BIOLOGICA HUNGARICA
EDIDIT DR. Z. SZILÁDY
VOL. 1 EMISSUM DIE 23. XII. 1924. FASC. 5

PRELIMINARY NOTES TO A MONOGRAPH OF THE LACERTIAN FAUNA OF THE MALTESE ISLANDS.[1]

By Baron G. J. DE FEJÉRVÁRY, Ph. D.
Reader in the Roy. Hung. ELISABETH-University,
Curator, in Charge of the Herpetol. Collections, in the Hung. Nat. Museum (Budapest).

To Mr. G. DESPOTT, the first who distinguished the different forms of Maltese Lacertae.

Through the kindness of Mr. GIUSEPPE DESPOTT, F. Z. S., in La Valletta, Malta, I obtained a large and very fine series of lizards belonging to the Genus *Lacerta*, originating from the main-island of Malta, from the Selmunett or St. PAUL's Island (N. E. of Malta) and from he Felfla- or Filfola-Rock. This material is of high interest, because of the variation of the Maltese Wall-Lizard on the one hand, and the formation of insulary varieties on the other — phenomena, being important from both the genetic-systematic and the zoogeographical standpoints, just as, e. g., in the case of the Lacertian species inhabiting the Canarian Islands.

The study of insulary forms will always remain most attractive to zoologists, and especially to herpetologists, and so it is with a particular pleasure that I undertake the task of preparing a detailed and illustrated Monograph of those representatives of the species *Lacerta muralis* LAUR. (s. lat.) which inhabit Malta and the adjacent islands. Before publishing, however, this Monograph, I wish to communicate the present „Preliminary Notes", especially devoted to the study of the livery of the respective Lacertian forms, and also containing the description of local forms new to systematics.

Mr. G. A. BOULENGER was the first to try to identify the various Lacertian forms occurring on Malta, but his attempts[2] led to a thoroughly false solution of the problem, and it might appear rather unconceivable to a specialist how such a famous herpetologist could ever have drawn that sort of conclusions. In Vol. I of his valuable „Monograph of the Lacertidae", London, 1920, Mr. BOULENGER writes as follows (p. 219): „With an insufficient material before me, I first referred the lizards from Malta and Linosa to *L. serpa* (= *albiventris*),[3] and maintained the var. *filfolensis* for the larger form from the Filfola Rock, near Malta. The characters for separating the latter now break down, but the Malta and Linosa

[1] The substance of this paper was given before the Zoological Section of the Roy. Hung. Soc. of Natural History, on Nov. 7th 1924.

[2] In: *A Contr. to our Knowledge of the Varieties of the Wall-Lizard* (L. mur.) *in W. Europe and N. Africa*, Trans. Z. S. London, XVII, Pt. 4, 1905, p. 399—404, Pl. XXVII, Figs. 9 & 9a, & *Sec. Contr. to our Knowledge of the Var. of the Wall-Lizard* (L. mur.), ibid., XX, Pt. 3, 1913, p. 158—161, 205 & 212, Pl. XVII, Figs. 6—8, & Pl. XVIII, Figs. 4—6,

[3] Though here referred to by Mr. BOULENGER under the name of „*L. serpa*", this species is looked upon by him as merely constituting a variety of *L. muralis*. — Author.

specimens are sufficiently distinguished by their coloration and their average smaller scaling to be separated from the former. I therefore retain the name *filfolensis*, but apply it to the lizards from the main island and from Linosa and Lampione, as well as to those for which it was originally intended. Much as I regret using so unsuitable a name, in view of the extended range of the variety, I am compelled to do so in preference to the alternative of proposing a new name. I should see no objection to these lizards being united with the var. *quadrilineata* from Corsica and Sardinia, from which some specimens are, to my eye, undistinguishable. The only characters which can be adduced in favour of their separation is that in the var. *quadrilineata* there are usually fewer than 70 scales across the body (56 to 77 being the ascertained range of variation), and the rostral usually touches or enters the nostril, and in the var. *filfolensis* there are usually more scales and the rostral rarely touches the nostril.*

Now, the first conclusion is absolutely wrong, because the subspecies living on the Felfla-Rock, i. e. the true subsp. *filfolensis* DE BEDR., is certainly not identical with the Wall-Lizards occurring on the main-island, neither with the form present on St. PAUL's Island, nor with the variety described, according to Mr. DESPOTT,[1] by Mr. GULIA under the name of „*Lacerta generalensis*" from the Fungus- or General's Rock, west of Gozo, and the same obtains in the case of the Linosa Lizard too. As regards the second part of Mr. BOULENGER's statement, viz. the resemblance existing between the var. *quadrilineata* GRAY from Corsica and Sardinia and some of the individuals occurring on Malta, this is undoubtedly a fact which cannot be denied, and it is surely not the consideration of scaling alone which will offer us a clue to the natural solution of the systematical problem afforded hereby, casual difficulties necessarily arising in consequence of the close phylogenetical connexion subsisting between the single systematical units belonging to this form-group of lizards. If, according to Mr. BOULENGER, the Malta Wall-Lizards are identical with *filfolensis* on the one hand, and with *quadrilineata* on the other, it might have appeared logical on his part to synonymize the former name with the latter, all the more so, as he would have obtained like this a name valid from the nomenclatural point of view and referring, at the same time, to a form — I mean *quadrilineata* — possessing a more extended range of distribution. That he did not do so, despite of the requirements of logic and in view of the opportunity of eliminating hereby „so unsuitable a name" as *filfolensis*, sufficiently proves that he felt, somehow, that such a proceeding ought to result in being an absurdity. And, as regards the right appreciation of characters bearing upon genetic systematization, this „biological feeling" or rather „sense" of an experienced specialist — the „zoologisches Taktgefühl", as my esteemed friend, Prof. OTHENIO ABEL called it once, as we spoke about questions of that kind — is certainly an important factor too, often indicating the right way, we would easily have missed if exclusively keeping to strictly predetermined schemes, a fact especially obtaining in complex cases, such as the „*muralis*-problem", a „cause célèbre" among herpetologists, too well known and though, as yet, unsolved. Besides, I should like to draw attention to the fact that not only var. *quadrilineata* is approached by some specimens of the Malta Wall-Lizard, but also var. *hieroglyphica* BERTH. from Constantinople and Asia Minor, and even to a rather high degree, indeed. As anatomist and palaeontologist I am certainly accustomed to lay special stress upon morphological characters, but, as biologist, I must emphasize that, having the possibility of doing so, also the livery and its variations must be duly considered from both the phylogenetical and systematical standpoints, and that the consideration of colour-markings and their variations might, in some cases, contribute far more to the natural solution of systematical detail-problems than purely morphological reflexions would do. Coloration is highly important from a physiological point of view, and the intimate biochemical peculiarities set forth by the livery often result in being decidedly characteristic of certain evolutionary lines and parentage. It is, no doubt, dangerous to overestimate the bionomical value of colour-markings, but it is, on the other hand, a great mistake to neglect them. in general, with

„ *In about 10 per cent. of the specimens examined."

