucasia and Bulgaria.

*Literature*.—*Pelobates syriacus* subsp. R. Mertens, Senckenbergiana, 5, pp. 118-128, 1923 [figs. skulls]. L. Müller, Zool. Anz. 100, pp. 299-309, 1932. [2 photographs, whole animal.]

In a letter of 13 December, 1918, Mr. G. A. Boulenger informed me that he considered this "a valid species" and said "Its superficial resemblance to *Bufo viridis* is so great that Boettger tells us he first overlooked a jar of specimens (the original types) believing them to be that common toad."

These two kinds of toad, *Pelobates syriacus* and *Bufo viridis*, apparently may occur in the same holes in the ground in Palestine and are extraordinarily alike in colour and markings. In theory the *Pelobates*, in life, can be distinguished at once from the *Bufo* by the contracted pupil being **vertical** in *Pelobates* and not horizontal as in *Bufo*, but at night the black pupil expands and becomes circular filling up the whole surface of the eye, except for a very narrow yellow circle representing the iris.

Major Maurice Portal, D.S.O., in June 1917, collected several large and medium-sized specimens out of holes in gardens near Deir el Belah, to the south of the Wadi Guzzee. As Deir el Belah is only about twelve miles from the Palestine-Egyptian frontier at Rafa, this species may yet be found within the Kingdom of Egypt. In April 1918 Portal found the immense tadpoles of this toad in the Bir Salem pond.



Family BUFONIDAE John Hogg, Ann. & Mag. Nat. Hist. (1) 7,  
no. 45, p. 361, July 1841.

*Type-genus*.—*Bufo* J. N. Laurenti, Syn. Rept. p. 25, 1768.

*Type-species*.—*Bufo vulgaris* Laurenti, 1768=*Rana bufo* Linnaeus, 1758=*Bufo bufo* (Linnaeus), typically from Sweden.

Three species of *Bufo*—*viridis*, *regularis*, *vittatus*, are known definitely from Egypt, two other species, *pentoni* and *dodsoni*, which have been found in the Red Sea Province of the Sudan may perhaps occur in the extreme south-east of Egypt.

#### Penton's Toad.

BUFO PENTONI J. Anderson, Ann. & Mag. Nat. Hist. (6) 12, p. 440, Dec. 1893.

Named after Col. Richard Hugh Penton, D.S.O., A.M.S., who obtained the type-specimen.

*Type-locality*.—Shaata Gardens, about one mile inland from Suakin, Red Sea Province, Sudan.

*Distribution*.—Red Sea littoral of Sudan, Eritrea, and Lahej and Haithalhim, 20 and 25 miles from Aden, in Arabia. Penton's Toad will be found to have a much wider distribution when northern tropical Africa is better known; already the British Museum has received specimens from Darfur, collected by Admiral Hubert Lynes, C.B., C.M.G., R.N., and others from as far west as the Trarza country in Mauritania.

*Literature*.—*Bufo pentoni*. J. Anderson, P. Z. S. 1895, p. 662, and Zool. Egypt. 1898, pp. 355, 356, pl. 50, fig. 4. S. S. Flower, P. Z. S. 1925, p. 276.

#### Dodson's Toad.

BUFO DODSONI G. A. Boulenger, P. Z. S. 1895, p. 540, pl. 30, fig. 5.

Named after Mr. E. Dodson, who accompanied Dr. A. Donaldson Smith as taxidermist to Somaliland 1894-5, during which expedition the type-specimen was obtained 6 October, 1894.

*Type-locality*.—Rassa Alla, in Gallaland or Western Somaliland.

*Distribution*.—Somaliland and Eastern Sudan.

*Literature*.—*Bufo dodsoni*. H. W. Parker, P. Z. S. 1932, p. 366.

A. L. Butler found this species in May 1908 numerous in the Khor Arbat, about 25 miles from Port Sudan, in the Red Sea Province of the Sudan.

#### 77. Green Toad.

BUFO VIRIDIS J. N. Laurenti, Syn. Rept. p. 27, 1768.

