

ON THE PRESENT STATE OF OUR KNOWLEDGE OF THE HERPETO-
FAUNA OF PALESTINE*

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A summary of research on the Reptile Fauna of the Territory between the Mediterranean Sea and the Syrian Desert including the Sinai Peninsula, with special consideration of the area now occupied by the states of Israel and Jordan. About 90 species are briefly reported. The bulk of new data on dispersal and new species concerns material in the Collection of the Hebrew University, Jerusalem. Several dubious or erroneous statements in the older literature are discussed. Since Flower's paper on "The Reptiles and Amphibia of Egypt", approximately 10 new species have been added for this region.

Following the first publications on the Herpetofauna of Palestine by Boettger, Lortet and Günther, the reptiles of this region have been treated by a considerable number of distinguished herpetologists and collectors. Nevertheless, we are still very far from a satisfactory knowledge of the distribution of this group in the western part of the "fertile crescent". Politically, this area is split up into the states of Syria, Lebanon, Israel, Jordan and a province of Egypt (the region bordered on the west by the Suez Canal, including the "Gaza strip" and the Sinai Peninsula). Geographically, it forms a well-defined entity, bordered in the West by the Mediterranean and the Gulf of Suez, in the East by the Syrio-Arabian desert and in the South by the Red Sea.

The diversity of biotopes in this relatively restricted area is indeed remarkable: along the Mediterranean coast there are coastal dunes in different degrees of fixation, artificially watered plains and swamps; but there are also regions of Mediterranean forest near the coast and — at higher altitudes — even at a considerable distance from the sea. This forest is, in part, well preserved; other parts survive in different degrees of reduction, some of which is caused by man; and in others, there is almost complete annihilation. The greater part of the area is characterized by a diversity of semi-arid and arid landscapes ranging from steppe to desert. This diversity is paralleled by wide

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differences in the annual rainfall, ranging from something like 1680 mm. per annum to practically .nil (50 mm). The higher levels have, generally speaking, the largest amount of rain, while the eastern and southern parts of the region receive the least and show the different types of desert landscapes in various gradations.

Among the earlier authors dealing with the herpetofauna of a major part of this region, special tribute should be paid to Canon Tristram, who, in his splendid work "Flora and Fauna of Western Palestine"¹⁹, concentrates the data gained from the earlier works of Loret and Böttger together with the material collected by himself and determined by Günther. In 1933, Flower⁸ published his paper on the Reptiles of Egypt, combining his rich experience in this field with the results reported in Anderson's monograph (1898) on the same subject. Flower's paper is of special interest for us, because he takes into account our whole region, especially Sinai, Palestine and Transjordan; the remaining part of the area is briefly summarized as "Syria". He fully uses the considerable quantity of more recent literature as well as data of several collectors in Palestine proper (during World War I) and the results of his travels throughout Egypt and Sinai. Since the appearance of Flower's paper, the author and a considerable number of collaborators have succeeded in concentrating a fairly rich collection of reptiles in the premises of the Hebrew University in Jerusalem. It appears worthwhile, therefore, to give a short account of this field of investigation during the last two decades, specially since a considerable number of recent publications must be taken into consideration. Moreover, Tristram's data were taken into account by Flower only in part, while Werner²², in 1939 subjected them to a revision for "Syria" (and the Lebanon) only. Our present more comprehensive knowledge of the fauna of Israel and Jordan, based on a collecting activity of many years, enables us to check a series of Tristram's data and to test their validity.

The least known region is Transjordan, for, since Tristram's journeys, this area has been investigated only by Festa (results published by Peracca¹⁵), Philipps (Barbour's paper 1914) and an Expedition of the Field Museum of Nat. Hist. (results published by Schmidt¹⁶). The author (1946) also contributed a little to our incomplete knowledge of this area, filling in some gaps concerning the faunal differences between the Levant countries and Iraq and settling some questions as to important boundaries of distribution. The eastern part of Transjordan is almost unknown, though some work has been done on the western part and the South (Wadi Araba and the Aqaba region).

The whole of the data will be treated in systematic sequence, giving for each group the references in Tristram, Flower and the most recent literature, and the results of our own investigations. As a supplement, a revised list of the reptiles occurring in our area will be added, limiting its scope to the regions belonging to the states of Israel and Jordan, but including the "Gaza strip".

It must be emphasized that Tristram's "Palestine" does not agree with the geogra-

phic conception of this area which was en vogue until 1948. Tristram's Palestine comprises the region occupied today by the states of Israel and Jordan (partly) as well as the southern parts of the states of the Lebanon and Syria. He did not visit the eastern parts of Transjordan.

Testudinata

Tristram mentions for "Palestine" the following species: *Testudo ibera* Pallas (= *T. graeca* L.); *Testudo kleinmanni* Lortet (= *T. leithii* Günther); *Emys caspica* Gmelin (= *Clemmys caspica* Gmelin); *Emys europaea* D.&B; *Trionyx aegyptiacus* Geoffr. = *triongis* Forskal; *Chelonia caretta* L. (= *Caretta caretta* L.); *Chelone viridis* Schneider (= *Chelonia mydas* L.).

Flower confirms the general occurrence of *Testudo graeca*, but he found *T. leithii* in northern Sinai only; he thinks that Tristram's "*kleinmanni*" is a smaller and lighter coloured race of *graeca*. This form has been called *T. graeca floweri* by Bodenheimer⁸ (vide also Mertens¹²) and should occur, according to Tristram, in the region between Hebron and Beersheba, and south of the Dead Sea. Flower also confirms the frequent occurrence of *Clemmys caspica rivulata* Valenciennes in Palestine and Syria. He does not comment on Tristram's data concerning *Emys europaea*, which may derive from a rather vague remark in Lortet (1883, p. 189), who saw them playing in the Sea of Galilee "où elle atteint de grandes dimensions". *Trionyx triunguis* is, according to Flower, only a sporadic, occasional immigrant into the coastal rivers of the Levant coast, being transported by means of the Nile floods which force huge quantities of water along the Mediterranean coast in a northerly direction. Apart from the occurrence of the two species of sea turtles mentioned above, *Eretmochelys imbricata* is added for the Red Sea. (The possible occurrence of *Dermochelys foriacea* should be taken into consideration, see Flower, p. 752).

The collection of the H.U. contains specimens of *Testudo graeca ibera* from both Palestine and Transjordan (vicinity of Jerash); we may add the localities mentioned by Werner²² and earlier workers (ibid.) from Syria and Lebanon. The H.U. Collection has no specimens of *Testudo graeca floweri* or of *T. leithii*. There is no doubt that Lortet's "*Cistudo europaea*" should be omitted from the faunal list of our region, but *Clemmys caspica rivulata* is very common throughout the area in the adequate biotopes. Flower is wrong, however, concerning the sporadic re-immigration of *Trionyx triunguis* from the Nile system into the coastal rivers of the Levant coast. We have, from the river Kishon in Northern Israel to the river Yarkon (Auja) near Tel Aviv, specimens of very different sizes — even very young ones — and we got a batch of eggs from the neighbourhood of Kfar Vitkin, approximately halfway between the above-mentioned localities. We may add that this species has been found in quaternary deposits in Palestine (Bate⁸) and — near Tel Aviv — in the excavations of Tel Kassile

(1200—800 B.C.E.). It may be assumed that the species is equally well established in the localities further to the North, e.g., Litani, Nahr el Kelb, Lake of Antiochia (we have two very large specimens from this Lake). It was impossible to ascertain the correctness of Siebenrock's (1913) statement about the occurrence of *Trionyx euphratica* in Lake Tiberias; there is, however, a specimen bearing this label in the Vienna Museum!* We have no other data on soft turtles from the Jordan river system, quite in accordance with Tristram's statement. As to sea turtles, *Chelonia mydas* is considerably rarer than *Caretta caretta*; we know of no record of a *Dermochelys* from the Mediterranean coast of Palestine; there is in our collection a head of *Eretmochelys imbricata* from the Gulf of Aqaba.

Crocodylia

Since Böttger's report (1880) on the occurrence of *Crocodylus niloticus* in the freshwater swamps of Kabara (Nahr Zerka near Benyamina), which was restated and confirmed by Tristram, the locality "Zerka" has caused some confusion, because there is a river of the same name in Transjordan. Thus, Gadow ("Reptiles," p. 461) writes of the occurrence of the Nile crocodile in "an eastern tributary of the Jordan", namely, this "second Zerka". Since the year 1902 no other specimens have been recorded from the original locality. In the meantime, the swamp has been drained and all that remains at present is a very small swamp near the spring of the Zerka river, which is now confined to a narrow controlled bed. As a parallel to the case of *Trionyx*, quarternary remains of the crocodile have been identified by Miss Bate³ from a locality not very far from the last refuge of this species in Palestine. A true, long-established colony, and not a sporadic, individual immigration, may, therefore, be presumed for this reptile also. The present local conditions preclude any possibility of a survival of the species at this spot.

SAURIA

Gekkonidae

According to Tristram, the following species live in Palestine: *Stenodactylus guttatus* Cuv. (= *sthenodactylus* Licht.) (north of the Dead Sea); *Gymnodactylus geckoïdes* Spix (Carmel); *Gymnodactylus kotschy* Steind. (Haifa, Beirut); *Hemidactylus verruculatus* Cuv. = *turcica* L. (common in every part of Palestine); *Ptyodactylus hasselquistii* Schneid. = *lobatus* Geoffr. (every part of Palestine).

In this series, *Gymnodactylus geckoïdes* Spix is a synonym of *kotschy*, which is represented in our area by the ssp. *orientalis* Stěpánek¹⁸.