[1] G. DESPOTT, The Rept. of the Maltese Islands, The Zoologist, London, 1915.

respect to their bearing upon phylogeny and systematics. I dare to affirm that, within the *muralis*-group, livery will not unfrequently prove to be at least as important as or even more so than scaling. There are many cases in which it might be impossible to characterize the members of a group by one sort of markings, and the searching for and establishing of one certain „criterium" will prove thus, in the overwhelming majority of organisms, to be a thoroughly vain and artificial tentative — the genetic-systematic importance of scheme-characters varying even as regards the single systematic units of well defined and closed groups. So we are compelled to simultaneously consult a large complex of markings, and to choose among them, from occasion to occasion, those which evolved to a systematical importance with respect to the forms one has to deal with. In the present case I found the coloration to play a remarkable rôle, and so the genetic-systematic distinctions contained in these „Preliminary Notes" shall meanly rely upon the livery, whilst eidonomical[1] and anatomical — especially osteological — markings will be treated in my Monograph mentioned above. I should still like to remark that the examination of living material and its consciencious observation in terraria during the years of growth and development and during the various seasons seems to me to constitute one of the most important points as regards a lucky solution of the „*muralis*-problem."

Before proceeding, however, I cannot omit to mention yet another important publication dealing with the Maltese Wall-Lizards, viz. Mr. DESPOTT's excellent note on „The Reptiles of the Maltese Islands", appeared in „The Zoologist", in 1915, which, though being brief and not containing any detailed descriptions, is, on account of its author's fine observations and due conclusions, very much superior in scientific value to the respective expositions contained in Mr. BOULENGER's cited works. It is interesting to remark that this paper has not even been quoted in Mr. BOULENGER's recent „Monograph of the Lacertidae", though „The Zoologist" certainly not being a periodical wanting in the Zoological Library of the British Museum.

Finally I wish to express my very hearty thanks to Mr. G. DESPOTT, the most generous and obliging colleague I ever met with, as well as to my friend and colleague, Dr. JULIUS KIESELBACH, first lieutenant in the late Imp. and Roy. Austro-Hungarian Army, who has been prisoner of war in Malta, and to Mr. H. SAMMUT, retired officer of the Maltese Milice, in La Valletta, the amiable assistance and intervention, respectively, of these Gentlemen having enabled me to publish the present observations.

MATERIAL PRESENTLY EXAMINED.

A) MALTA, MAIN-ISLAND.

I. Living material:

1. 1 ad. ♂ from Krendi (S. W. Malta), XII, 1923. From Mr. G. DESPOTT.

2. 1 ad. ♀ from Zebbug (S. W. Malta), XI, 1923. From Mr. G. DESPOTT.

3. 6 specimens (5 ad. ♂ & 1 ad. ♀) from Bir Zebbugia (S. E. Malta), IX, 1924. From Mr. G. DESPOTT.

4. 27 specimens (1 juv. ♂, 13 semiad. ♂, 3 ad. ♂, 1 rather sen. ♂, 2 semiad. ♀, & 7 ad. ♀ some of which rather approach the limit of senility) from the Scuglea Point („Isola di Scuglea"), a little peninsula in the Great Harbour (N. E. Malta), 3. XI, 1924. From Mr. G. DESPOTT.

II. Material preserved in spirit:

1. 7 specimens (1 ad. ♂, 2 semiad. ♂, 1 rather juv. ♂, 2 ad. ♀ & 1 semiad. ♀) without any further indication of habitat, 1906. Leg. Lieut. HUGH SAMMUT. (Mus. Hung. Rept. No. 2804.)

2. 9 specimens (3 ad. ♂, 3 semiad. ♂, 2 halfgrown individuals [sex not determined], 2 ad. ♀ & 1 semiad. ♀) from Zebbug, XI, 1923. From Mr. G. DESPOTT. (M. H. R. Nos. 2802/1 & 2802/2).

3. 15 specimens (3 ad. ♂, 1 nearly ad. ♂, 5 semiad. ♂, 2 ad. ♀ & 4 semiad. ♀) from Krendi, XII. 1923. From Mr. G. DESPOTT (M. H. R. Nos. 2801/1, 2801/2 & 2807).

4. 3 specimens (1 old ♂, 1 ad. ♂ & 1 ad. ♀) from Bir Zebbugia, IX, 1924. From Mr. G. DESPOTT. (M. H. R. No. 2806.)

Altogether 69 (35 living & 34 preserved) specimens.

[1] For this term (eidonomy = extern morphology) see E. MARTINI, Vorschlag e. neuen Wortes f. e. alten Begriff, Zool. Anz. LVI, Leipzig, 1923, p. 59—61.

B) SELMUNETT OR ST. PAUL's ISLAND.

I. Living material:

6 ad. ♂, VIII, 1922 (2 specimens) & XII, 1923 (4 specimens). From Mr. G. DESPOTT.

II. Material preserved in spirit:

6 specimens (2 old ♂, 1 ad. ♂, 1 semiad. ♂, 1 ad. ♀ & 1 juv. individual), VIII, 1922 & XII, 1923. From Mr. G. DESPOTT. (M. H. R. Nos. 2794, 2805 & 2803.)

Altogether 13 (6 living & 7 preserved) specimens.

C) FELFLA-ROCK.

I. Living material:

21 specimens (11 ♂, ad. & old, & 10 ad. or almost ad. ♀), VIII, 1922 (8 ♂) & IX. 1924 (3 ♂ 10 ♀). From Mr. G. DESPOTT.

II. Material preserved in spirit:

8 specimens (7 ♂ & 1 nearly ad. ♀); 1846[1] & 1864,[2] leg. Mr. EMERIC DE FRIVALDSZKY; 1896, Coll. MÉHELY; VII, 1922, from Mr. G. DESPOTT. (Mus. Hung. Vert. Nos. 1846/4. t., 758/38-40 & 1992/13, & Mus. Hung. Rept. Nos. 2779 & 2800).

Altogether 29 (21 living & 8 preserved) specimens.

D) LINOSA.

1 ad. ♀, 1913. Leg. Dr. JACQUES DE BEDRIAGA (Coll. LORENZ MÜLLER, No. 1147, Herpetol. Dept. of the Zool. Collections of the Bavarian State, Munich).

The present „Preliminary Notes" are thus based on the result of the examination of 112 specimens of the genus *Lacerta*, all entering into the specific confines of *Lacerta muralis* LAUR. (s. lat.), and collected within the region belonging to the Maltese Islands.