*Type-locality*.—Vienna.

*Distribution*.—Central and southern Europe (north to south Sweden); west and central Asia, including Sinai, Palestine, Syria and Arabia, as well as the Himalayas, Tibet and Mongolia; and parts of North Africa, Morocco, Tunisia, Tripoli, Cyrenaica and Egypt (west of the Nile).

Three individuals have been found in the Hoggar, Central Sahara, at 1400 metres (4593 feet) elevation, as recorded by J. Pellegrin (1927).

This species has been recorded also from the Hoggar and from the Niger (in the neighbourhood of Timbuktu) by G. F. de Witte (1930, p. 614).

*Literature.*—*Bufo viridis*. G. A. Boulenger, *Tailless Batr. Europe*, 2, p. 227, pls. 11, 12, 1898. J. Anderson, 1898, pp. 350–352, pl. 50, fig. 2. F. Werner, 1909, p. 638, pl. 30 [eight individuals from Tripoli, Gharian Mts., Bengasi and Dernah figured]. S. S. Flower, *P. Z. S.* 1925, p. 275. D. Vinciguerra, 1927, p. 344.

*Bufo arabicus* C. H. G. von Heyden, in Rüppell, *Atlas, Reise nördl. Afr.* Rept. p. 20, pl. 5, fig. 2 [poor figure], 1827.

*Type-locality.*—Arabia Petraea. R. Mertens (1922, p. 164) says that Heyden's type-specimen is identical with *Bufo viridis* Laurenti.

*Bufo viridis arabicus*. S. S. Flower, *P. Z. S.* 1925, p. 276.

*Occurrence in Egypt.*—J. Anderson (1898, Introduction, p. 43) wrote:—“The strong affinity which the flora of the oases presents to that of Europe sanctions the inference which has been put forward in explanation of it, viz., that the area of the Libyan desert in which the depressions lie has been directly continuous with the lands of the Western Mediterranean before it had formed part of Egypt. It remains yet to be ascertained whether the fauna of the oases will also favour a similar conclusion.”

*Bufo viridis* appears to support this conclusion, as this Palaearctic species does not occur in the Nile Valley or Delta. The localities in the Kingdom of Egypt from which it is known are:—

1st. The oases in the western desert.

1. Siwa. Seven specimens obtained in January 1920 by Col. R. Meinertzhagen, D.S.O., Royal Fusiliers.

2. Dakhla. Three specimens collected in April 1917, at Kasr Data, by Dr. Lewis H. Gough.

3. Kharga. Nine specimens collected in September 1918 by Dr. Lewis H. Gough.

2nd. Wadi Natron, western Lower Egypt.

In March 1910 Messrs. M. J. Nicoll and E. W. Shann collected thirteen specimens in brackish water in the Wadi Natron. These arrived at Giza 26 March, 1910; one was kept alive there, and four alive and seven in spirit sent to England. Mr. G. A. Boulenger, F.R.S., identified them at the British Museum:—“*Bufo viridis*, the small race described as *B. arabicus*.” In November 1911 M. J. Nicoll collected ten alive from a freshwater waterhole at Gaar in the Wadi Natron, and in October 1914 he got twenty-three very small specimens from a place called Homra in the Wadi Natron.

3rd. North-western Egypt.

1. Mersa Matruh. Nine specimens obtained in March 1920 by Lieut.-Col. R. S. Wilson, Lancashire Fusiliers.

2. Mariut. I found this species numerous at Amria, Behig, etc.

3. Alexandria. I found this species numerous at Nuzha, Ramleh, Abukir, etc.

4th. North-eastern Sinai.

In 1918 I found *Bufo viridis* numerous at El Arish, and at Magdhaba, Ruafa, Sheik Aulad Ali, etc., in the Wadi el Arish, and also in the Wadi el Gedeirat, at 1300 to 1400 feet above sea-level, about 50 miles south from the coast of the Mediterranean sea and about five miles west of the Palestine frontier.