With the appearance of Flower's paper, this list could be enriched by the following

* See Addenda No. 1.

species: 1. *Stenodactylus petrii* Anderson (= *elimensis* Barbour) from Sinai only; 2. *Tropicolotes steudneri* Peters from Sinai; 3. *Tropicolotes nattereri* Steind. from East Sinai (probably not a "good" species, according to Flower); 4. *Gymnodactylus scaber* Heyden; this easily transferable species has been recorded from Tor (Sinai); 5. *Tarentola mauritanica* (L.) from Sinai; 6. from the same region, the Arabian species *Ceramodactylus doriae* Blandford in mentioned (fide Boulenger). All five species mentioned by Tristram are recorded from Sinai also. As species, not seen by Flower but mentioned by Anderson from Egypt, *Bunopus blanfordii* Strauch (for Egypt doubtful, vide Loveridge¹¹; specimen from Aqaba in British Museum) should be added; the possibility of the occurrence of *Pristurus flavipunctatus* is admitted. Boulenger's *Hemidactylus sinaiticus* is not acknowledged even as a variety of *turcicus* — later authors (esp. Parker¹⁴, Loveridge¹¹ retain the Sinai form as a "good" species. An easily distinguishable form of *Ptyodactylus hasselquistii* (*var. sancti-montis* Barbour, from the Hermon area) should be added to this considerable list. We can see at a glance that the "new" species mostly inhabit the Sinai region.

From a review of the most recent literature and our own additions, the following items should be added:

Bunopus crassicauda Nikolsky has been found at Djebel Amri, N. East Syria. *Bunopus tuberculatus* Blandford has been mentioned by Schmidt (from Damesin's Camp, Syria), by Angel (Deir-ez-Zor, Syria), by Haas (manuscript: Wadi Menajeh, S. Palest.). This species, therefore, extends its range very far along the Syrian desert in a southward direction from its main habitat, southern Persia and Baluchistan*.

Tropicolotes steudneri has been mentioned (Haas⁹), from the region west of the Dead Sea, and later from the Negev (Wadi Fukra, S. Palest.). Loveridge: Sinai.

A new species, *Stenodactylus grandiceps* Haas, has been recorded from Transjordan (60 km. south of Amman) and from Addaye (Mossul area, Iraq) Haas, manuscript).

Flower's suggestion concerning the possibility of an occurrence of *Pristurus* is partly confirmed by the occurrence of a small variety, *P. flavipunctatus guweirensis* Haas, in the Nubian sandstone hills north of Guweira (Transjordan).

Ceramodactylus doriae has been found in the southern part of the Wadi Araba. This indicates that the range of the species extends from Sinai in a north-easterly direction.

Angel found *Gymnodactylus scaber* in Abu Kemal, N. E. Syria.

Hemidactylus flaviviridis Rüpp. has been recorded by Anderson from Suez; this record has no special zoo-geographical value as this species may easily have been transferred by ship transports. Similarly, Loveridge¹¹ mentions *Tarentola annularis* (L.) from Sinai. As stated above, Stěpánek described the Palestinian specimens of *Gymnodactylus kotschyi* as subspecies *orientalis* (1937) and subspecies *syriaca* (without locality, *ibid.*).

* See Addendum No 2.

Ptyodactylus hasselquistii sancti-montis Barbour (1914) was earlier described simultaneously by Peracca¹⁵ as *var. syriacus* and corresponds, according to Loveridge¹¹, to the ssp. *puisieuxi* Boutan. We found this form not only in Jerash, Transjordan (confirming Peracca), at the foot of Mt. Hermon (on Israel soil) but also in a coherent area in Galilee. In my opinion there are no transitional forms between the two typical *hasselquistii* populations and the striking difference in many morphological details and general habitus warrants the establishment of this group as a clear-cut true species of *Ptyodactylus*. I propose the specific name *puisieuxi*.

Comparing the newest additions with Flower's list, it becomes clear that a number of species recorded by this author from Sinai penetrate, into Palestine proper: *Tropicolotes steudneri* goes very far to the North; *Bunopus tuberculatus* and *Ceramodactylus doriae* penetrate only up to the W. Araba and its tributary wadis.

To sum up, some 14-16 species are known, so far, from the whole region considered in this paper; among them there are a number of primitive species lacking adhesive devices on the fingers.

Agamidae

Tristram gives *Trapelus sinaiticus* = *Agama sinaita* Heyden for the region of the Dead Sea; *Trapelus ruderatus* Oliv. = *A. ruderata* Ol. for "most parts of Palestine", *Stellio cordylina* Lam. = *Agama stellio* L.: "common"; *Uromastix spinipes* Merrem = *aegyptia* Forsk. "Southern desert of Judea" and *Uromastix ornatus* Rüpp. "Southern desert".

The rather generalized localities for *A. ruderata* give no clear hint as to whether *A. ruderata* or *pallida* is the species in point, or both species, which are often considered as subspecies only (vide, e.g., Wettstein, 1928). Flower, however, considers both forms as "good" species and stresses the uncertainty concerning the northern boundary of *pallida*, which should cross Palestine and Transjordan. He considers both forms as exclusive of each other and mentions *ruderata* from Syria only; *A. pallida* is known to him from Syria and southern Palestine. He confirms Tristram in stating that *A. stellio* is recorded from Syria, Transjordan, Palestine and Sinai; *sinaita* from southern Palestine and Sinai. It is a pity that he gives no satisfactory descriptions of his three forms (subspecies or geographic races) of *stellio*, as we in Palestine meet several geographical types which are easily distinguishable in colour as well as structure. He mentions a dull-coloured form from Alexandria, a darker and bigger form from the granite mountains in south Sinai, and a bright type of medium size from northern Sinai and Palestine. (See infra). As an addition, we should mention *Agama savignyi* D.&B. = *flavimaculata* Anderson from Sinai and southern Palestine. There is a doubtful record of *A. spinosa* Gray from Sinai. *Uromastix ornatus* Heyden is stated to be found in Sinai (Werner [1893], Anderson [1898]); *U. aegyptia*, in Sinai, *U. acanthinurus*, in southern

Sinai. Flower does not mention Tristram's statement concerning the occurrence of *ornatus* and *aegyptia* in the "Southern Desert" of Palestine.

As to local races (or subspecies) of *Agama stellio*, we should mention in the first place the black form from Transjordan lava fields, described by Parker¹⁴ as *A. stellio picea*. We are under the impression that the Palestine-Transjordan-Sinai region is inhabited by a series of other easily distinguishable forms: specimens from the northern half of the Transjordanian high plateau (partly covered by Mediterranean wood) are rather dark, even blackish, and have blue patches on the sides of the body; they are quite different from specimens from Palestine in which buff, yellow and brown-greyish hues predominate and which show yellow to orange patches on the back. Another, very big type, in which a brick-red colour predominates, lives in the Negev (S. Palestine). There seem to be some differences also in the pholidosis and size between this and the forms previously mentioned. A full description of this third type will be published shortly.

Flower's *A. savignyi* seems to be identical with Wettstein's (1928) *sanguinolenta isolepis* Blgr.* This is the only species restricted to sandy soil in the Negev, whereas *pallida* is restricted to more loamy and gravelly steppe areas. *Sinaita*, on the other hand, is a characteristic rock-lizard; *stellio*, while also common on rocks, does not seem to be particular in the choice of its biotope, but avoids extremely arid areas. Both species are very often seen perched on prominent boulders or rocks. From the eastern part of Transjordan, Schmidt¹⁶ mentions *Agama persica* Blandford.

Some confusion seems to prevail concerning the species *A. pallida* and *A. ruderata* owing to the fact that even the populations found in the region of Palestine and Transjordan show a wide degree of variation in size and "spinosity". Collecting along the Track of the Pilgrims in Transjordan, one is impressed by the gradual decrease in size of the specimens from North to South; specimens from southern Palestine never reach the size of those caught south of Amman (Wadi Dhoba'i and other places). The picture is further complicated by the presence of very spiny specimens at some distance south of Amman, where the road to Madaba forks off, bearing a certain resemblance to *ruderata*. With regard, however, to the position of the nostril, which lies exactly at the top of the canthus rostralis, the spiny specimens are intermediate between both species in question**. It may be that both "species" merge gradually somewhere (in northern Transjordan). While the lower Jordan valley harbours many reptiles having elsewhere a more southern range, *pallida* does not penetrate into this area.

True *Agama ruderata* are recorded from Syria (Homs, Tel Abiad) by Angel² and by Schmidt¹⁶ from eastern Transjordan (Umm Muwal). Werner²², assigning full specific rank to both, thinks that Peracca's *pallida* from Damascus is probably a

* See Addendum No. 3.

** The Brit. Mus. N.H. Collection contains such a specimen, labelled as *A. ruderata*.

ruderata, as this region should be the approximate boundary between the northern "species" *ruderata* and the southern *pallida*. But this border-line cannot be correct, since Angel records *pallida* from a place as far north as Palmyra (also specimen in H.U. Collection) and Schmidt a *ruderata* as far south as his locality in Transjordan. We may be right, therefore, in assuming that both forms intergrade over a ragged borderline, while pockets of the typical species exist here and there.

Uromastix aegyptius is found rather frequently in the Wadi Araba from the southern end of the Dead Sea to the Gulf of Aqaba, mainly on slopes covered by boulders, and also high on the western slopes of the Araba (Maaleh ha-Aqrabim, east of Kurnub). We have no records of this species being found north of the Dead Sea.

Uromastix ornatus, known from Sinai, has not been recorded from Palestine since Tristram's time. There is the very doubtful quotation of Boulenger, giving "Syria" as the locality of this species. Werner²² thinks that in fact Palestine may have been the real locality in question. Why should a penetration of this Arabian species into the southern corner of Transjordan or Israel be impossible?

Chamaeleonidae

The only species of our area, *Chamaeleon chamaeleon* (L.) is already reported by Tristram as "very common in every part of the country"; this is rather an overstatement, because the species requires considerable air humidity and density of vegetation, but does not necessarily require trees. At any rate, it cannot survive in steppe or desert, but is fairly common in the adequate biotope.

Chamaeleon africanus approaches our area closely, in the western and central Nile Delta, but does not even enter the Sinai Peninsula (vide Flower).

Scincidae

Tristram's list of Scincoid lizards is so extensive that our knowledge today is not much more advanced than it was in the eighties.

Tristram's list :

Ablepharus pannonicus Licht. = *A. kitaibelii* Bibron & Bory : Haifa.

Scincus officinalis Laur. : Syria.