DESCRIPTION AND DISCUSSION.

Lacerta muralis LAUR. var. *Despotti* n. v.

The Wall-Lizards inhabiting the main-island of Malta represent a special variety, and I wish to dedicate this handsome form to Mr. G. DESPOTT, to the courtesy of whom I owe the splendid material here dealt with.

Var. *Despotti* is extremely variable, and I never saw a *muralis* from elsewhere which would have shown such an amount of important variations in livery and size as this form, comparable in this respect to *Lacerta serpa* RAF. Whilst, however, the different forms of *Lacerta serpa* are mostly due to geographical variations, being confined to different territories, the various changes in livery and size of var. *Despotti* are not attached to different habitats. This variability proves that certain characters are not yet fixed in var. *Despotti*, in which we have, thus, a living and very demonstrative example of the genesis of systematical units in present times. The variations occurring in this form might be looked upon as constituting a sort of „fluctuating variations", retraceable to both the influences of exterior and interior factors. Var. *Despotti* is decidedly a „collective type", and an epidotic[3] one, highly interesting from the point of view of the evolution of systematical units — a bionomical process, displaying itself, in the present case, before our eyes. I must confess that if I would have obtained some of the the main types of variation, to be here discussed, from different islands or from different spots, I would have described them, without hesitation, as belonging to separate varieties. This, however, not being the case, the „main-types" coexisting side by side and being connected with eachother by complete series of gradual transitions: I am unable to systematically separate them from one another — and such a separation would appear to me, at least in the light of our present notions of the subject, to be an absolutely

[1] Wrongly labelled „Sicily".

[2] Partly labelled „Malta" and partly wrongly labelled „Balkans".

[3] This term has been introduced by St. J. BOLKAY, Elem. of the Compar. Osteol. of the Tailless Batr., Glasn. Zemaljsk. Muz. u Bosni i Herceg., XXXI, Sarajevo, 1919, p. 354.

unscientific proceeding, a sort of sport having the aim to make as many „new varieties" or rather „new names" as possible, not having anything to do with genetic lines fixed by heredity, i. e. with the genetic and not merely „descriptive" conception of systematics. I am profoundly convinced that it is only this genetic conception which leads to an acceptable, bionomically founded interpretation of systematics as a true science and not as a more or less agreeable pass-time or a sort of an easy and sure individual way to be walked on by some authors to attain various „gradûs ad Parnassum". I keep, therefore, also in the present paper, to this principle of a Natural System, and after having duly weight the pros and cons, I consider the Wall-Lizards of the main-island of Malta presently under inspection as the representatives of one and the same variety: var. *Despotti*.

Size, in the average, equal to that of *L. muralis* LAUR. s. str.; one of the specimens obtained from Bir Zebbugia is, however, considerably larger, approaching, hereby, subsp. *filfolensis*, whilst two adult „olivaceous" individuals among those captured at Zebbug are much smaller than the normal *muralis*, not having grown, contrarily to other specimens I kept, despite of the rather long time they were observed in captivity. Thus, with respect to the size, one might distinguish (in the adult) between „normal", „large", and „small" specimens.

Livery. Ground-colour of the median zone of dorsal surface delimited by the striae supraciliares[1] olive-brown, more or less greenish, to a bright olive-green, with a more or less intensive bronzy shine, rarely grass-green; chesnut-brown specimens with a more or less pronounced indian-red tone sometimes occur among young or halfgrown individuals; a greyish tone in the brown colour, to be met with in *muralis* LAUR. s. str., has not been observed. Striae dorsales vanished, like in *muralis* s. str. Within the zone delimited by the striae supraciliares darker designs appear under the form of a more or less dense network, or unregular wavy crossbars, or vermiculations, spots and dots; these designs are, in olive-brown specimens, generally of the same colour as the ground-coloration, but somewhat darker; sometimes the difference between the tone of the ground-colour and the designs is a so trifling one that the obsolate pattern becomes visible only in the case of a close inspection; sometimes, however, these designs are much darker, VAN DYCK- or sepia-brown, so especially in the reticulated specimens with a bright olive-green or grass-green back; a series of larger sepia-brown dots or spots occurs, in some individuals, in the very median line of the back, i. e. along the vertebral column, representig the remnants of the vitta occipitalis, but they are seldom as markedly pronounced and forming such a long row as often to be observed in *muralis* s. str. There are individuals in which the designs here discussed are very much reduced, sometimes appearing only along the stria supraciliaris, under the form of confluent small spots or confluent minute dots, constituting a darker line bordering the supraciliary stria. Striae supraciliares whitish (especially in young), yellowish, olivaceous, pale-brown, or more or less greenish, in accordance with the coloration of the median dorsal zone, but always somewhat lighter than it; confluent, forming rather straight lines (females and many young), or more or less interrupted and presenting wavy outlines, or broken up, by the dark pigment forming the designs, into rows of more or less regular ocelli. Vitta temporalis VAN DYCK- or sepia-brown, or olive-brown, with a more or less pronounced reddish tone; rather uniform (many females and young), or presenting interstices or ocelli which are brown, very light copper-coloured — rather pinkish —, greenish, or grass-green; in the latter case (i. e. if interstices and ocelli are present) the dark colour appears under the form of a reticulation; blue axillar ocelli are not frequent, but they occur in some adult or old males, where they might present a considerable development. Striae suboculares generally somewhat broader than the striae supraciliares, exhibiting the same variations in colour and outlines as these; they are, however, in general, more obsolate than the supraciliary striae, which are, as a rule, well marked only in females, in males being reduced, already in early stages of ontogenetical development, to pinkish, brownish, or greenish ocelli. Vitta maxillaris presenting the

[1] For the terminology of the livery see L. v. MÉHELY, Materialien z. e. Syst. u. Phylog. d. muralis-ähnl. Lacerten, Ann. Mus. Nat. Hung., VII, Budapest, 1909, p. 423. Fig. 1.

same coloration and pattern as the temporal vitta, but generally somewhat paler with more obsolate designs. Coloration of pileus corresponding to that of the median zone of back, uniform, or with a more or less densely strewn dark vermiculation, especially well expressed in strongly reticulated specimens; loreal shields and the temporals — at least the upper ones — of the same colour as the temporal vitta, sometimes presenting, in the temporal region, light spots, which are of the same colour as the interstices or ocelli appearing in the temporal vitta; supralabial shields, and often the lower temporals, light, presenting different nuances between dirty white, yellow, green, and pale tomato-red with a more or less intensive bronzy shine, with or without dark (brown or blackish) spots of variable extent, often forming, on the supralabials, vertical designs, alternating with the lighter ground-colour. Ground-colour of limbs varying between that of the median zone of the back and that of the temporal vitta; rather brownish or bronzy, like the temporal band, but not green, not even in green specimens; limbs with dark brown dots, sprinkles, or more or less extensive designs or spots, and light, more or less ocelliform interstices; hind limbs with light ocelli; the stria subocularis runs above the fore limb, like in other forms too, being interrupted only by the hind limbs, on which it may be followed in traces, continuing, afterwards, on the tail; in the rather uniform „olivaceous" specimens the limbs are, generally, quite devoid of pattern. Tail presenting, in its relations to the rest of livery, the same characteristics as in other forms belonging to the *muralis*-group.