Across the frontier, in Palestine, Major Maurice Portal, D.S.O., collected specimens at Kilab, about halfway between Rafa and Khan Yunas, and also near Gaza, and I met it at Beersheba.

H. C. Hart (1891, pp. 43 & 210) mentions *Bufo viridis* from Wadi Ghuweir,

15 to 20 miles south of the southern end of the Dead Sea, and T. Barbour (1914, p. 78) writes:—"Three fine brilliantly colored toads of this species were taken at Petra, Arabia."

*Size*.—Although all the forty-six or fifty specimens I saw from the Wadi Natron were of pygmy size, those from north-western Egypt were comparable in size with fine European specimens and those from north-eastern Sinai appeared to be even larger; nine individuals, taken at random, among those seen at El Arish in December 1918 measured in length from snout to vent, in millimetres:—73, 74, 78, 79, 80, 88, 89, 95, 95 (=3.74 inches).

*NOTE*.—*Bufo viridis arabicus* appears to be the only amphibian known from the Wadi Natron, western Lower Egypt. On 27 February, 1923, I saw, but did not get an opportunity to examine, tadpoles in the Wadi Natron, so presumably they would have been of this form: this date is mentioned as a possible help to future investigators.

### 78. Reuss's Toad.

*BUFO REGULARIS* A. Reuss, Mus. Senckenb. 1, p. 60, 1834.

*Type-locality*.—Egypt.

*Distribution*.—Tropical and South Africa, Egypt and Arabia.

Among the areas that this species is definitely known from are Senegambia, Liberia, the Niger and Congo water-systems, Egypt, Nubia, Sudan, Eritrea, Abyssinia, Lake Rudolph, Uganda, Kenya Colony, Tanganyika Territory, Zanzibar, Pemba, Portuguese East Africa, Bechuanaland, Transvaal, Cape and in Arabia—Midian and Petra.

*Literature*.—*Bufo regularis*. J. Anderson, 1898, pp. 353–355, pl. 50, fig. 3. F. Steindachner, 1901, p. 335. F. Werner, 1908, p. 1907. A. Loveridge, P. Z. S. 1925, pp. 769, 770 [notes on localities, colour, habits, etc.], and 1929, pp. 93–95. J. H. Power, Trans. Roy. Soc. S. Afr. 14, part 4, p. 416, pl. 21, 1927 [subspecies]. G. F. de Witte, Rev. zool. bot. afr. Bruxelles, 19, 2, p. 244, 1930, and Bull. Mus. Hist. nat. Belg. (2) 2, 6, p. 614, 1930.

*Occurrence in Egypt*.—*Bufo regularis* is an Ethiopian species which has followed the Nile northward to Lower Egypt. In Egypt it occurs in all places which receive water from the Nile, and is unknown in the western oases, in the Wadi Natron, and in Sinai.

Personally I have met this toad all over the Delta from Alexandria in the west to on the east the line of the Freshwater Canal—Port Said, Ismailia, Suez. It is common in the Cairo–Giza area and in the Fayum and is to be found in suitable spots along the Nile Valley in Upper Egypt from Beni Suef to Aswan and Wadi Halfa.

Near Alexandria, where by means of the Mahmudia Canal, Nile water has been carried into the country behind the old coast-line *Bufo regularis* has entered the territory of *Bufo viridis*, and both species can be found in the same neighbourhood, this also happens at Petra in north Arabia (T. Barbour, 1914, p. 79) but from some other, and not yet known, physical cause. Perhaps these two species also meet in West Africa, somewhere near Timbuktu, as G. F. de Witte (1930, p. 614) has recorded both from near Lake Débo on the Niger.

In the Sudan I found *Bufo regularis* to be numerous along the Nile through the Provinces of Halfa, Dongola, Berber and Khartoum, on the Blue Nile to as far south as Roseires, and on the White Nile and its tributaries to as far south as Rejaf. This species occurs also in Kordofan; I met it at El Obeid in December 1920, and F. Werner (1919, p. 452) has also recorded it from El Obeid, Deбри, Kadugli and Talodi.