Euprepes fellowsii Gray = *Mabuya septemtaeniata* Reuss; "from Dan to Beersheba". (*Euprepes fellowsii* Günther = *Mabuya vittata* Olivier, [fide Boulenger]. As *M. septemtaeniata* Reuss is absent in Palestine and *vittata* common, a lapsus calami, concerning the author's name, is possible).

Euprepes septemtaeniatus Reuss = *M. septemtaeniata* Reuss : Syria, Lebanon.

Euprepes savignyi Audouin = *Mabuya quinquetaeniata* Gray (fide Boulenger) "on the coast".

Euprepes vittatus Oliv. = *Mabuya vittata* Oliv.: Beirut.

Eumeces pavementatus Geoffr. = *schneideri* Daud. (acc. to Werner *E. schneideri* var. *pavimentatus*); "rough ground near Dead Sea"; on the coast (Lortet); Jerusalem (Simon).

Ophiomorus miliaris Pallas recte: non Pallas sed Günther = *O. latasti* Günther "in various parts of the north".

Gongylus ocellatus Forsk. = *Chalcides ocellata* Forsk. "this lizard swarms in every part of the country, mountain, or deep valley, in dry places among stones".

Seps monodactylus Günther = *Chalcides güntheri* Blgr.: near Nazareth, Lake Huleh, near Hermon; Jaffa, Haifa (Boettger).

Sphaenops capistratus Wagler = *Chalcides sepsoides* Audouin. Jaffa (Boettger).

According to the synonyms used today, *M. septemtaeniata* appears twice in this list (or else *M. vittata* is referred to more than once).

Flower does not mention Tristram's statement about *septemtaeniata*, which is an East African and Arabian species. Strangely enough, he records *M. vittata* for Palestine alone (not for Sinai or other neighbouring areas). He is doubtful about any occurrence of *quinquetaeniata* = *savignyi* in Palestine or Syria, although some animals might have been imported into a harbour area. As no other author since Tristram's time has mentioned or found this species in our area (e.g., Werner), it should be dropped from the faunal list. *Ablepharus kitaibelii* is known to Flower as occurring in Sinai, Palestine, and Syria; *Eumeces schneideri* (var. *syriacus*) in Sinai and different places in Palestine. *Scincus officinalis* (= *stincus*) does not enter Sinai or Palestine from the West, according to our author, but both *Chalcides sepsoides* and *ocellatus* are found there, the latter in Syria also. Concerning *Ophiomorus latastii* (Type spec. from Mt. Hermon), Flower doubts its occurrence in southern Palestine. (He is right; the animal avoids the arid South). *Chalcides güntheri* is, strangely enough, recorded as a Syrian reptile! (see infra).

As we can see, Tristram considerably overestimated the number of Scincidae and we have very little to add, instead.

Peracca¹⁵ describes *Ablepharus festae** from Jerash and Es Salt in Transjordan (Schmidt¹⁶; specimens from Jerash in the collection of the H.U.). We found specimens of *Scincus officinalis* (*stincus*) in the Negev (Asluj); therefore an occurrence in Sinai is very probable. The author erroneously reported as *Sc. officinalis* a specimen, not bearing the characteristic dorsal crossbars, which was collected near Guweira (Transjordan). Comparison with specimens from different parts of the Arabian Peninsula shows clearly that this Transjordanian specimen should be referred to the Arabian species group, which is, however, not yet systematically clarified: *S. meccensis*, *arabicus*, *conirostis*, *philbyi* belong to this group. We have no record of *Mabuya quin-*

* See Addendum No. 4.

que- and *septemataeniata* (see below. Werner knows the species *M. vittata* (as do Müller and Wettstein¹³; from Transjordan: H.U.), and *Eumeces schneideri pavimentatus* from Syria and Lebanon. (See also: Angel²; for Transjordan: Barbour [1914], Peracca¹⁵, H.U.).

To summarize the records of the Scincidae, *Chalcides ocellatus* and *Eumeces schneideri* have the widest dispersal in the whole area; *Mabuya vittata* is absent from Sinai(?); *Ablepharus pannonicus* is not recorded from Transjordan(?)*; *Scincus stincus* enters our area probably from the South but should still be found in Sinai. *Chalcides sepsoides*, too, is a southern form, which is limited to the coastal dune strip of southern Palestine (known as far as Caesarea). *Ophiomorus latastei* has a very restricted dispersal in Upper and Lower Galilee and the Jordan Valley to the slopes of Mt. Gilboa (Tirat Zvi) in the South and Mt. Hermon in the North**. Specimens are known also from Mt. Carmel. *Chalcides güntheri*, also, is a northern type, known from the Hermon and from there southwards on Israel soil until we reach a transverse line connecting Jerusalem and Jaffa. We know no localities south of this area of distribution, but an extension into the hills, perhaps reaching the vicinity of Hebron, is very likely, if we consider the ecological and phyto-sociologic conditions (rather high rainfall, Mediterranean type of vegetation).

Lacertidae

Tristram's enumeration of Lacertids is not easy to discuss as many items are very doubtful and many others are obscured by the shifting nomenclature in this group.

His list and some of his remarks are reproduced below:

- (1) *Lacerta viridis* L. "most abundant in every part of the country".
- (2) *Lacerta strigata* Eichwald "not so common as the former".
- (3) *Lacerta judaica* Camerano (= *L. laevis* Gray) "from the Lebanon to Jerusalem, in upper and hilly country".
- (4) *Lacerta laevis* Gray "near Jerusalem, plains of Jericho".
- (5) *Lacerta agilis* L. "every part of the hill country and maritime plains".
- (6) *Zootoca taurica* Pallas "Phoenician plain, all around base of the Lebanon".
- (7) *Zootoca muralis* Laur. "very common in North of Palestine, not observed in the South".
- (8) *Zootoca tristrami* Günther (= *Acanthodactylus tristrami* Boulenger) "Lebanon District".
- (9) *Zootoca deserti* Günther (= *Ac. pardalis* Licht.) "in plains beneath Hermon and the Lebanon".
- (10) *Acanthodactylus scutellatus* Aud. "near Beirut".

* See, however, Addendum No. 4

** One specimen in the BMNH from Waid Heidan east of Dead sea.

- (11) *Acanthodactylus savignyi* Aud. (= *Ac. schreiberi syriacus* Blgr.) "various localities on the coast".
- (12) *Acanthodactylus boskianus* Daud. "in collections at Beirut" (not found by Tristram).
- (13) *Eremias guttulata* Licht. "near Beirut".
- (14) *Mesalina pardalis* Licht. (= *E. guttulata*) "sandy plain near Beersheba".
- (15) *Ophiops elegans* Ménétr. "very common everywhere, except Jordan valley".
- (16) *Ophiops schlueteri* Boettg. "Beirut".

In this list, 1 and 2 (*Lacerta viridis strigata* Eichwald), 3 and 4 (*Lacerta laevis* Gray), 13 and 14 (*Eremias guttulata* Licht.) are synonyms; 15 and 16 are considered today as varieties of *Ophiops elegans* Ménétr., according to Boulenger.

Flower mentions the following *Lacertidae*: for Palestine: *Lacerta viridis strigata* (= *major wolterstorffii* Mertens, Müller and Wettstein¹³) and *laevis* (the latter from Jaffa, Jerusalem and Petra [Transjordan]); for the Lebanon, *L. fraasii* and *kulzeri* (later: *dandfordi kulzeri*; ref. Müller and Wettstein¹³); *Latastia longicaudata* (Reuss) from Sinai; *Acanthodactylus boskiana* (Daudin) var. *asper* probably from Sinai, Palestine (west of the Dead Sea, Gaza, Auja), and Transjordan (Aqaba, Wadi Kerak); *Acanthodactylus pardalis* (Lichtenstein) var. *typica* from Jaffa (Werner 1898): this locality seems to me very doubtful, as well as the locality "Jerusalem" quoted by Boulenger, but there is no doubt about the locality Beersheba, as this species is restricted to a loess landscape typical for the Negev (southern Palestine); *Acanthodactylus scutellata* (Audouin) is mentioned for Sinai and Palestine (Jaffa and, again, a very improbable locality, Jerusalem; this species is found in the lowland in dunes only, and not at 800 m. above sea level); "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". *A. robustus* has been recorded by Schmidt (1930) from Transjordan. *Ophiops elegans* Ménétr. is recorded from southern Sinai (Barbour 1914) and widely distributed in Palestine (near the Dead Sea, Jaffa [Werner 1898] and Mt. Hermon); Werner does not discuss the relationship of Boulenger's "varieties" of this species. *Eremias guttulata* Lichtenstein is mentioned for Sinai, Palestine and Transjordan; he considers the varieties *olivieri* and *martini* as individual variations ("at any rate in Egypt") and not as geographical races. (Boulenger⁶ mentions both from Sinai, the typical variety from Palestine). *Eremias rubropunctata* Lichtenstein is recorded from Sinai (central part) only. "The area of distribution of a Punjab species *brevirostris* extends to northern Syria (Boulenger 1921, 1923)." The species *Eremias mucronatus* Blanford (= *brenneri* Blgr.) is doubtfully recorded for Sinai.

Taking into consideration the synonyma in Tristram's list of *Lacertidae*, Flower considerably enlarged our knowledge of this family, which has so many representatives in our area; he does not even discuss three species mentioned by Tristram — doubtless

owing to false determinations — namely: *Lacerta agilis*, *Zootoca taurica*, *Zootoca muralis*. Probably these errors are due to a false interpretation of the relatively newly described species from the Lebanon, *Lacerta danfordi kulzeri* and *L. fraasi*. I cannot, however, find an explanation for the quotation of *Lacerta agilis* (see also Werner [1898]); already Boettger (1878/79) thought that the recorded occurrence of *L. muralis* from Palestine was due to a false determination of *L. laevis*. With regard to the locality references mentioned above, some criticism seems indicated. *Lacerta viridis strigata* (= *major wolterstorffii*) is met in Israel in areas of Mediterranean woodland only. This species, therefore, has a rather continuous dispersal in the relatively moister areas of Galilee, especially near the northern frontier, and, high up in the hills, some island-like refuges in the Judean Hills (e.g., Aquabella and Deir Abu Ammar west of Jerusalem). *Lacerta laevis* has been found near Jericho, but I think that this isolated atypical occurrence is due to the agency of man (importation by chance into a man-made oasis). Tristram's localities for *Zootoca deserti* seem very improbable to me, as this species has a very densely populated and restricted dispersal in the south Palestinian loess plains. The locality Beirut for *Acanthodactylus scutellatus* is also doubtful; to our knowledge, the northern boundary of this species lies some 50 kms. north of Tel Aviv. It seems very strange, to a Palestinian herpetologist, that Tristram, who so often visited the Dead Sea and Lower Jordan area, did not find the very common lizards of this area, namely *Acanthodactylus boskianus* and *Eremias guttulata*. The locality near Beirut for the latter is quite misleading.

