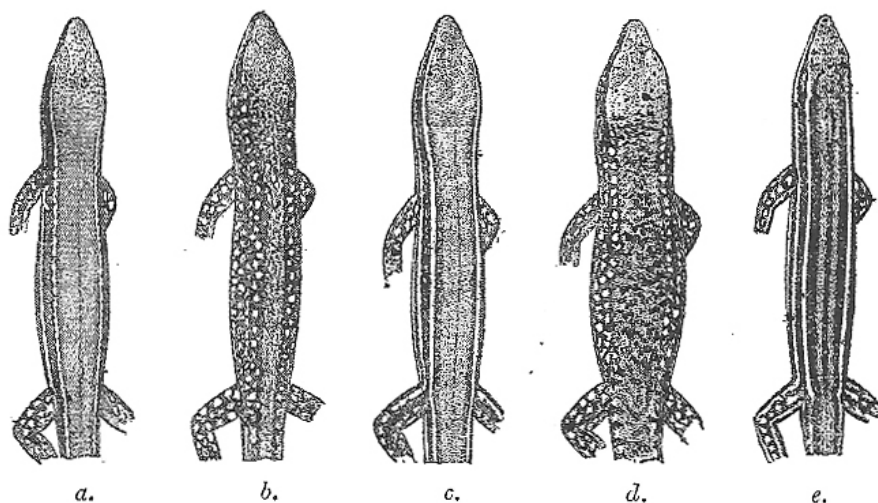


Text-fig. 4.



Young specimens of :—*a*, f. *typica*, Arnao, Asturias ; *b*, var. *bocagei*, Madrid ; *c*, var. *liolepis*, Valencia ; *d*, var. *monticola*, Spain ; *e*, var. *hispanica*, Almeria.

### III.—BALEARIC ISLANDS.

(Plates XXIII. & XXVI.)

A good example of the neglect of the lepidosis in defining races of the Wall-Lizard, of which I have complained above, is offered by the lizards inhabiting the Balearic Islands. Although the form and coloration have been described by Bedriaga and by Boscá, the difference in scaling by which the Iviza lizard can be sharply separated from the so-called varieties inhabiting the two more eastward islands has hitherto entirely escaped attention. Yet, with the help of these characters, the Balearic lizards stand out as the best-definable of all the subspecies or varieties which have been included under *Lacerta muralis*, and certainly have stronger claims to specific separation than have *L. bedriagæ* and *L. depressa*.

But, then, it is necessary to entirely put aside the colour—whether brown, yellow, green, or black—and to place together, as var. *pityusensis* Boscá, the Iviza specimens referred by Boscá to vars. *balearica* and *pityusensis*, and to group under the older name of var. *lilfordi* Gthr. all the lizards from Majorca, Minorca, and neighbouring islands, which have been described by Bedriaga as vars. *balearica*, *giglioli*, and *lilfordi*, the numbers of the scales counted across the middle of the body (55 to 68 in the former, 70 to 90 in the latter) being sufficient for their discrimination. The important fact that in the Iviza lizards the rostral shield constantly enters the nostril, as only exceptionally happens in other forms of *L. muralis*, affords a diagnostic character by which to separate them from those of Spain, which agree in the number of scales across the body.

Since this paper was written Hr. Lorenz Müller has reported (Zool. Anz. 1905, p. 502) the occurrence of the var. *cettii* (= *tiliguerta*) at Binisaida, S.E. coast of Minorca, and he has kindly sent me one of his specimens, which agrees entirely with the Sardinian var. *tiliguerta*. Whether these lizards are really indigenous or were introduced by human agency is a question which Hr. Müller himself has suggested for consideration, but which cannot at present be solved.

Var. PITYUSENSIS.

*Lacerta muralis*, var. *balearica* Boscá, An. Soc. Espan. II. N. xii. 1883, p. 245.

*Lacerta muralis*, var. *pityusensis* Boscá, l. c. p. 246.