In 1912 I caught at Khartoum a *Bufo regularis* with some red markings, an uncommon sight in north-east Africa, though a well-known phenomenon farther south which G. A. Boulenger (P. Z. S. 1907, p. 479, pl. 21) has drawn attention to and figured in colour.

A few miles south of the town of Sennar on the Blue Nile in swampy bush-country there were on 28 July, 1909, thousands of toads of this species, at the time of my visit 9 to 11 A.M. the air was full of their croakings, the sound was deafening. All the toads appeared to be in axillary sexual embrace: the males, which were all smaller than the females, were all bright lemon-yellow in colour above, with rich dark brown markings: the females were noticeably different, being pale brownish grey in general colour but with dark markings similar to those of the males.

*Notes on colour in Egypt.*—1. In the same locality and at the same time of year half-grown individuals may have a very well-defined narrow yellow vertebral line, or an incomplete, *i. e.* broken, line, or they may have no trace of a vertebral line. This variety with the yellow line I noted at Alexandria, in the Desuq district of Gharbia Province, in the Kafr Saqr district of Sharqia Province, and near Tamia in the Fayum. By keeping such individuals in captivity I found that the vertebral line disappeared before the toads reached their full size. At Sai el Hagar, Kafr el Zayat district, Gharbia Province, 20 October, 1920, young individuals were beautifully marked with black blotches and very distinct narrow bright yellow vertebral line.

2. At Gheit el Nassara, near Damietta, in August 1918, I noted half-grown toads of this species with well-defined narrow white vertebral line.

3. In the Sennures district of the Fayum, in August 1917, I saw individuals with very many small yellow spots.

*Growth.*—Very small tadpoles caught at Giza 11 April, 1919, transformed between 25 May and 5 June, and by the end of the year had grown into toads of 45 to 48 mm. length from snout to vent. Five little toadlets I collected in the Delta in April 1912 were all full grown by the end of 1914.

*Breeding season in Egypt.*—Tadpoles are to my certain knowledge from February to November, and probably occur in every month of the year. I noted newly transformed young toads leaving the water in large numbers from April to November. In the Nouzha Gardens, Alexandria, 5 & 6 July, 1917, I noted spawn, tadpoles in all stages and young toads leaving the ponds.

*Food.*—Among the insect-prey of this toad is the powerful Hornet, *Vespa orientalis*, that is such a pest to bee-keepers in Egypt.

*Voice.*—In spite of its great value to man as a destroyer of noxious insects, most people in Egypt look upon this toad as an objectionable irritant. It can extend a very large gular pouch and become vocal in every month of the year, not only in the evening and at night but sometimes in the morning and even at high noon. Its voice is not cheerful, amusing and varied like that of the Mascarene Frog (see p. 846), but is monotonous and depressing, resembling, as the late Mr. E. W. Buckley of the Irrigation Service first pointed out, the words "Part worn, part worn, part worn," repeated with melancholia and infinitude.

### 79. Degen's Toad.

*BUFO VITTATUS* G. A. Boulenger, P. Z. S. 1906, p. 573, text-fig. 98.

*Type-locality.*—Entebbe, Uganda.

Described from a single female specimen from the collection of Mr. Edward Degen, 1852–1922.

*Distribution, as far as known.*—Uganda and Lower Egypt.

*Literature.*—*Bufo*, sp. n. A. Andres, 1908, p. 7.

*Bufo vittatus*. A. Andres, 1909, p. 624. S. S. Flower, Egypt, Public Works Dept., Zool. Report for 1908, Cairo, 1909, p. 8: and Rep. for 1909, 1910, pp. 9 & 31, and P. Z. S. 1925, p. 276.

*Occurrence in Egypt.*—This little toad was first discovered by Herr Adolf Andres; on 7 June, 1908, he brought me four males that he had obtained at Ramleh in the eastern suburbs of Alexandria. I sent specimens to the British Museum, where Mr. G. A. Boulenger, F.R.S., identified them as of this species. Andres obtained further specimens in the same locality in 1909 and 1912.