Recent Literature and Data based on our own Observations and Collections.

The Syrian green lizard has been described under different names: *Lacerta viridis strigata* Eichwald seems to be identical with *L. strigata major* Boulenger (Werner²² for Syria and Lebanon), and with *L. major wolterstorffii* Mertens (1933). All known localities are situated in the evergreen Mediterranean forest region and are relatively rich in rainfall and shadow. Outside this centre of distribution in the Lebanon and northern Palestine (apparently harbouring a relatively dense population) there are scattered islands, as far south, perhaps, as Hebron in the Judean hills (see above) but also in Syria (Werner).

Angel² describes a var. *nigra* of *Lacerta laevis* from Beirut and Tartous. Specimens from Palestine are very uniform in coloration: the brown back is not mottled with black (as I saw it in specimens from Syria and in our specimens from Petra). *Lacerta laevis* from northern Transjordan (Jerash), identical in colour with Palestinian specimens, is in the H.U. Collection.

Müller and Wettstein's *Lacerta kulzeri* (1932) has been fully redescribed by the same authors¹³ under the name *L. danfordi kulzeri*. The specimens from Petra (Trans-

jordan) and Shiba (on Mt. Hermon), described by Barbour (1914) as *L. danfordi*, are referred to *L. laevis* by Boulenger: "should be compared with *L. laevis*". Wettstein examined our specimens from Petra and decided to consider them as slightly aberrant *L. laevis*. There are no records from Israel (northern part) of *L. danfordi kulzeri* or of *L. fraasi* (recorded from the Lebanon at altitudes ranging from 1,800—2,300 m.). Perhaps Tristram considered specimens of this lizard as *Zootoca taurica*; the localities, however, "all around the base of the Lebanon and Phoenician plain" do not suit a high mountain inhabitant. We are able to add some interesting new localities for the genus *Acanthodactylus*. In the area west of the Jordan only the following species are found: *A. schreiberi syriacus*, *scutellatus*, *pardalis*, *boskianus asper*. The species *grandis*, *tristrami* and *robustus*, formerly known only from the northern parts of the Syrian desert, have a much wider range.

Specimens of *A. grandis* could be found at localities (Tel Abiad) some 400 km. northwest of the terra typica (see Angel²). The author described specimens from Transjordan (1943, between Hissa and Ma'an); this species has a very extended range along the western border of the Syrian desert.

Angel² describes a smaller north-eastern form of *Acanthodactylus tristrami (orientalis)*, which is recorded by Schmidt¹⁰ from the Syrian "panhandle" (Palmyra-Der-ez-Zor). *Tristrami* has been found by us in Transjordan also.

Since Werner's original description of *A. robustus*⁹ from the Syrian desert, Schmidt (1930) and Haas⁹ found this species on Transjordan territory. The H.U. collection has a beautiful series of specimens of it, collected by J. Aharoni; unfortunately, instead of a precise locality, only "Syrian desert" was noted. The question of *E. guttulata guttulata* and Boulenger's var. *olivieri* has been discussed by the author elsewhere (manuscript). The "olivieri-form" of Transjordan and Palestine should be considered a subspecies and will be described as *olivieri* ssp. *schmidtii*. This subspecies is distinguished from *olivieri* by several well-defined characters in pholidosis as well as in colour*. It may be that Boulenger's "olivieri", with its very extended range, is a mixture of several closely related *Eremias* forms. In a number of biotopes in southern Palestine *guttulata* and *olivieri schmidtii* live together, but around the Dead Sea and in the Judean desert, near the Jerusalem-Jericho road and the lower Jordan Valley, *guttulata* only is represented. On the other hand, we found *schmidtii* exclusively in depressions between the dunes near Jaffa on patches of exposed heavy soil.

Eremias brevisrostris has been found by Angel² in Haouarine in Syria (for other places in Syria, ranging from Palmyra to Damascus, Werner²²); this species penetrates from Northern Syria southwards right through Transjordan to Aqaba (Haas⁹). We have no knowledge of any localities west of the Wadi Araba. Probably the southward extension along the western margin of the Syrian desert is of relatively recent date,

* See Addendum No.5.

having taken place after the formation of the great rift which the species was unable to cross owing to its very high temperatures and dryness. In Transjordan, the specimens are considerably smaller in the South than in the North.

We have no record of *Eremias mucronata* and *rubropunctata* from Israel and Transjordan, not even from the southern corners of the states.

In the extreme North of our region, in the Amanus, (Schechle : Werner²²), *Latastia cappadocica* has been found; *L. longicaudata*, known from Sinai, has not been found elsewhere since.

Boulenger splits *Ophisops elegans* into a series of "varieties"; of which *ehrenbergii*, *schlueteri* and *mizolepis* are recorded from our region. The predominant variety is, (for Transjordan and Israel) *ehrenbergii*; *schlueteri* has been recorded from the northern corner of Israel (Lebanon and Syria) around the Hermon massif; *mizolepis*, from Haifa. Schmidt¹⁹ records *elegans elegans*, also, from Syria and Transjordan. I fully agree with Werner²² in attaching slight value to these "varieties"; they are probably without geographical significance and their characterization is rather vague. In the area of *ehrenbergii* we found, near Gaza, a population whose scale and ventral plates across the middle of the body number less than Boulenger's minimal values — otherwise these specimens conform with the rest. A population of very large specimens with blue markings at the flanks is found around the Huleh Basin. These specimens, however, agree in their pholidosis with *ehrenbergii*. These characters are probably not sufficient for a thorough study of the geographical races which, no doubt, exist in the vast range of this species. This seems fairly evident if we consider that in the H.U. Collection *mizolepis*-forms are represented from regions geographically and ecologically as disparate as Hanita (Northern Israel: terra rossa soil, Mediterranean forest) and the steppe area between Petra and Ma'an in Transjordan (very sparse low-growing vegetation). From the Petra hills "*schlueteri*" specimens, also, could be determined. The taxonomy of this very common small reptile badly needs full revision owing to the fact that it splits into local populations and so often seems to produce corresponding changes from the norm in far distant areas.

Amphisbaenidae

According to Tristram, *Amphisbaena cinerea* (Vaud.) = *Blanus cinereus* Bedriaga, but in fact *B. strauchii* Bedriaga, should occur ("not uncommon") under stones in the plain of Genezareth and in the coastal plain. It has not been possible to confirm this reference since Tristram's time. Boettger mentions the species only from Cyprus and Rhodes. Werner²² saw only a specimen from Northern Syria, "doch scheint *Blanus* nicht über Syrien nach Süden hinauszugehen". Aharoni told the author of specimens he had collected in the Huleh Basin, but specimens are not represented in his collection, now incorporated in the H.U. Collection.

Varanidae

According to Tristram, two species of *Varanidae* live in Palestine, namely: *Psammosaurus scincus* Merrem (= *Varanus griseus* Daud.) in the vicinity of Ein Geddi (west coast of the Dead Sea) and *Monitor niloticus* Geoffr. in the South of the Dead Sea and in the South of the Judean Desert.

Flower records the first species for Sinai, Palestine and Transjordan and states briefly that Tristram's record of *V. niloticus* could not be confirmed. Obviously, Tristram's localities for both species lie within the area inhabited only by the first. In the coastal plain, *V. griseus* is found as far north as Jaffa, but the northern limit in the Rift Valley is unknown. (It is also known, farther in the East, from Mesopotamia). I saw a beautiful specimen in the sandy region east of Kurnub (Negev). The species is not recorded from Syria.

Anguidae

Tristram mentions (fide Müller) the European Glass Snake, *Anguis fragilis* L., as an inhabitant of Palestine, a statement which is, no doubt, an error. *Pseudopus apoda* Pallas = *Ophisaurus apodus* is recorded from Mt. Hermon; Flower gives three localities in Palestine: Wadi Rubin, Judean Hills (2,700 m. above S.L.) and near Nazareth. We have no record of this species south of the Valley of Esdraelon, but it is not rare in Upper and Lower Galilee or in the Emek (an area covered mainly by Mediterranean vegetation). There is no record for Syria in Werner²², but Peracca found this giant glass-snake in Es-Salt (Transjordan), a place with a luxuriant Mediterranean vegetation on the slopes and the bottom of a deep wadi. The southern limit of this species crosses both Palestine and Transjordan, but so far details are not known.

OPHIDIA

Boidae

Eryx jaculus L. has been known from Palestine since Hasselquist's travels (1749-52). It is interesting that Tristram mentions the rapidity of this snake's movements — it is, in fact, rather sluggish. Many authors record this rather common snake from our area: Flower, from Palestine (between Rafa and Gaza) and Syria; Boettger, from Beirut; Günther, from Galilee; Angel, from Tartous and Charagrag; Werner, from Coelesyria (Beka'a) near Baalbek (Boulenger); Schmidt, from the Jordan Valley. Nothing is known of its occurrence in Sinai. In the H.U. Collection we have quite a number of specimens of this remarkably uniform snake. It is mainly confined to the coastal plain, especially common in regions covered by coastal dunes and stretches of the red "Khamra"-soil, and shows a certain preference for citrus groves. Nevertheless, we found specimens also in the Central Negev (Beth Eshel, Dorot), in the Jordan

Valley (Maaz) and in the hills (Rosh Pina, Jerusalem). We have no record from Transjordan, but, as the snake is known from Mesopotamia, it will surely be found in this intermediate region also.