Some peculiarities will be yet separately discussed, hereafter, when dealing with the „main-types" set forth by the variations occurring within the confines of var. *Despotti*. First, however, the description of the ventral coloration shall follow.

Throat lemon- or greenish yellow, tomato- or brick-red with a yellowish tone in it — not so deep red as to be observed in red-throated specimens of *L. muralis* s. str. —, exceptionally rather whitish; sometimes a few obsolate brownish or greyish spots, or rather cross-bars, might occur on the submaxillar shields. Belly more or less nacreous, whitish, often presenting a greenish-yellowish, reddish or pinkish-greyish tint, bright pink — without any indication of a red tone[1] —, or light brick- or tomato-red, unspotted, obsolate spots only exceptionally occurring in some old males, being confined to the marginal series of ventral plates; marginal series of ventral plates with sky-blue or turquoise spots, or entirely blue, the blue colour sometimes extending upon the supplementary ventral plates („Oberschildchen") and the marginal scales of the dorsal surface, as well as upon the outer margin of the ventral plates forming the second longitudinal series.

Now, as regards the different modes in which the variations in coloration and pattern might be combined with eachother, the subsistence of the following „main-types" can be established:

1. A greenish-bronzy type, in which the pattern of the females resembles that to be met with in the average females of *L. muralis* s. str. from Central Europe, the males being, on the whole, rather striped than distinctly reticulated.

2. A dark (sepia- or VAN DYCK-) brown type, in which the females might recall very much the dark females of *muralis* s. str., those, in which the striae and vittae, though presenting rather undisturbed outlines, are, in toto, obsolate in consequence of the preponderance of the dark pigment. The males are more or less striped or reticulated, and even an extreme reticulation might occur, so that some specimens, especially if very large, bear a decided resemblance to *Lacerta reticulata* DE BEDR. There are, however, individuals belonging to this type, which tend towards a uniformity in the livery, i. e. in which the obsolate pattern has nearly vanished. The belly of the females of this dark brown type is of a whitish nacreous colour, the males presenting the same coloration, or light brick- or tomato-red lower surfaces, constituting an interesting contrast to the dark dorsal side. The specimens caught at

[1] I never saw Central European specimens of *L. muralis* s. str. presenting bright pink — not reddish — lower surfaces.

Bir Zebbugia belong, two males excepted, to this type, which, in opposition to the 1st one, does not seem to be frequent.

3. A *quadrilineata*-like type, occurring in some very distinctly striped females, and some halfgrown males in which the olive-brown, or, more so, the reddish chesnut-brown colour associated with the more or less well pronounced crossbars occurring in the median zone of the dorsal surface reminded me some males of *quadrilineata* from Ajaccio, Corsica, collected by my late friend, Dr. EDMUND HUPKA. The females of this type are often not unlike some females of var. *Bocagei* SEOANE from Coruña or Ordenes (Galicia, Spain) for instance, in which the belly, and especially the throat, might often present a greenish tint.[1]

4. A *hieroglyphica*-like type, in which the median zone of the back is grass-green, and the pattern consists of a dark brown reticulation, to be observed in some adult and old males, generally provided with a pink coloration on the belly. The dorsal livery of this extremely reticulated type absolutely agrees with that of an old male of var. *hieroglyphica*, obtained, through the kindness of my aunt, Mrs. COCHRANE née CATHERINE DE SZILASSY, from Constantinople.

5. Two „olivaceous" types, a bronzy brownish and a green or greenish, connected with eachother by numerous transitions, due to age (young are generally brownish) and to other individual changes occurring in the adult in the lapse of time. The median zone of the back is, in this type, olive-green, grass-green, or olive-brown, the dorsal parts of the flanks being of a bronzy brown, not unfrequently reddish coloration, occupying the zone of the lateral striae and vittae, the elements of which are, thus, as a rule, undistinguishable. There is, in some males, a splendid sky-blue band separating the reddish bronzy coloration of the flanks from the pale tomato- or brick-red coloration of the ventral surfaces; it is precisely in these cases that I observed the extension of the blue colour upon the lower lateral dorsal scales, as mentioned above, and such specimens exhibit also some large axillar ocelli, more or less fused with eachother, so that the axillar region turns blue. Such males are very like the handsome old males of *Lacerta peloponnesiaca* BIBR.,[2] whilst the less showy individuals remind the so-called „var. *olivacea* WERN. (non RAF.)" of *Lacerta serpa* RAF. subsp. *fiumana* WERN., or the „olivaceous" individuals to be met with in other forms of *L. serpa*, as well as in *L.* (*taurica* PALL. subsp. ?) *ionica* LEHRS, and *L. muralis* var. *hieroglyphica* and var. *liolepis* BLGR. The lower surfaces of the individuals belonging to this type are whitish nacreous or pale brick- or tomato-red, this latter coloration often occurring also in females, without constituting in them an arrhenic character produced by senility. This type is the most aberrant one to be found within the range of individual variations in var. *Despotti*, and, at first sight, I thought to be able to distinguish the specimens belonging to it as a separate variety not to be identified with the rest contained in the form here dealt with. A careful examination of the subject convinced me, however, that such a distinction is absolutely inadmissible, because „olivaceism" is only an individual and, besides, to a certain degree inconstant character, upon which no systematical unit can be based, supposed, naturally, that we look upon systematical units as representants of specialized evolutionary lines relying on the relative purity, i. e. on the hereditary fixation of their characteristic markings. Now, olivaceism is a condition to be observed in most different forms of lizards, as might be stated from the examples referred to above, just like the occurrence of a red or yellow belly, for instance; I should like yet to remember here the so-called „var. *rubra* LAUR." of *Lacerta agilis* L., the specimens with a uniform median dorsal zone of *L. Danfordi* GTHR., specimens of *L. vivipara* JACQ. and *L. muralis* var. *Bocagei* with an obsolate pattern and pale coloration, and the uniform individuals of *Anguis fragilis* L. the males of which are often presenting sky-blue spots („var. *incerta* KRYN."), — chromatic individualisms, paralleling olivaceism and not having, among lizards, more genetic importance than the occurrence of blue, gray, green and brown eyes in certain human races. It is important to remark that there is a complete series of gradual transitions existing between the livery of this type and that of the non-olivaceous types, and that