*Lacerta muralis balearica*, var. *pityusensis* Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 254.

Head (Pl. XXVI. fig. 1 a) once and a half to once and two-thirds as long as broad, moderately depressed, its depth in the tympanic region equalling the distance between the anterior border or the centre of the eye and the anterior border of the tympanum; snout rather pointed. Neck as broad as or a little broader than the head. Body moderately depressed. Hind limb reaching the shoulder or the collar in the males, the shoulder, the axil, or the elbow of the adpressed fore limb in the females; foot as long as or a little longer than the head. Tail once and a half to a little over twice the length of head and body, rounded in section, cyclotetragonal at the base.

Rostral shield entering the nostril, often largely; nasals forming a suture behind the rostral, separated from the anterior loreal by the postnasal, which is usually single<sup>1</sup>. Frontal as long as or shorter than its distance from the end of the snout; a series of granules between the supraciliaries and the principal supraoculars<sup>2</sup>, the first or first and second of which are usually in contact with the first supraciliary. Occipital usually as long as and broader than the interparietal, sometimes much smaller. Parietals once and one-third to once and two-thirds as long as broad, in contact with the upper postocular. Upper temporal shield entirely absent or broken up into a series of small shields. Temple covered with granular scales; tympanic and masseteric shields distinct, the latter separated from the parietal by from one to three series of scales. Four upper labials anterior to the subocular<sup>3</sup>.

26 to 34 scales and granules on a line between the symphysis of the anterior chin-shields and the median collar-plate; gular fold distinct; collar even-edged, formed usually of rather small plates, 9 to 14 in number.

<sup>1</sup> Two postnasals on the left side in two of the specimens in the British Museum, two on both sides in a specimen in the Madrid Museum.

<sup>2</sup> These granules are reduced to a few in one of the specimens in the British Museum and in four in the Madrid Museum.

<sup>3</sup> Five on one side in two specimens, on both sides in one.

Dorsal scales (Pl. XXVI. fig. 1 *b*) granular, roundish-hexagonal, more or less feebly but always distinctly keeled, 55 to 68 across the middle of the body; 3 and 4 transverse series (rarely 4 throughout) correspond to one ventral plate, 35 to 47 to the length of the head.

Ventral plates in 6 longitudinal and from 26 to 30 transverse series.

Anal plate bordered by one or two semicircles of small plates.

Scales on upper surface of tibia finely granular, much smaller than dorsals, more or less distinctly keeled. 19 to 24 pores under each thigh. 26 to 31 lamellar scales under the fourth toe.

Upper caudal scales strongly keeled, truncate or very obtusely pointed behind; the whorls subequal in length, the fourth behind the postanal granules containing 30 to 38 scales.

Brown, yellow, or green above, with black or reddish-brown spots or vermiculations, usually arranged in five or seven more or less well-defined longitudinal stripes; the black markings sometimes forming chains enclosing roundish light spots, or an irregular reticulate pattern, or reduced to mere dots or vermiculations; females often with a light dorso-lateral streak, beginning from the supraciliary edge, sometimes bordered by fine black lines, sometimes with a black vertebral streak; upper surface of head spotted or vermiculated with black; tail with dark and light markings, forming more or less regular longitudinal series. Young with six light streaks on the body. Belly yellow, orange, or red, without markings, except on the outer row of ventral plates, which bears large blue spots.

Measurements (in millimetres) of two of the type specimens in the Lataste Collection:—

	♂.	♀.
From snout to vent . . . . .	72	64
"      "      fore limb . . . . .	30	23
Length of head . . . . .	18	15
Width of head . . . . .	13	9
Depth of head . . . . .	11	7
Fore limb . . . . .	28	19
Hind limb . . . . .	40	32
Foot . . . . .	21	17
Tail . . . . .	145	85 *

\* Tail reproduced.

I have examined 79 specimens, all collected by Sr. E. Boscá on Iviza, three of which belong to the Lataste Collection, the rest being in the British and Madrid Museums.