Typhlopidae

Tristram reports both species, *Typhlops syriacus* Jan=*vermicularis* Merrem, and *Onychocephalus simoni* Boettger=*T. simoni* Boettger; the first being described as very common everywhere, the second reported from Jaffa and Caiffa (=Haifa). Almost every author mentions *T. vermicularis*: Lortet (1883) from Syria and Palestine; Flower (1933) from Sinai, Palestine and Syria; Werner (1939), from Damascus, Nisib near Aleppo, Mt. Hermon (1,500 m.) and Amanus; Angel (1936), from Beirut, etc. We have a large collection of this species, which appears to inhabit the whole of Israel with the exception of true deserts; a certain humidity seems to be indispensable to this species, which is regularly found on the surface in late spring (April to June) and later, under stones in the hills. It is found in great numbers in marshy places, e.g., the northern border of the Lake of Galilee and the dried swamps of the coastal area (Benyamina) and the Emek (Ein Harod). The large amount of rainfall in the hills seems to suit the natural requirements of this species which is never found in the driest time of the year. There are no records from Transjordan, but its occurrence in Iraq suggests that it might be found there also, especially in the higher parts of the country.

The distribution of *Typhlops simoni* is rather scattered. First recorded by Boettger from Jaffa and Haifa, Peracca (1894) found this species in Jericho. Our collection (H.U.) has several specimens from the southern shores of Lake Tiberias and Tiberias (whereas *T. vermicularis* is not found there); from the surroundings of Gaza, 30 km. east of Beersheba; from east of Beni Naim (Judean desert); and from Bat Yam near Tel Aviv. The species seems to be limited to Israel and Cisjordan and prefers rather damp localities of lower elevation, even in very hot parts of the country, avoiding the regions of limestone rocks. No records exist so far from Transjordan and the Syrian area.

Leptotyphlopidae (= *Glaconüdae*)

Barbour described (1914) as *Leptotyphlops phillipsi* Barbour a little snake from Petra (Transjordan); this species proved to be synonymous with *L. macrorhynchus* (Jan), known to Boulenger (1893) from Nubia and (?) the Euphrates. In a later publication Boulenger (1920; Journ. Bombay Nat. Hist. Soc. p. 25) confirms this dubious statement (Faleya, Euphrates).

This tiny creature has been found again by Haas (1943), at Ein Harod in the Emek Jezreel. Later, the H.U. Collection received specimens from Dorot in the Negev and from Ein Feshkha on the north-western shore of the Dead Sea. These rather

scattered localities are insufficient for an intimate understanding of the ecological requirements of the species.

A high soil humidity and rather light soil seem to be indispensable for so tiny an animal. It appears to prefer the lower localities of the country and a hot climate. Nothing is known about its occurrence in Syria-Lebanon.

Colubridae aglyphae

According to Tristram, the following species belong to the Fauna of Palestine.

- (1) *Rhynchocalamus melanocephalus* Günther (= *Oligodon melanocephalus* Jan) Lake Huleh, Jericho, Lake Tiberias (whole Jordan Valley).
- (2) *Ablabes coronella* Schlegel = *Contia coronella* Schlegel = *Eirenis lineo-maculata* Schmidt, "every part of the country, Lebanon, Hermon, Huleh, Genesareth, Tyre, Nablus".
- (3) *Ablabes modestus* Martin = (fide Günther) *Eirenis rothii* Jan (an error, see later), the Lebanon, Mt. Hermon.
- (4) *Ablabes fasciatus* Jan = *Eirenis coronella* Schlegel (Schmidt¹⁶), "dry stony places on the hills".
- (5) *Ablabes decemlineatus* Dum. et Bibr. (= *Eirenis decemlineatus* Dum. et Bibr.) Galilee, Plain of Phoenicia, lower Lebanon, Huleh.
- (6) *Ablabes collaris* Ménétr. = *Eirenis collaris* Ménétr., near Beirut.
- (7) *Coronella austriaca* Dum. et Bibr., "near Beirut and elsewhere in Palestine".
- (8) *Coluber aesculapii* = *Elaphe longissima* (Laur.), near Beirut
- (9) *Coluber quadrilineatus* Pall. = (*Elaphe*), northern Palestine.
- (10) *Zamenis diadema* Schl. = *Spalerosophis diadema* Schl. = *Periops parallelus* Geoffr., Phoenician and Philistian plains.
- (11) *Zamenis ventrimaculatus* Gray = (*Coluber*); round the Dead Sea.
- (12) *Zamenis caudaelineatus* Günther = *Coluber nummifer* Reuss = *C. raverigieri* Ménétr.; near Jerusalem, Nazareth, Tyre.
- (13) *Zamenis viridiflavus* Dum. et Bibr. = *Coluber jugularis asianus* Bttg., throughout the country, both in the Jordan Valley and on the hills.
- (14) *Zamenis viridiflavus*, var. *carbonarius* Bonap. = *Coluber jugularis jugularis* L. "warmer parts of the country, Jordan valley, rarer in maritime plains, where the other is much more abundant".
- (15) not in the hills; *Zamenis dahlui* Dum. et Bibr. = *Coluber najadum* Eichwald; in moist, but not in marshy places.
- (16) *Zamenis raverigieri* Ménétr. = *C. raverigieri* Ménétr. Lake Phiala (Birket er-Ram).
- (17) *Zamenis algira* Jan, banks of the rivers Litani, Nahr-el-Kebir and others.

- (18) *Tropidonotus hydrus* Pall. = *Natrix tessellatus* Laur. swarms in lakes and little ponds; especially abundant in Lake Phiala.
- (19) *Tropidonotus tessellatus* Laur. Nahr el Kebir, plains of Genesaret, Sidon.
- (20) *Tropidonotus natrix* Lineé = *Natrix natrix* L., in Palestine (Böttger, Müller, Bedriaga).

This list needs some corrections: Nos. 12 and 16, and also 18 and 19, are synonymous. A number of species have never been mentioned since Tristram, and our improved knowledge of the geographical boundaries of repartition of the species involved enables us to eliminate the following species as highly improbable for our area: *Coronella austriaca*, *Coluber aesculapii*, *Coluber quadrilineatus*, *Zamenis algira*. According to Werner, Boettger mentions *Elaphe situla* from Beirut. This record appears highly improbable (see Werner 1896/97 and 1939). At least for Palestine, *Coluber jugularis jugularis* only, has been recorded by later authors. As the juvenile coloration of this species changes to black, juvenile specimens were probably mistaken for *C. j. asianus*.

Turning now to Flower's list, we see that he was able to add a considerable number of species to Tristram's thirteen aglyphous Colubrids.

"*Natrix natrix* has been reported from Palestine, but its occurrence there is doubtful". Barbour described *N. tessellata* as occurring in Sinai; Flower found this species entering the eastern Nile Delta. It exists throughout Palestine and Syria.

Flower refers to eight species of *Coluber* for Palestine-Syria-Egypt. From this number, *florulentus* should be excluded from our area; *jugularis* and *najadum* are not found in Egypt.

His list of the genus *Coluber* follows:

C. jugularis jugularis L. Palestine (Jebnah, near Ramle; near Jericho).

C. najadum Eichw.: Palestine (Sarona), Syria, fide Werner, Barbour.

C. rhodorhachis Jan: Palestine, Syria(?), Sinai (W. Feiran).

C. ventromaculatus Gray: Palestine, perhaps Sinai. This statement is erroneous, as the author's remarks concerning coloration of a specimen caught between Gaza and the Egyptian frontier (as it was before 1948) show clearly that it should be referred to the next species.

C. rogersi Anderson: Palestine and Sinai (Wadi el Gedeirat near Kossaima; Maghara hills; Sudr el Haitan; Ras el Jaifi).

C. elegantissimus Günther: our knowledge of this species is based on two specimens only; the type being from "Mountains east of el Muwavlah, Midian (Hedjas); Aqaba, or on way from Sinai to Aqaba" (Hart).

C. ravigieri ravigieri Ménétr.: probably in Northern Syria only.

C. ravigieri nummifer Reuss: Southern Syria(?), Palestine (Jerusalem; Nazareth; Haifa; Tyre; Sidon; Jaffa); Transjordan (Kerak), Sinai (W. Feiran, Barbour 1914).

Spalerosophis diadema Schlegel: Sinai (Kossaima), Palestine (Aqaba to the Dead Sea: Hart 1891; Gaza).

Lytorhynchus diadema Dum. et Bibr. Strangely enough, Tristram does not mention this rather common snake. Sinai (Mahadat; Mohammadia); Palestine (Gaza, Ramle).

Oligodon melanocephalum Jan : occurrence in Sinai very doubtful (Hart's specimen, labelled "Sinaitic Peninsula" is in fact from Petra, Transjordan), Palestine (Wadi Guzee), Syria.

Contia (= *Eirenis*) *fasciatus* Jan = *Eirenis coronella* Schlegel (Schmidt¹⁶). Sinai (Gebel Dhalfa, North Sinai), Palestine, Syria.

Contia (= *Eirenis*) *coronella* Schlegel = *E. lineomaculata* Schmidt : Sinai ([Anderson 1904]; St. Catherina Monastery [Barbour 1914]); Palestine (Jordan Valley), Petra [Barbour 1914], Syria. Barbour's data, however, have to be referred to *Eirenis coronella* Schlegel; this author merged the two species, on obvious error!

The following species of *Contia* are unknown from Egypt and Sinai, but occur in Palestine : *C. decemlineata*, *collaris*, *modesta*, *rothii*.