[1] I should like to remark, however, that in *quadrilineata* and *Bocagei* the lower surfaces are often spotted

[2] Cfr. Pl. I in P. Z. S. London, 1911. (G. A. BOULENGER, On the Peloponnesian Lizard. *L. pelop.* Bibr.)

olivaceism might be, to a certain degree, inconstant even in one and the same individual. In December 1923 I received a pair of olivaceous var. *Despotti* from Zebbug in which the median zone of the dorsal livery was green, and I did not notice any striae or other designs in them; the lower surfaces, especially the throat, were of a bright pale tomato-red; I preserved the male in summer 1924, and at this date both specimens had changed their green colour into an olive-brown coloration and the red colour of the lower surfaces lost its brightness too; the female possessed, in Nov. 1924, a dark, though well marked stria supraciliaris and some designs appeared, under the form of an obsolate network, in the axillar region of her vitta temporalis. This fact proved me that not only brown individuals might turn green, but also the green coloration might easily be changed into brownish on the one hand, and that, to a certain degree, pattern might develop, in the lapse of time, in such adult and olivaceous specimens in which it has been absent before. The difference between the olivaceous individuals and the „normal" ones is, thus, not meritorious, it is not „qualitative" but „quantitative" only, and might be regarded as an exact parallel to the changes occurring in the colour of hair and eyes in young or semiadult individuals of *Homo*, not unfrequently to be observed in the Indogerman race, a phenomenon not making any allowance for systematical distinctions.

These are the five „main-types" to be distinguished within the range of individual variations to be met in var. *Despotti*, certainly not indicating any systematical dissociations, but being, nevertheless, of a high phylogenetical interest. This side of the problem shall be touched upon in the „conclusions", at the end of this paper.

It should be also mentioned, for the sake of completeness, that some of the reticulated specimens connecting type 1st with type 4th are recalling *L. Danfordi* Gthr., from Asia Minor, by the presence of numerous and striking light ocelliform interstices occurring in and along their vittae (cfr. the general description). Such specimens are, however, rare, and the feature itself is of no special importance, so that there is no necessity of grouping these specimens into a separate „type" of individual variation.

Lastly it will not be without interest to throw a glance upon the ontogenetical development of the livery in this remarkable variety. Young specimens are very like the young of *L. muralis* Laur. s. str., and it is often but the yellow coloration of the throat by which they might be, in some way, distinguished from the latters. With the proceeding age this likeness vanishes by degrees, in females generally somewhat later than in males, and many of the semiadult males and some of the adult ones not yet presenting a full livery, are to be found in the stage of the *quadrilineata*-like type, also attained by certain females. After this stage there is a bifurcation to be observed in the development of male and female; in the former the *quadrilineata*-like type is not brought to its full development, the male deviating soon from that line of ontogenetical evolution, producing full liveries referable to the types 1st 2nd or 4th, whereas those females which developed their livery in the sense of the *quadrilineata*-type seem to adhere definitively to it, constituting the definitive — and not merely transitory — contingent of type 3rd. The ontogeny of the livery of type 5th seems to be different inasmuch as olivaceism appears already ab initio, in the young, just like chlorochroism or erythrism, presenting, on its part, again a wide range of individual variations, from an obsolate, though perfect pattern to an absolute uniformity of the dorsal surfaces, all these differences occurring within coeval specimens, and, thus, not precisely depending on age. A sericeous glimmer is often to be met in olivaceous specimens, not being, however, confined to the representatives of this type only. Strictly taken, olivaceism ought, on account of its congenital character, not to be confounded, bionomically, with the phenomenon called „uniformity" of livery, which is not a sort of individual aberration, like olivaceism, but the product of an orthogenetical development, like in *L. viridis* Laur. s. str. or its subsp. *maior* Blgr. and subsp. *strigata* Eichw., or in *L. ocellata* Daud. subsp. *pater* Lataste, where the young recapitulate the coloration and pattern of the earlier phylogenetical stages through which their livery had passed, such a recapitulation not occurring in the case of olivaceism. „Olivaceous uniformity" and „orthogenetical uniformity" are, thus, not equivalent, a

fact I had not yet clearly realized when, nearly 11 years ago, I touched upon this subject.[1] This should not, however, at least on principle, exlude the possibility that olivaceism might, in the course of generations, produce a separate variety to be systematically distinguished.

Lacerta muralis LAUR. var. *Kieselbachi* n. v.

The Wall-Lizards I obtained from the Selmunett or St. PAUL's Island, in St. PAUL's Bay, are, in some details, different from those inhabiting the main-island and described, here above, under the name of var. *Despotti*. Mr. DESPOTT was the first to notice this fact, writing about the variety now to be dealt with as follows: „The St. Paul's Islands Lizard. — This form inhabits the islets at the mouth of St. Paul's Bay, and was noticed by me in 1913.* It is identical with the typical Wall-Lizard[2] in nearly every respect, having as a peculiarity only some black spots on the under parts, which spots are not found in the common Lizards,[3] and seem to be also wanting in young of the present form; at least, among hundreds of young individuals I examined, I did not find one with any sign of black."

Mr. DESPOTT not having given any systematical name to this variety, I wish to dedicate it to my friend, Dr. JULIUS KIESELBACH, as a sign of my sincere gratitude for the part he had with respect to the obtention of the material discussed in the present paper.

Var. *Kieselbachi* is closely related to var. *Despotti*, differing from it by the apparently somewhat smaller average-size, the less variable livery, the average predominance of the reticulated pattern, the absence of a yellow or greenish coloration in the gular region, which is generally whitish, and the presence of black spots on the lower surfaces[4] in specimens presenting a full livery. I must remark, however, that these spots may be developed, in some cases, but very late, so that their appearance is not necessarily attached to the attainment of the adult stage, and so it may happen that one gets adult individuals in which one cannot yet find any trace of spots, whereas in others they may be developed to a high degree. It is usually on the marginal row of ventrals that the spots, generally spreading all over the ventral surfaces, are developed first, and here they are, those on the submaxillar shields and on the throat excepted, the largest. The only adult female I dispose of presents quite unspotted lower surfaces, her dorsal pattern reminding that of an obsolately striped female of *muralis* s. str., differing, however, from the latter by the olive-greenish tone of coloration. The juvenile specimen mentioned in the list of the material examined is remarkable for its yellow throat, agreeing thus in every respect with the young of var. *Despotti*, whilst another juvenile female I had, having died in captivity without the possibility to be preserved, and thus not figuring in the list here referred to, presented a whitish gular region, just like the semiad. ♂ under inspection. The livery of the dorsal surface varies between that occurring in the 1st and the 4th types of var. *Despotti*, whilst in some specimens the brownish coloration is predominating. I have a living male with an obsolate pattern, but I did not get any „olivaceous" individuals. One of the males I got more than two years ago was striking for the greyish tone of his ground-colour, not

[1] G. J. v. FEJÉRVÁRY, Über d. Entw. d. Farbenkleides b. d. Lacerten. Gedanken z. e. phylog.-ontog. Studie, Zool. Anz., XLIII, Leipzig u. Berlin, 1914. p. 535.