At Faraskur in Daqahlia Province, 28 and 29 May, 1917, I found this species very numerous and took four alive. Michael J. Nicoll, in a letter to me from Simbellawin, Daqahlia Province, 25 August, 1917, wrote:—“*Bufo vittatus* swarms between here and Abu Karamit [about 6 miles south-east of Simbellawin] in the rice-fields. When one has learnt its note it is unmistakable, but *Rana mascareniensis* and *Bufo regularis* are also common.” Farther to the south-east on the Bahr Fakus in Sharqia Province, about 6.30 p.m., 23 May, 1920, I heard what appeared to me to be *Bufo vittatus* croaking, but failed to secure a specimen. Thus, with the exception of Andres’s original discovery near Alexandria, the localities for this toad in Egypt all appear to be in the eastern Delta between the Damietta and the old Pelusian branches of the Nile.

*Voice.*—The male has a single subjugal vocal sac and in spite of his small size makes a very loud noise, a most strident croak, “Kaak-kaak-kaak-kaak,” repeated indefinitely every evening, as far as my notes go, from the end of March till the middle of September.

Family HYLIDAE A. C. L. G. Günther, P. Z. S. 1858, p. 339,  
and Brit. Mus. Cat. Batr. Sal. p. 96, 1858.

*Type-genus.*—*Hyla* Laurenti, 1768.

Genus HYLA J. N. Laurenti, Syn. Rept. p. 32, 1768.

*Type-species.*—*Hyla viridis* Laurenti, 1768 = *Rana arborea* Linnaeus, 1758 = *Hyla arborea* (Linnaeus).

### Tree-Frog.

HYLA ARBOREA (Linnaeus), 1758.

*Rana arborea* Linnaeus, 1758, p. 213.

*Type-locality.*—Europe.

*Distribution.*—All Europe south of about 56° North Latitude, except the British Isles; temperate Asia from Asia Minor to Japan; Morocco, Algeria, Madeira and the Canary Islands. A form of this species has been stated in various books to be Egyptian, this is:—

### Savigny’s Tree-Frog.

HYLA ARBOREA SAVIGNYI Audouin, 1827.

*Hyla savignyi* J. V. Audouin, in Savigny, Descr. Egypte, 1 (1) (Expl. pls. Rept.) p. 183, 1827. v. C. D. Sherborn, Index Anim. 2, p. 5760, 1930.

Named after Marie Jules César Lelorgne de Savigny, 1777–1851, French zoologist, who visited Egypt with Napoleon’s expedition.

*Type-locality*.—"Syria."

*Distribution*.—Corsica, Sardinia, Elba, Cyprus, Asia Minor, Syria, Palestine, Transjordan, Mesopotamia, Persia, Central Asia, China, Corea, Japan and Hainan.

*Literature*.—*Hyla arborea savignyi*. H. B. Tristram, 1888, p. 160. G. A. Boulenger, *Taillies Batrach. Europe*, p. 250, pl. 15, 1898. J. Anderson, 1898, pp. 357, 358, text-fig. 14. T. Barbour, 1914, p. 78. F. S. Bodenheimer, *Zool. Anz. Leipzig*, **98**, pp. 313–317, 1932.

There appears to be no evidence of any Tree-Frog having occurred in Egypt. Audouin's specimen was probably brought from Palestine or Syria, where this animal is well known. In the years 1914–1923 I received specimens from Sidon, Haifa, Jaffa, Rubin Marsh (about 9 miles south of Jaffa), Bir Salem (where tadpoles were found in April 1918 by Major Maurice Portal, D.S.O.), Nahr el Auja, Ramleh, Gaza and even from south of the Wadi Guzzee.

*Introduction into Egypt*.—The late Capt. H. B. Suter, Egyptian Camel Transport Corps, wrote to me from Haifa, 18 March, 1919, that he got six of these frogs in Syria and started off for Cairo on leave intending to present the frogs to the Giza Z. G.; owing to the disturbances in Egypt he only got as far as Kantara and then had to return to Haifa, so he liberated the Tree-Frogs in the Sweet-water Canal at Kantara, where there are trees and gardens on both sides of the canal.