This short survey of the *Aglyphae* shows that there exist some unsettled issues, which render a comparison of Tristram's and Flower's lists a difficult matter. The main difficulties lie in the doubtful validity of the determination of *Coluber ventromaculatus* (in both authors) as well as in the uncertain systematics of the genus *Contia* (*Eirenis*). Perusing Boulenger's Catalogue of Snakes, I found that Günther's *Zamenis ventromaculatus* (probably Tristram's specimen from the Dead Sea) is in fact a *Zamenis rhodorhachis* (vide Günther 1864). Flower, again, refers a specimen from southern Palestine to *ventromaculatus* and concludes that possibly the species penetrated into Sinai. As the coloration mentioned is quite atypical for this species but typical of *Coluber rogersi*, the slightly higher number of ventrals (207) as compared with Werner's data (in "*Colubridae*": 197—201) is not sufficient to exclude his specimen from this species. In the collection of the H.U. there is also one specimen, from Wadi Dhaba'i (Transjordan), with 207 ventrals. So we should revise the data for *rogersi* given by Werner²². Corkill's photographs⁷ show clearly the completely different coloration of his true *ventromaculatus*-specimens from Iraq. In this connection we may refer to Angel², who states that in his specimen, also, the dorsal patches are much wider than the bright intervals (he, too, refers it to *ventromaculatus*): I think that he is dealing with a true *rogersi* also. We may, therefore, assume that the upper limit for the ventralia is higher than that indicated in the first description of this species.

Concerning the rather confused state of *Contia decemlineata-modesta-collaris*, the following remarks may be of some use. Specimens from Lebanon, the Hermon (Ferzol), and the Amanus are referred by Werner to *C. modesta*. (Boulenger's specimen : Voy. Gadeau de Kerville, p. 55, (1923), is referred to *Contia collaris* Ménétr.). Werner's *Contia modesta* is, therefore, a snake with 17 scale-rows and is closely related to *Contia decemlineata* Dum. et Bibr., from which it is distinguished by frontals at least

* See Addendum No. 6.

twice as long as they are broad (in the other at highest $1\frac{1}{2}$ as long as broad). All the specimens from Palestine and Transjordan in our collections are true *decemlineata*. There is no doubt that Boulenger's (1894) *Contia collaris* is a mixture of *C. collaris* Ménétr., a small snake with 15 scale-rows, and *C. modesta* Martin, a larger snake with 17 scale-rows*. I think that Boulenger's "mixture" is due to a statement by Günther, who maintains that *Eirenis rothii* Jan is not specifically distinct from *Ablabes modestus* Martin. For this reason, we have some doubts concerning Tristram's localities for this latter species: there are no references in the British Museum Catalogue indicating Tristram as collector of any specimen of Boulenger's mixed *Contia collaris-modesta*. In the appendix to the Catalogue of Snakes mention is made (III. p. 642) of a specimen from Mt. Hermon (Turin Mus.); as it has 17 scale-rows, it almost certainly refers to *C. modesta*; therefore, one of Tristram's localities might be confirmed again, but Peracca¹⁵ gives, under the name *Homalosoma modestus*, snakes with both 15 and 17 scale-rows again, almost certainly a mixture (locality: Hermon area, Ferzol). Schmidt's¹⁶ *Eirenis collaris* Ménétr. from the Jordan Valley resembles the Palestinian *Eirenis rothii* Jan in coloration, but has rather different numbers of ventrals and subcaudals. (Corkill for *collaris*: V. 170—200, Sc. 55—75; data of 5 specimens of *rothii* [H.U.-C.] show ventrals: 166—187, Sc.: 46—54. Peracca's specimen from Es Salt (Transjordan) is considered as *E. collaris*, owing to its high number of subcaudals (V. 187, Sc. 60). Boulenger records, for *rothii*, V. 159—183, Sc. 40—53. We see, from this as well as other evidence, that both species are closely related, or, possibly, merging locally. The higher number of subcaudals in *collaris* seems to be the main difference between them. The H.U. collection contains true *rothii* from Jerash (Transjordan)*.

Summarizing these complicated data, we may stress again that *Coluber ventromaculatus* Gray probably does not enter our region (but is recorded from Iraq [see Corkill]); that *Contia rothii* and *collaris* (if they are in fact clearly distinguishable species) co-exist, perhaps in Transjordan and other places; but that, at least in Palestine, *rothii* is the characteristic species. (But see Schmidt's specimen with the rather inexact locality "Jordan Valley", and Flower's specimen from Jericho [p. 816/17]). From Iraq, only the species *collaris* is recorded, but in Transjordan and Syria both species co-exist.

Natrix tessellata is the only aquatic snake recorded so far from Palestine and Transjordan; concerning the question of the occurrence of *N. natrix*, Werner²² reports *f. bilineata* form the Lebanon and Syria and thinks that this species does not exist farther south than Beirut. The same author mentions both *Coluber jugularis jugularis* and *asianus* for Syria and the Lebanon. In spite of Tristram's statement, which agrees with that of Werner for Syria, I am convinced that, at a certain size, all individuals of this species turn black and should therefore be referred to *jugularis* only. The

* See Addendum No. 6.

size at which this blackening starts is approximately one metre; we have several specimens showing the gradual darkening of the juvenile colour pattern and not one, above a certain size group, shows even traces of the former coloration. Our biggest specimens are nearly 2,500 mm. long. Angel records the species from Syria (Hama); the H.U. Collection has specimens from Jerash (Transjordan).

Coluber najadum is known so far from Palestine, Syria, the Lebanon, and (Barbour 1914) from Transjordan (Kerak). Tristram is certainly not correct in limiting this species to the lowlands; we have several specimens from the hills (*e.g.*, Jerusalem); this snake is by no means rare.

Two species of desert racers are widely distributed in the Negev and in the lower Jordan Valley: *Coluber rhodorhachis* and *rogersi*. The H.U. Collection has a very fine specimen of *rhodorhachis* from the South end of the Dead Sea. Werner does not mention this species from Syria. In considering the question of the validity of *C. ventromaculatus*, quoted by Flower from southern Palestine and by Angel from northern Syria (Palmyra), I concluded that both cases should be referred to *rogersi* (see below); the H.U. Collection has identical specimens with the same high numbers of ventrals from Transjordan, and others from different parts of the Negev. We did not get any specimen of the probably Arabian species, *elegantissimus* — there are no records of any specimens being caught since those mentioned by Flower.

Concerning the geographical boundary between *Coluber nummifer* Reuss and the form *ravergieri* Ménétr., Werner states that the borderline in Syria lies somewhere between the Lebanon and Amanus, *ravergieri* having been recorded in the Amanus and Asia Minor; Angel found typical *nummifer* in Beirut, Hama and Homs (Lebanon; Syria); from Hama he describes a new form *pallaryi*. *Nummifer* has a wide distribution in Palestine but this species avoids the drier parts, especially the South, of the country. In Jerusalem (800 m.) this species is perhaps the commonest *Coluber*.

In contrast to the latter species, *Spalerosophis diadema* is very thermophilous and, in Palestine, is met in the southern Jordan Valley and in the Negev (H.U. Collection). We found this species also in Transjordan (W. Dhoba'i) and Angel reports it from as far north as Palmyra (Syria). Specimens from Transjordan are remarkably different from the Palestinian ones and are probably of subspecific value. Corkill also describes two different forms from Iraq; there probably exists, therefore, an unbroken series of forms from Palestine, through Transjordan and Iraq, to Iran. All these forms would repay a thorough study of the whole "Formenkreis"; for the moment we have not enough material to undertake such a task, even for Palestine and Transjordan only.

We have now to consider the possibility that two different types of *Lytorhynchus diadema* exist in Palestine. Specimens from the coastal plain correspond to the Egyptian population in having a stouter habitus and a lower number of dorsal markings than the specimens from the drier hinterland in the Negev. We have no records of

this species from Syria or the Lebanon, or, strangely enough, from Transjordan either, but the species is recorded from Sinai, Iraq (Corkill: the Syrian Desert at Rutba), and Central Arabia (manuscript); its occurrence in Syria and Transjordan is, therefore, not improbable.

According to Angel, Wettstein and Werner, *Oligodon melanocephalus* is known from the Lebanon and Syria. In Palestine this form is widely distributed, but it avoids regions of extreme dryness.

The following species of *Contia* (= *Eirenis*) have been described, so far, from Israel: the commonest are *C. rothii* and *decemlineata* (especially in the cultivated coastal plain and in the hills of Judea); *C. lineomaculata* and *coronella* (nomenclature after Schmidt¹⁶) avoid each other almost entirely — but in certain parts of the Judean desert and the Negev they may be found together. *Coronella* is the more aridophilous form and has its maximum frequency especially in the South of Transjordan, the Negev and Sinai. The species *lineomaculata* is somewhat common in the Judean desert, but also occurs fairly frequently in the moister parts of Palestine, especially in country covered with boulders and a sparse vegetation (e.g., in deforested localities on the plateau of Mt. Carmel; near Jerusalem). *Contia collaris* has been recorded twice from Israel by Flower (1932), from Jericho, by Schmidt¹⁶ from the Jordan Valley, and by Peracca¹⁵ from Transjordan (Es Salt). We have no records of *C. modesta* from Palestine proper (See Addendum No. 6).

Summarizing the newer literature and excluding Israel we may compile the following list of dispersal areas:

Contia rothii: the Lebanon (Werner); Transjordan (H.U. Collection): not Sinai.
Contia coronella Schlegel: Syria (Schmidt), Transjordan (H.U. Collection and others), Sinai (Barbour), not the Lebanon.

The H.U. Collection has a specimen from Transjordan which seems to correspond to Schmidt's *var. fraseri* (type from Rutba, Iraq).

Contia decemlineata: Syria (Angel, Werner); the Lebanon (Werner); Transjordan (H.U. Collection), not Sinai.

Contia lineomaculata: Syria (Angel); the Lebanon (Werner); we have no references from Transjordan; Barbour's specimens from Sinai should be referred to *coronella* Schlegel, because they have 15 scale-rows and the ventral counts are too high. I do not think that this species enters Sinai. Corkill records 15—19 scale-rows; for his *Contia coronella* (= *lineomaculata* Schmidt). He evidently confuses *lineomaculata* and *coronella* (= *fasciata* auct.); therefore, an occurrence in Transjordan is possible, but not yet proved.

Contia modesta: the Lebanon (Werner); and (Peracca) also in Syria (Hermon area); not from Palestine or Sinai.