„* Dr. J. De Bedriaga has told me of the existence in our islands of a Lizard with spotted under parts; its habitat, however, was not known."

[2] Mr. DESPOTT, evidently misled by the confusion existing with respect to the systematical appreciation of the species *L. muralis* LAUR. and its divisions, looked upon the Wall-Lizard of the main-island, i. e. var. *Despotti*, as being identical with *L. muralis* LAUR. s. str., the systematical error committed by this identification being, at any rate, much more justifiable than Mr. BOULENGER's amalgamation of the Maltese *muralis*-varieties with subsp. *filfolensis* and the Linosa Lizard (subsp. *Laurentii-Mülleri*, mihi). — Author.

[3] I. e. var. *Despotti*. — Author.

[4] In *Lacerta muralis* LAUR. s. str. the presence or absence of some spots on the lower surfaces is of no importance, though specimens with immaculate lower surfaces being, on the whole, by far more frequent. In the varieties and subspecies of *muralis*, however, especially in the Mediterranean ones, the absence and occurrence and even the arrangement of ventral spots might be, in certain cases, of a systematical significance, not representing, any more, a merely individual character like in *muralis* s. str.

unfrequently to be met in *L. muralis* s. str., but not observed by me in the Maltese varieties, since that time, however, also this specimen got the characteristic brownish-greenish tone. I did not find any blue axillar ocelli. Marginal row of ventral plates provided with a sky-blue coloration. Apart the whitish nacreous coloration of the lower surfaces I only observed a pinkish colour to occur, which may turn into a bright pink, extending upon the gular surfaces.

As regards the ontogenetical development, the material I dispose of does not enable me to offer details with respect to this side of the question. All I can say is, that the livery of the young agrees with that of var. *Despotti*, except, in ordinary cases, the colour of the gular region. The young are, thus, also in this variety, very like those of the Central European *muralis* s. str., and, on account of the gular coloration normally exhibited, even more so than the young var. *Despotti*.

Var. *Kieselbachi* is remarkable for representing, with ***Lacerta muralis* LAUR. var. *generalensis* GULIA** from the Fungus- or General's Rock, west of Gozo, the „maculiventres" among the non-melanotic murales of the Maltese Islands, those to which E. SCHREIBER refers in his „Herpetologia europaea"[1] under the name of „Malteser *nigriventris*", differing hereby from the Wall-Lizards inhabiting the main-island, which are characterized by unspotted lower surfaces. Var. *Kieselbachi* is a parallel form to var. *generalensis*, both being retraceable to var. *Despotti* or, eventually, to its immediate predecessor. *Kieselbachi* and *generalensis* are, thus, not euthygenetically[2] related with one another. Var. *generalensis* is more advanced in the specialization of its livery, presenting a dense reticulation on the dorsal surfaces and „the black spots on the under parts" being in it „still more confluent and conspicuous than those of"[3] var. *Kieselbachi*, so that the livery of *generalensis* might be compared to that of the Florence specimens of *L. muralis* var. *Brüggemanni* DE BEDR. It is not without interest to remark here that in the Tyrrhenian var. *insulanica* DE BEDR. the lower surfaces are less spotted than in the continental *L. muralis* var. *Brüggemanni* and var. *nigriventris* BONAP. living on the Italian territories facing the Tyrrhenian islets, a fact again proving how difficult it is to generalize when dealing with biological phenomena.

Lacerta muralis LAUR. subsp. *filfolensis* DE BEDR.

With respect to this interesting form only some accidental remarks shall be made of.

First of all its systematical position must be considered. As regards this question Dr. SCHREIBER[4] emits the following opinion: „Die hier geschilderte Eidechse wird meistens als eine Abänderung der *Lacerta serpa* Raf. betrachtet; doch konnte ich mich mit dieser Auffassung nicht besonders befreunden und glaube, dass sich die *filfolensis* weit eher und ungezwungener von der *muralis* als von der obgenannten Art ableiten lässt. Die mich hiezu bestimmenden Gründe bestehen einerseits darin, dass die *filfolensis* durch ihre mehr kurze und ziemlich plötzlich zugespitzte Schnauze viel mehr der *muralis* als der *serpa* gleicht . . .", the part here quoted of this sentence having proved to be absolutely correct.

The head is decidedly more pyramidocephalous than in the preceding varieties, from which *filfolensis* differs also by its considerably larger size, especially in the males, which are, e. g., as large as those of the Croatian form of *L. serpa*. In spite of this genetical relation I doubt very much of *filfolensis* being euthygenetically retraceable to *nigriventris* (Southern Italy), as presumed by SCHREIBER, and would be rather inclined to believe in its descent from a more ancestral Southern *muralis*-form, than from a form living in recent time, whilst its origin from the „Malteser *nigriventris*" further on alluded to by SCHREIBER[5] — what could only mean an offspring from the vars. *Kieselbachi* or *generalensis* — is simply excluded.

[1] II. Aufl., Jena, 1912, p. 428.

[2] For this term see G. J. DE FEJÉRVÁRY, Quelques obs. s. la loi de Dollo et l'épistréphogén. en consid. spéc. de la loi biogén. de Haeckel, Bull. Soc. Vaud. Sc. Nat., 53, 1920, Lausanne, 1921, p. 351, note[1].

[3] DESPOTT, op. cit.

[4] Op. cit. p. 421.

[5] Op. cit. p. 428.