Family RANIDAE C. L. Bonaparte, *Giorn. Arcad. Sci. Lett. ed Arti, Roma*, **49**, p. 65, 1831.

Ranadae J. E. Gray, 1825, p. 213.

*Type-genus*.—*Rana* Linnaeus, 1758.

*Rana* is the only genus of this family occurring in Egypt, other genera occur in the Sudan south of Khartoum.

Genus RANA Linnaeus, 1758, p. 210.

*Type-species*.—*Rana temporaria* Linnaeus, 1758, p. 212, typically from Sweden.

One form of frog (*Rana mascareniensis*) occurs in Egypt, one (*Rana esculenta ridibunda*) in Palestine, and several others in the southern Sudan.

### Edible Frog.

RANA ESCULENTA Linnaeus, 1758, p. 212.

*Rana ridibunda* P. S. Pallas, *Reise d. v. Prov. Russ. Reichs.* **1**, p. 458, 1771.

The Frog usually known as *Rana esculenta ridibunda* does not occur in Egypt; there can be little doubt that the "Alexandria" specimens of the late Monsieur Letourneux came from Syria or Palestine (see p. 836), and its reputed occurrence in Sinai, founded on specimens collected by H. C. Hart, is incorrect, as Hart (1891, p. 210) obtained his frogs from the Ghôr, at the southern end of the Dead Sea.

This form occurs in Tunisia, Tripoli and Cyrenaica, and is the common frog of Palestine and Transjordan. Major M. Portal, D.S.O., sent me specimens that he had caught at the following localities:—

1. Red House Garden, Wadi Guzzee, August 1917.
2. Nahr el Rubin, April and July 1918.

3. Wadi Kelt, west of the Jordan, November 1918.

4. Rubin Marsh, 8 to 10 miles south of Jaffa, December 1918.

Among the literature on this frog from the contries to the east and west of Egypt may be mentioned:—H. B. Tristram (1888, p. 160), J. Anderson (1898, pp. 345, 346), F. Werner (1909, p. 636, and 1931, p. 274), T. Barbour (1914, p. 79), G. A. Boulenger (1923, p. 42), R. Mertens (1929, p. 292), and F. Angel, Bull. Mus. Hist. nat. Paris (2) 4, p. 387, 1932.

### 80. Mascarene Frog.

*RANA MASCARENIENSIS* Duméril & Bibron, Erp. gén. 8, p. 350, 1841.

*Type-locality*.—Seychelles, Mauritius and Bourbon.

*Distribution*.—Africa, Madagascar, Mauritius, Bourbon and the Seychelles: in Africa very widely distributed, from the southern Algerian Sahara and Egypt, west to the Gaboon and Sierra Leone, in the Belgian Congo, the Sudan, Eritrea, Abyssinia, Uganda, Kenya Colony, Tanganyika Territory, Portuguese East Africa and Angola, and south to Rhodesia and Zululand.

*Literature*.—*Rana mascareniensis*. J. Anderson, 1898, pp. 346–349, pl. 50, fig. 1, and A. Loveridge, P. Z. S. 1925, p. 775 [localities, size, etc.].

*Occurrence in Egypt*.—Evidently an Ethiopian form which has followed the Nile right down to Lower Egypt. I found it to be very numerous in all the six Provinces of the Delta:—Beheira, Gharbia, Daqahlia, Sharqia, Menufia and Qaliubia. On the west it occurs along the land watered by the Mahmudia Canal to as far as Alexandria, on the east the Freshwater Canal has enabled it to reach the environs of Port Said and Suez. Salt water limits its distribution, but in December 1921 I found this species to be very numerous in the brackish shallow water at the edge of Lake Menzala, between Gheit el Nassara and Sidi Shata. Numerous in the Cairo–Giza area and in all three districts of the Fayum, but farther south I personally only know this frog from the Qena Province and from the Edfu district of the Aswan Province. I failed to obtain evidence of its occurring in Nubia, but met it in the Sudan at Khartoum, on the White Nile to as far south as Mongalla on the Bahr el Gebel and on the Blue Nile to Roseires.