Contia collaris: Palestine (Flower, Schmidt) both localities probably in "Jordania";

Transjordan (Peracca; the species is also known from Iraq, vide Corkill): not from Syria and the Lebanon. The H.U. Collection has many *C. rothii* from Palestine; several in the large series reach the lower scale margin assigned to *collaris*.

Colubridae opisthoglyphae

Tristram knows the following species from Palestine:

Micrelaps muelleri Boettger (hill country of Judea and Galilee: type from Jerusalem; after Lortet: Lattakieh).

Coelopeltis lacertina Wagl. = *Malpolon monspessulanum* Herrmann: near Jerusalem; Galilee; round Lake Tiberias and Lake Huleh (Lortet).

Psammophis moniliger Daud. = *schokari* Forsk.: Tiberias; Solomon's Pools near Bethlehem (Lortet).

Tachymenis vivax Fitz. = *Tarbophis savignyi* Boulenger (= *fallax syriacus* Boettger); Jerusalem, Tabor, Tiberias. "Syria".

Flower briefly mentions *Micrelaps muelleri* for Palestine; *Tarbophis savignyi* for Palestine (Jaffa) and Syria; *Tarbophis fallax* Fleischmann "may occur in Northern Syria;" *Tarbophis güntheri* Anderson is known from Sinai (South Sinai: El Heswa, Wadi Firan) and Syria (Werner 1898); *Malpolon monspessulanum* Hermann's is recorded from Sinai (doubtful: Werner 1893, Hart 1891), Palestine, Transjordan, Syria; *Psammophis schokari* Forsk., Sinai, Palestine (Gaza, Jaffa), Syria; *Macroprotodon cucullatus* Geoffr., South Palestine (Rafa, near Gaza).

Micrelaps mülleri is so far known from Palestine only; the only locality beyond the boundaries of Palestine is Lattakieh (*vide* Lortet in Tristram). Werner does not mention this species as occurring in Syria. We have, therefore, no clear idea about its range; our localities are situated in the Central Hills (Jerusalem), at the south-western end of Lake Tiberias — from this place, also, two specimens with "inverted" colour pattern were found; and in Upper Galilee. The species is unknown from the southern part of the country.

As a new species we may add *Tarbophis nigriceps* Ahl; the type has been described from Iraq¹; our specimens were found in Transjordan, (several kms south of Amman) and in the Negev. This snake differs strikingly in behaviour from *T. savignyi* which rolls up into a ball when roughly handled; *T. nigriceps* is devoid of this instinct. *Tarbophis güntheri* enters the Rift Valley from the South; we have several records: from the Judean desert, from the northwest end of the Dead Sea¹⁷ and from the eastern slopes of the Emek to the Jordan Valley (Mt. Gilboa). Thus there exists a bridge between Flower's locality in Sinai and Werner's (1898) reference of this species for Syria. Strangely enough, Werner omits mention of this species in his later work²².

Boulenger's remark on the occurrence of *T. fallax* in northern Syria (1896, p. 49) has

not been confirmed by Werner. Peracca's and Angel's "*T. vivax*" from Syria are probably *savignyi*, as Werner lists a series of *savignyi* (= *T. fallax syriacus*)-localities from the coastal area (the Lebanon) and the hinterland. The H.U. Collection has no specimens from the Negev (from this area, *nigriceps* only) or Transjordan. Werner refers Boulenger's and Peracca's specimens simply to *savignyi*.

Malpolon monspessulanum cannot be called "a rock and desert snake" (Tristram); I should rather say the contrary, for it avoids deserts and prefers a denser vegetation. This species is well known from the Lebanon, Syria, Palestine and Transjordan (many authors), but, as we saw above, the locality "Sinai" has not been confirmed since Werner's paper in 1898. The specimens of our area belong to the ssp. *insignitus* Geoffroy.

Coelopeltis moilensis Reuss has been reported from Palmyra (Syria) by Angel⁹. Otherwise, this snake is unknown from our area, but is found in Iraq, Arabia and Egypt.

Werner²² thinks that *Psammophis schokari* is a typical desert-snake, and accordingly doubts Jan's locality, Beirut. I am not of Werner's opinion. Angel reconfirms the locality and *schokari* is indeed not exclusively a desert-dweller. It is known from the whole coastal area of Palestine as well as from the hills and desert landscapes. In specimens found in relatively damp localities four dorsal stripes form a striking contrast against the brighter ground colour; in specimens from more arid localities these bands are less conspicuous and show different grades of obliteration — the central part of each stripe may be as bright as the ground colour, while series of small regular dark dots persist at the border of each stripe — or these border-markings may even vanish, leaving the snake plain buff or plain brown. The darkest markings (stripes) are seen in specimens from the coastal plain and from the hill areas, where larger amounts of rainfall and higher main humidity prevail. Barbour (1914) is wrong, too, introducing this species as "a common sand snake". It may be found in the rocky hills and on slopes covered by boulders as well as in the coastal dunes. This snake is known from Sinai, Palestine, Transjordan, Syria (Palmyra and Beirut). In Palestine this euryoecous type may be found everywhere.

Since the appearance of Fower's data on *Macropotodon cucullatus* in southern Palestine (Rafa, Gaza), no other specimens have been brought to our knowledge.

Colubridae proteroglyphae

Naja haje L. "is rare in Palestine"; it is "well known in the plains and downs beyond Beersheba; I met with it near Gaza, on the sandy plain" writes Tristram. Flower, however, admits that he has no knowledge of this species from Palestine or Sinai. Since this reference of Tristram, no specimen has been caught by any local collector and there is no specimen from the east side of the Suez Canal in the British Museum Collection. We obtained two specimens of *Walterinnesia aegyptia* Lataste from Palestine. Perhaps

Tristram's cobras belonged to this species (but *Walterinnesia* is so extremely rare, that even this possibility may be discounted as very improbable). One specimen was found in Bir Asluj (Negev, south of Beersheba) and the second specimen was brought, by an Arab, from the Judean desert (probably from the neighbourhood of Nebi Musa on the Jerusalem-Jericho road) (H.U. Collection). The geographical situation of these localities can be taken as proof that the species should still be found in Sinai, since it was previously recorded from Egypt only. Perhaps this species is linked, by a bridge of dispersal crossing Transjordan in the South, to its nearest relative or even co-specific counterpart from Iraq, *Naja morgani* Mocquard.

Viperidae

Owing to numerous changes in nomenclature and systematic arrangement which have been made since Tristram's time it appears hopeless to determine exactly which species of *Viperidae* this author had in mind.

His list follows :

1. *Vipera euphratica* Martin = *lebetina* L. (fide Boulenger): Galilee; Jericho (Lortet).
2. *Vipera ammodytes* L. : lower slopes of the Lebanon.
3. *Daboia xanthina* Gray = *V. lebetina* L. (fide Boulenger): Plain of Acre, near Tiberias.
4. *Cerastes hasselquistii* Strauch = *Cerastes cerastes* L. : desert country of southern Judea.
5. *Echis arenicola* Boie = *colorata* Günther : "on the dry sands north and west of the Dead Sea".

According to Flower the following Viperidae live in our area :

Vipera ammodytes L. : Syria; *Vipera lebetina* L. : Tripoli (Syria) and Palestine; *Pseudocerastes fieldii* Schmidt : from Transjordan (Bair Wells, Um Muwal) and Central Sinai ("White Ridges"); *Cerastes cerastes* L. : Sinai (Abu el Tilûl; Wadi Hareidhin); (Werner 1893, Anderson 1904, Andres 1920); Palestine; Transjordan (Boulenger 1896), (Anderson 1898; Barbour 1914).

Cerastes vipera L. ; Sinai (Katia; East of Lake Timash; Maḥadat; Habel el Maskar; Gebel Masheiti, Tor); southern Palestine (near Gaza).

Echis carinata Schn. : northern Syria, not from Sinai or southern Palestine.

Echis colorata Günther : Sinai (Wadi Firan [Anderson 1904]); Palestine (Jordan Valley); Transjordan (Kerak, Aqaba [Barbour 1914]).

Concerning the genus *Vipera* I agree with Werner²¹ rather than with Schwarz¹⁷ : Werner mentions three vipers for Syria — Lebanon, viz. : the "Mountain Viper" *V. xanthina* Gray (= *bornmuelleri* Werner), from the Lebanon (2,000 m.); ac-

According to Werner²² there is no doubt that this species is identical with Tristram's *V. ammodytes* (from the Lebanon). Schwarz¹⁷, however, mentions *Vipera ammodytes meridionalis* Blgr. (from the British Museum Collection) as occurring in the Lebanon*; as scattered localities from Anatolia are known (Cilicia Konia, Bosphorus), this seems to be the last outpost of the species); a second species, *V. palaestina* Werner, is known mainly from Palestine and from Syria (Jebelié, south of Latakia). The third, *V. lebetina* L., is known from Syria (Aleppo) and the Lebanon (Beirut) as well as from northern Palestine (Acre). The H.U. Collection has specimens of *V. palaestina* from the coastal plain (near Tel Aviv), the Emek, as well as from the Central Hills (near Jerusalem). We are still ignorant of the exact boundaries between *palaestina* and *lebetina* in Israel and have no knowledge of their occurrence in Transjordan. Schwarz's *Vipera lebetina lebetina* and *lebetina xanthina*, are, according to Werner, not correctly defined. As insufficient material is at my disposal now, I can only stress the very unsettled state of this group; *lebetina* is probably restricted to the extreme North only (Werner²¹).

Pseudocerastes fieldii: the H.U. Collection has specimens from Transjordan (W. Dhoba'i) and southern Palestine (Negev); the gap between Sinai and Transjordan is, therefore, closed. In the meantime, this species has been found in Central Arabia also (manuscript).

Cerastes cerastes is probably limited to the South of Palestine and the southern part of the Jordan depression (Transjordan : East of the Dead Sea : Kerak (Barbour); Araba [Strauch]). We have a specimen from Asluj in the Negev; we have also a specimen of *C. vipera* from the same place.

Echis colorata is not rare in the southern wadis of the Judean desert; we have specimens from the area Jericho — Wadi Kelt — Kallia — Ain Feshkha, and one from the north-eastern slopes of Mount Gilboa, rather far in the North.