The livery of the upper surfaces consists of a dense black reticulation, presenting, in living specimens, olive-brown, emerald-green, sometimes more or less yellowish and mica-like glittering interstices, the latter specimens having been named by SCHREIBER „var. *chrysochlora*", a denomination relying upon the designation of a mere individualism, and constituting, thus, a synonyme of *filfolensis*; on the sides the interstices are often of a turquoise colour. In specimens not yet possessing a full livery, especially in females, the traces of the ancient striae may be detected in the arrangement of the green, yellow or blue interstices. Some specimens are enterely black. SCHREIBER writes not to have found the blue axillar ocellum recorded by some authors, and he is certainly right inasmuch as no special axillar ocelli are to be found, but, in specimens with turquoise blue spots on the dorsal part of the flanks, these spots also extending upon the axillar part, blue spots might although occur in the axillar region, not being, however, confined to it. — The livery of the lower surfaces is very variable; ground-colour of median zone of belly, in the living specimens presently under inspection, whitish nacreous (in specimens not yet presenting a full livery), dull brick-red with a rather brownish tone,[1] or cupreous generally powdered with a darker tone of the same colour, ochreous, black powdered with emerald-green, or enterely black in the males, whitish or pinkish nacreous powdered with smoke-gray, greenish ochreous, black powdered with emerald-green, or enterely black in the females, which are often presenting a metallic blue gular region, very like that occuring in the dark bluish specimens of *L. oxycephala* D. & B., differing, however, from it by the presence of more or less densely strewn black spots. The two lateral rows of ventral plates are provided with large black spots, which appear as if forming the ground-coloration, interrupted by large spots of a beautiful sky-blue colour, which might be rather few in number (in quite black specimens) or, on the contrary, very numerous, present on almost each lateral plate of the first series, often extending all over it and partly or totally over the plates of the second series as well, and sometimes small blue spots are to be found even on the median rows of ventrals, a phenomenon not attached to the male sex, being very often observable in females; the extension of the blue colour goes, naturally, together with the reduction of the black pigment representing the spots, so that in the cases just referred to the blue appears to constitute the ground-coloration of the respective series of ventral plates.

Finally I should like to point out the „remarkable tameness" which is a „very striking character in these Lizards" making „them so suitable for keeping in vivaria", as very correctly emphasized by Mr. DESPOTT.[2] It is interesting to observe that after having unpacked the boxes in which Mr. DESPOTT sent these handsome creatures to me, the lizards were immediately feeding, some of them taking the insects (grasshoppers and larvae of *Tenebrio molitor* L.) at once from the pincette and, in a few days, eating when kept on hand, though the material I got was freshly captured. Their temper is rather calm and peaceful.

Lacerta muralis LAUR. subsp. *Laurentii-Mülleri* n. subsp.

Under this name I wish to designate the Wall-Lizard of the islet of Linosa, between Malta and Sicily, also referred by Mr. BOULENGER to „var. *filfolensis*," though not being identifiable with it. I dedicate this insulary form to my esteemed colleague, Prof. LAWRENCE MÜLLER, Curator, in Charge of the Herpetological Department, Zoological Collections of the Bavarian State, Munich, in friendly remembrance of the times I had the pleasure to enjoy his most obliging guidance through the splendid collections of the Munich so-called „Old Academy", in the autumns 1923 and 24, and as a token of my gratitude for having kindly lent me the only adult female of the Linosa Wall-Lizard he disposed of, constituting now the type of the present subspecies.

[1] SCHREIBER (op. cit. p. 421) is decidedly wrong in supposing that the „brownish red" coloration of the lower parts, referred to in literature, might be, perhaps, attributed to preservation only.

[2] Op. cit.

With respect to this subject Mr. BOULENGER[1] writes as follows: „The lizard from Linosa, of which I have seen living specimens, is on the whole intermediate between that from Malta and that from the Filfola Rock", a statement being perfectly right inasmuch as it gives a good idea of the very first impression subsp. *Laurentii-Mülleri* makes upon the observer, the „intermediate" characters not having, however, any phylogenetical meaning.

Size about that of an average female of *filfolensis*. Head markedly pyramidocephalous, temporal region swollen.

Livery. Median zone of dorsal surface dull olive-brown, rather bronzy, uniform, with the exception of a dark sepia-brown line representing the vitta occipitalis and dividing the dorsal zone into two broad striae dorsales; vittae parietales consisting of two dark sepia-brown lateral stripes bordering the very distinct striae supraciliares, which are of the same coloration as the striae dorsales, but, especially in their anterior part, lighter than these, being there rather whitish, with an emerald-green tone in the nuchal region; vittae temporales dark sepia-brown, rather blackish, especially on the neck, where the vittae parietales just referred to are also of a blackish tone; vittae maxillares of the same coloration, somewhat clearing up before reaching the supplementary row of ventral shields; temporal and maxillar vittae separated from eachother by a well marked stria suboccularis of about the same coloration as the stria supraciliaris, not presenting, however, any greenish tone and possessing a faint indication of a reddish brown tint. Within the temporal and maxillar vittae numerous very distinct ocelliform spots occur, being, in the preserved specimen here described, of a whitish coloration presenting a faint bluish tone; some of these spots are also to be met with in the parietal vittae and, more so, in the supraciliary and suboculary striae. Pileus olive-brown, rather bronzy, somewhat lighter than the striae dorsales, with numerous large spots and designs of a dark sepia-brown colour; loreal and temporal region dark sepia-brown, rather blackish, with a few bluish white spots, and presenting, on the supralabials, some olive-brown rather bronzy interruptions, which are the remnants of the ground-coloration. Ground-coloration of the dorsal surface of limbs equalling the colour of the dorsal striae, being, however, nearly invisible on the fore limbs in consequence of its suppression by the confluent dark sepia-brown rather blackish spots occurring on them; hind limbs provided with a dark reticulation of the same colour, presenting light ocelliform interstices, in some of which the ground-coloration seems to turn into a greenish or bluish tint. Tail regenerated in the described specimen, and presenting, thus, a rather uniform coloration, i. e. a bronzy olive-brown ground-colour, each scale being provided with a minute dark sepia-brown stripe running in a longitudinal direction; the continuation of the temporal vittae is to be followed on the regenerated part too, appearing there as a rather narrow and obsolate band of a uniform sepia-brown colour. — Lower surfaces, contrarily to *filfolensis*, on the whole decidedly light, the ground-coloration being whitish or rather very pale greenish nacreous with a faint pinkish shine, spotted with black; the lateral series of ventral shields is almost quite black or dark sepia-brown or bronzy, respectively, because of the dark coloration not being uniform on them; dark spots of the same coloration also occur on the second series of ventrals, gradually loosing on prevalence towards the median series of ventral plates, these being almost immaculate — like in many specimens of var. *insulanica* — and only faintly powdered with the dark colour; a few rather small sky-blue spots present on the supplementary row of ventrals and on the outer edge of the plates forming the marginal row; pectoral region and lower surfaces of head richly spotted with black, like in var. *Brüggemanni* or *insulanica*, the spots forming on the submaxillar shields more or less confluent, irregular crossbars.

To complete this description, based on an only specimen, I add, in the following, Mr. BOULENGER's[2] data relying on the examination of some living individuals of subsp.

[1] Cited Monogr., p. 221.
[2] Op. cit. p. 221—222.