*Variation*.—In Egypt this species varies in colour and markings in the same locality, and also varies in size, colour and markings in different localities. Thus at Gheit el Nassara, near Damietta, this frog appears to reach larger dimensions than elsewhere in the Delta, at Desuq, in Gharbia Province, individuals with a broad yellow vertebral line were not uncommon, and in the Dekernes district of Daqahlia Province I noted specimens with a broad green vertebral line.

*Habits*.—In Egypt this species may be seen in every month of the year; in winter if a north wind be blowing the frogs select sheltered spots where they can bask in the sun, in summer, especially in the rice-fields of the north-eastern Delta, they may be seen in untold numbers and are very active in the bright, hot, noontide sun.

My notes for tadpoles are for the months of June, July and August only, but May to November is probably more correct, as I have seen spawn as late as the 21st August, and newly transformed young frogs leaving the water in June, July, August and November.

*Rana mascareniensis*, at any rate in the Delta, at Giza and in the Fayum, is a "Water-Skipper," small specimens and even half-grown frogs were noted hopping over the surface of the water in ponds, ditches and flooded fields,

as is the custom of frogs of other species in India and southern Arabia (cf. J. Anderson, P. Z. S. 1895, p. 662).

*Voice in Egypt.*—This frog croaks from February to November, chiefly at night and in the morning up to 9 A.M., but, especially during May, some individuals may be heard at any hour of the day. It appears to be able to utter an almost infinite variety of sounds, but after taking down written notes in many localities for about twenty years I was able to classify these sounds under seven headings :—

1st. *Warning, or welcome ?*

The presence of this species in a locality during the daytime is often made known to one in this way—although no sound has been heard previously, on looking closely round a piece of canal or pond, a frog will give a single loud cheerful call, indicating its presence and position.

2nd. *Croaking.*

The simplest noise that this species makes is a monosyllabic “tûk.” Then there is the call of “tûk, tûk, tûk,” uttered in quick succession, alternated with periods of silence. Next there is the steady “toock, toock, toock, toock, toock,” which leads on to :—

3rd. *Rattling.*

The most characteristic sound made by this species is a rattling one, something between that made by a child's toy rattle and the old-fashioned wooden rattle of a night watchman. During the warmer months in Egypt this sound may be heard in the morning steadily up to 9.30 or 10 A.M. : I have noted it at 12.45 P.M. and again from 3.15 P.M. or later, on to and after sunset. It should be noted that in the daytime in some localities where these frogs abound, there is—first silence, then a rattling noise begins and gets louder, then silence for a period, then all the frogs rattle together and so on. In other localities one hears a regular continuous rattle. While “rattling” the two vocal sacs are very visible, appearing like great white globes, with opalescent colouring, on either side of the frog's head. As far as I have been able to observe, the vocal sacs are kept inflated during the process of rattling, a slight partial deflation causing the sound.

4th. *Talking.*

At times a party of these frogs in a canal or ditch, when not engaged in “rattling,” give one the impression that they are carrying on an animated conversation among themselves, so various are the notes and the intonations that they use.

5th. *Tolling.*

This is a resonant steady croak, to my ear very like the voice of *Bufo vittatus*.

6th. *Chuckling.*

At times these frogs utter a miscellaneous series of short notes, like a human being who is “chuckling” over an amusing recollection, or who is unable to completely restrain his wish to laugh at some unusual incident.

7th. *Singing.*

Usually a morning performance. At say 7 A.M. a single frog will sing a solo—“Mick-a-mak, mick-a-mak, mick-a-mak, mick-a-mak,” then a chorus



of frogs sings in unison "Mack, mack, mack," then the solo again, then the chorus, and so on.

It may be noted that in the Giza Zool. Gardens the frogs of this species, that were living as pets in the house that I inhabited, generally started croaking whenever the Grey, Demoiselle and other Cranes in the adjoining paddock started calling.

#### 7. LITERATURE.

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