From the western border of the Dead Sea (Ein Geddi), my colleague, Dr. Mendelsohn, brought a specimen of a genus so far unknown from the whole area, representing a new species, *Atractaspis engaddenis* Haas¹⁰. This genus has a wide distribution in tropical Africa and tropical parts of Arabia; perhaps the locality nearest to our own is the Sudan. This completely isolated occurrence of a tropical snake in Palestine is of the highest interest. The local conditions of extreme heat combined with relative abundance of water may have favoured the survival of this form.

* See Addendum No. 7.

ADDENDA

As I had the opportunity to work at the British Museum of Natural History I could revise and complete some of the statements made in this paper. On this occasion I wish to express my thanks to Dr. H.W. Parker and Mr. J.C. Battersby, who both gave me very useful help and advice.

The Addenda bear numbers according to those in the text of this paper.

1. *Trionyx euphratica*. Siebenrock (1913) has no knowledge about the occurrence of *T. triunguis* in the coastal area of Palestine and even dismisses the possibility of its occurrence in Beirut (Strauch 1890). The specimen in the Vienna Museum from the Lake of Tiberias seems to Siebenrock of doubtful origin, because he thinks that *euphratica* should live at this locality, if *Trionyx* lives there at all. But, according to him, this specimen is a real *triunguis*. He is doubtful about the correctness of the locality and thinks that Strauch's specimen from Beirut could have been brought from Egypt!

2. *Bunopus tuberculatus*. The specimen at hand (♀) shows a mixture of *B. tuberculatus* as well as *blanfordii* characters. The continuation of the preanal series of scales on the ventral side of the femur is not clearly set off from the more caudal, smaller series; the head, however, in having rather the slender proportions of *blanfordii*, has the slightly concave contour — seen from en face — in the frontal region as in *tuberculatus*. The strongly protruding trihedral scales of the back point also more in the direction of *tuberculatus*.

3. As there is only one *Agama* in the sandy stretches of Southern Palestine, whose nomination seems to be rather instable, it seems better to name the species not as Flower did, but in accordance with the specimens in the British Museum (N.H.), namely *A. flavimaculata* Rüppell = *leucostigma* Reuss. (After Flower = *flavimaculata* Anderson 96 and not Rüppell).

4. *Ablepharus festae* Peracca (= *A. brandtii festae* Schmidt 1939). In the British Museum (N.H.) Collection there is one of the Types of *A. brandtii* (from Es Salt); this proved to be a simple *A. Kitaibelii*. We have, therefore, to cancel this species.

5. New observations point more to the view that Boulenger's rather complex var. *olivieri* should be given full specific rank; the *olivieri* specimens from Sinai and Palestine differ in several characters (Haas, Manuscript) from the other *olivieri* forms and should, therefore, be kept apart as a subsp. *schmidtii*. (4 enlarged tibial scales ventrally; as a rule 5 supralabials in front of subocular; strongly keeled ventral scales of the yellow tail).

6. *Contia collaris* Ménétr. Dr. Parker splits Boulenger's species (with 15 and 17 scalerows, respectively), naming provisionally (personal information) the specimens with the higher scale numbers *collaris modesta*, the other *collaris collaris*. Under the first group one specimen (1920.1.20.1507) from the Lataste Collection bears the locality

Dead Sea. The locality is, however, of doubtful validity, as I have been informed. In the same collection are several specimens of this type from the Lebanon region! (10).

Contia collaris modesta reaches a considerable size (Dead Sea specimen : ca. 560 mm.), whereas *C. rothii* are probably always considerably smaller (1 specimen of exceptional size at hand : 330 mm.). Schmidt's *collaris* (1939) has, however, 15 scales across the body, is therefore a *C. collaris collaris*.

7. *Vipera ammodytes*. In the British Museum (N.H.). Collection there is one specimen (Tristram Collection, 1905.6.27.4.) labelled Lebanon. This specimen is of doubtful origin, as the locality *Syria* has been changed into *Lebanon* — probably in misreading *Syria* for *Syria*; further details concerning the origin of this specimen were not available as in the Inventory Catalogue the place *Syria* only is given. Perhaps Tristram took the small *Vipera xanthina* for *V. ammodytes* (see also Müller-Wettstein 1933).

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APPENDIX

- List of the Reptiles known from Israel (I.) and Jordan (J.) (Both sides of Jordan).
1. *Crocodylus niloticus* Laurenti I. (extinct).
 2. *Testudo graeca iberica* Pallas I. J.
 3. *Testudo graeca floweri* Bdh. I. J.? (of dubious validity).
 4. *Clemmys caspica rivulata* (Valenciennes) J.I.
 5. *Trionyx triunguis* (Forsk.) I.
 6. *Caretta caretta* (L.) I.
 7. *Chelonia mydas* (L.) I. J.
 8. *Eretmochelys imbricata* (L.) I. J.
 9. *Stenodactylus sthenodactylus* (Licht.) I. J.
 10. *Stenodactylus grandiceps* Haas I.
 11. *Tropicolotes steudneri* (Peters) I. J.
 12. *Tropicolotes nattereri* Steindacher I., probably J. (of doubtful validity).
 13. *Ceramodactylus doriae* Blanford I.
 14. *Bunopus tuberculatus* Blanford I.
 15. *Pristiurus flavipunctatus guceirensis* Haas J
 16. *Gymnodactylus kotschy orientalis* Stepánek I.; probably J.
 17. *Hemidactylus turcica* (L.) I. J.
 18. *Ptyodactylus hasselquistii* (Donndorf) I. J.
 19. *Ptylodactylus hasselquistii puisieuxi* Boutan I. J.
 20. *Agama pallida* Reuss I. J.
 21. *Agama persica* Blanford J.
 22. *Agama sinaita* Heyden I. J.
 23. *Agama flavimaculata* Rüppell I.
 24. *Agama stellio* (L.) I. J.
 25. *Agama stellio picea* Parker J.
 26. *Uromastix aegyptia* (Forsk.) I. J. (most probably).
 27. *Chamaeleon chamaeleon* D. I. J.
 28. *Ablepharus kitaibelii* Bibron et Bory I.
 29. *Ablepharus brandtii festae* Peracca. J.=28*
 30. *Mabuya vittatus* (Olivier) I. J.
 31. *Eumeces schneideri syriacus* Böttger I. J.
 32. *Ophiomorus latastii* Günther I. J.
 33. *Chalcides ocellata* (Forsk.) I. J.
 34. *Chalcides sepsoides* (Audouin) I.
 35. *Chalcides guentheri* Boulenger I.
 36. *Scincus stincus* (L.) I.
 37. *Scincus spec.* J.
 38. *Lacerta viridis strigata* Eichw. I.
 39. *Lacerta laevis* Gray I. J.
 40. *Acanthodactylus schreiberi syriacus* Böttger I.
 41. *Acanthodactylus scutellatus* (Audouin) I.
 42. *Acanthodactylus grandis* Boulenger J.
 43. *Acanthodactylus robustus* Werner J.
 44. *Acanthodactylus tristrami* Boulenger J.
 45. *Acanthodactylus pardalis* (Lichtenstein) I.
 46. *Acanthodactylus boskianus asper* Boulenger I. J.
 47. *Eremias guttulata* (Lichtenstein) I. J.
 48. *Eremias olivieri schmidtii* Haas I. J.
 49. *Eremias brevirostris* Blanford J.
 50. *Ophisops elegans Ménériès* J.
 51. *Ophisops elegans ehrenbergii* Wieg. I. J.
 52. *Ophisops elegans schlueteri* Böttger I. J.
 53. *Ophisops elegans misolapis* Stolicke I. J.
 54. *Ophisaurus apodus* (Pallas) I. J.
 55. *Varanus griseus* (Daudin) I. J. (very improbable: *Blanus strauchii* Bedriaga. I.)
 56. *Typhlops vermicularis* Merrem. I.
 57. *Typhlops simoni* Böttger I. J.
 58. *Leptotyphlops macrorhynchus* Jan I. J.
 59. *Eryx jaculus* (L.) I. J.
 60. *Natrix tessellatus* (Laurenti) I. J.
 61. *Coluber jugularis jugularis* (L.) I. J.
 62. *Coluber najadum* Eichwald I. J.
 63. *Coluber rhodorhachis* (Jan) I. J. (probably).
 64. *Coluber rogersi* (Anderson) I. J.
 65. *Coluber elegantissimus* (Günther) (J. most probably).
 66. *Coluber nummifer* Reuss I. J.
 67. *Spalerosophis diadema* (Schlegel) I. J. *Spalerosophis* another subspecies (?) J.
 68. *Lytorhynchus diadema* (Dum. et Bib.) I. J. probably, but in this case the Arabian sp.
 69. *Oligodon melanocephalum* (Jan) I. J.
 70. *Eirenis decemlineata* (Dumeril et Bibron) I. J.
 71. *Eirenis collaris* (Ménétriès) (I.?) J.
 72. *Eirenis rothi* Jan I. J.
 73. *Eirenis coronella* Schlegel I. J.
 74. *Eirenis coronella fraseri* Schmidt (J.?).
 75. *Eirenis lineomaculata* Schmidt I. J.
 76. *Micrelaps muelleri* Böttger.
 77. *Tarbophis savignyi* Boulenger I. J.
 78. *Tarbophis guentheri* Anderson I. J.
 79. *Tarbophis nigriceps* Ahl I. J.
 80. *Malpolon monspessulanus insignitus* Geoffroy I. J.
 81. *Psammophis schokari* (Forsk.) I. J.
 82. *Macroprotodon cucullatus* (Geoffroy) I.
 83. *Walterinnesia aegyptia* Lataste I. J.
 84. *Vipera lebetina* L. I. (?)
 85. *Vipera palaestina* Werner I. J.
 86. *Pseudocerastes fieldii* Schmidt I. J.
 87. *Cerastes cerastes* (L.) I.
 88. *Cerastes vipera* (L.) I.
 89. *Echis colorata* Günther I. J.
 90. *Atractaspis engaddensis* Haas I. (J. probably).

*See Addendum No. 4