Laurentii-Mülleri: „In one of the male specimens the top of the head and a broad median dorsal stripe are of a slightly reddish brown, the sides are black with round, greenish yellow spots; outer row of ventral shields black and blue; belly pale pink, with a longitudinal series of large black spots on the second row of shields; chin and throat yellowish white with large spots or marblings. In another male a black network extends over the whole back, whilst in further individuals of the same sex the upper parts are black with small light spots, exactly as in the lizard from Filfola. The larger female is dark brown above with a black network enclosing small yellowish spots, and with traces of three black longitudinal stripes, the median very narrow; belly pinkish, the sides spotted with black; small blue spots on the outer row of ventral shields. The smaller female also dark brown above, with a narrow black vertebral streak and a black lateral band edged with whitish above and below; lower parts as in the preceding." — Specimens of subsp. *Laurentii-Mülleri* are represented in Mr. BOULENGER's „Second Contr.", Pl. XVIII, Figs. 4 to 6, where they are referred to (on p. 220) under the designation of „var. *filfolensis* . . . Linosa."

Subsp. *Laurentii-Mülleri* is a melanotic form of *muralis*, melanism having, however, advanced in it to a lesser degree than in *filfolensis*; in the livery of its dorsal surfaces it approaches the latter form, whilst in that of the lower parts it presents, on the whole, more affinity to some of the non-melanotic spotted bellied forms of the Mediterranean murales, especially var. *insulanica*, and when I compared, a few years ago,[1] the livery of the ventral surfaces of the latter variety to that of *filfolensis*, it is precisely Mr. BOULENGER's quoted figures representing the pretended „*filfolensis*" from Linosa, i. e. *Laurentii-Mülleri*, I relied upon.

It is a very interesting problem, from both the phylogenetical and palaeogeographical points of view, to search for the reasons why subsp. *filfolensis* seems to be, in general, more intimately related to subsp. *Laurentii-Mülleri* than to var. *Despotti*, though the Felfla-Rock lying but three English miles south of the main-island of Malta, whilst Linosa lying about 100 English miles (i. e. 150 km) west-north-west of the Felfla-Rock. It is not impossible that the resemblance existing between these two forms will prove to rely upon a mere homoeogenesis of these forms, which are, at all events, the offspring of a common stock of ancestry, and in this case we would have to elucidate the question why the Linosa Lizard — not living on a rock-islet like *filfolensis* does — became melanotic, whilst in var. *Despotti* no trace of melanism can be detected. If, however, the subspecies *filfolensis* and *Laurentii-Mülleri* would prove to represent the actual end-points of a special bifurcation occurred within the phylogenetical unit of the *L. muralis*-ancestry, and var. *Despotti* pertaining to another branch of this evolutionary plexus, one ought to presume that a more intimate connexion existed between the Felfla-Rock and Linosa than between the former and the Malta main-island; it is not only the biologist's, but also the geologist's task to throw some light upon this thrilling problem, the solution of which might be, eventually, attempted by means of Mr. A. WEGENER's genial „Theory of Shifting".[2]

SUMMARY AND CONCLUSIONS.

1. The varieties and subspecies of the Wall-Lizard inhabiting the Maltese islands, islets and rock-islets are, as such, endemic forms, characteristic of the respective territories.

2. Var. *Despotti* FEJÉRV. is a *muralis* belonging to the „green" group, with unspotted lower surfaces, presenting many kinds of variations with respect to its livery, in which — contrarily to *muralis* s. str. and to the rest of its Mediterranean forms — olivaceism is to be met with; it lives on the main-island of Malta, and it is most probable that Comino and Gozo will also prove to be inhabited by this form.

3. The „fluctuating variations" occurring in var. *Despotti* may be divided into five different main-types, connected with eachother by numerous transitions, and exclusively relying on individualisms, and not being, thus, of any systematical rank, though proving of a high phylogenetical interest.

[1] G. J. DE FEJÉRVÁRY, Quelques obs. nouv. s. la L. muralis Laur. var. insulanica de Bedr., en consid. spéc. du probl. tyrrhénien, Bull. Soc. Vaud. Sc. Nat., 53, 1920, Lausanne, 1921, p. 386.

[2] A. WEGENER, D. Entstehung d. Kont. u. Ozeane, III. Aufl., Braunschweig, 1922.

4. Var. *Despotti* is an important epidotic collective type, some of its main-types of variation clearly pointing towards more intimate relations with certain murales in the West on the one hand, and in the East on the other. Type 3rd bears upon its connexion with the Corso-Sardinian var. *quadrilineata* GRAY, and perhaps, through this, owing to the ancient „Tyrrhenis" of Mr. FORSYTH-MAJOR, with the Spanish var. *Bocagei* SEOANE, whilst type 4th making allowance for the presumption of some more close relations having existed between the immediate predecessors of *Despotti* and *hieroglyphica* BERTH. The ontogenetical development of the livery of var. *Despotti* proves that *L. muralis* s. str., as occurring in Central Europe, is the most conservative among the forms belonging to the species *L. muralis* s. lat., its livery being also repeated by the young *Despotti*. This statement pretty well agrees with my conception of the origin and spread of the Italian forms of *L. muralis*, illustrated on my respective map published in 1921,[1] and it is, among all other murales, ascertainedly the Italian branch to which the Maltese forms have been the most closely related.

5. Var. *Kieselbachi* FEJÉRV. is a spotted bellied *muralis*, belonging to the „green" group, inhabiting the Selmunett or St. PAUL's Island, and being a descendant of var. *Despotti* or of its immediate predecessor.

6. Var. *generalensis* GULIA is a *muralis* of the „green" group, with still more spotted lower surfaces than the preceding form, and with an apparently constant reticulated livery; it is the inhabitant of the Fungus- or General's Rock and constitutes a parallel branch to var. *Kieselbachi*, with which it is of a common descent.

7. Subsp. *filfolensis* DE BEDR. is a large and melanotic *muralis* belonging to the „green" group, and not pertaining to the forms enclosed by the species *L. serpa* RAF. s. lat. It seems to be more intimately connected to the following subspecies than to var. *Despotti*; its habitat is confined to the Felfla- or Filfola-Rock.

8. Subsp. *Laurentii-Mülleri* FEJÉRV. is a melanotic *muralis* belonging to the „green" group, melanism not having, however, attained in it the same degree as in the former subspecies. It is, on the whole, intermediate between *filfolensis* and the Mediterranean non-melanotic murales, the spotted livery of its ventral surfaces reminding that to be met with in the characteristic average of var. *insulanica* DE BEDR. It lives on Linosa; the lizards inhabiting the islet Lampione, south of Lampedusa, might, perhaps, also be referred to this subspecies.[2]

9. Forms belonging to the species *L. serpa* RAF. do not seem to occur on the Maltese islands, though the Hungarian National Museum possesses two individuals (♂&♀), labelled under Vert. No 1992/22, certainly belonging to this form and obtained from Mr. BOULENGER as originating from „Malta", a circumstance most probably due to some mistake.

Budapest, December 5th, 1924.

[1] FEJÉRVÁRY, in op. cit.

[2] BOULENGER, cited Monogr., p. 224.