I append particulars as to size and scaling of some of them:—

	1.	2.	3.	4.	5.	6.
♂ . . . . .	80	60	26	12	30	21
„ . . . . .	75	61	27	10	31	23-21
„ . . . . .	73	67	27	14	34	24-22
„ . . . . .	72	62	28	9	30	22-24
„ . . . . .	72	60	27	12	28	22-23
„ . . . . .	70	63	26	12	26	20
„ . . . . .	67	60	26	12	28	19-20
„ . . . . .	65	63	27	11	31	21
„ . . . . .	64	62	28	10	32	23
„ . . . . .	62	68	27	11	32	23
„ . . . . .	60	64	27	11	29	23-24
♀ . . . . .	70	60	30	9	26	19
„ . . . . .	64	55	29	9	29	20-21
„ . . . . .	62	57	28	11	33	22-21
„ . . . . .	58	57	29	10	33	20-21
„ . . . . .	55	56	28	10	31	23-22

1. Length (in millim.) from snout to vent. 2. Number of scales across middle of body. 3. Transverse series of ventral plates. 4. Number of plates in collar. 5. Number of scales and granules between symphysis of chin-shields and median collar-plates. 6. Number of femoral pores (on right and left sides, if differing).

This form was found by Boscá on Iviza and on the small neighbouring islands La Grosa, La Redonia, and El Malvi.

Several specimens are figured on Pl. XXVI. figs. 1-5.

#### Var. LILFORDI.

*Zootoca lilfordi* Günther, Ann. & Mag. N. H. (4) xiv. 1874, p. 158.

*Lacerta lilfordi* Braun, Arb. Zool. Inst. Würzb. iv. 1877, p. 4.

*Lacerta muralis* Braun, l. c. p. 26.

*Lacerta muralis fusca* Bedriaga, Arch. f. Naturg. 1878, p. 275.

*Lacerta muralis*, var. *gigliolii* Bedriaga, op. cit. 1879, p. 247, pl. xvii. fig. 2.

*Lacerta muralis*, vars. *balearica*, *gigliolii*, *lilfordi* Bedriaga, Bull. Soc. Zool. France, 1879, p. 221, pl. ix. figs. 1-3.

*Lacerta muralis balearica*, part., Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 248.

Variations in colour in this lizard are solely responsible for the several names in the above given synonymy. The black colour of the specimens from the Isla del Ayre, near Minorca, was the sole ground on which Günther established his *Zootoca lilfordi*, and he showed his neglect of structural characters by associating with it the black lizard of the Filfolia rock near Malta. The lizard of Isla del Ayre differs, I repeat, in no other

respect but the ground-colour from the brown or green lizards of Minorca and Majorca, the markings of which may be detected in certain lights in some adult black specimens, and which are distinctly shown by all young specimens. Brown and olive-green specimens from Minorca were first referred by Bedriaga to his subspecies *fusca*, and afterwards to a distinct variety named *balearica*; whilst specimens with a blue or blue-green back, from the Dragoneras Island, near Majorca, were described as another variety named after Prof. Giglioli of Florence.

Having recently received from Señor J. Ferrer, of Mahon, numerous living specimens (some brown, some green, some bluish green on the back, and the green ones having after a time become brown<sup>1</sup>), I cannot regard the coloration as affording any justification for the establishment of varieties; and as the structural characters are the same in these so-called varieties, I have no hesitation in throwing them all together under the name of var. *lilfordi* Günther, which has priority over that of *balearica*. The form on which *L. lilfordi* was established I regard as a mere case of melanism, fixed on certain islands, through influences which are as yet unexplained; but there would, in my opinion, be no more reason for allowing it the rank of variety, in the sense in which I take the term, than in the case of the black individuals of *Vipera berus* and *V. aspis* or of *Lacerta vivipara*. Besides, if all the individuals on Ayre Island and other islets in the Balearic are affected with melanism, the name of the variety coupled with an indication of the locality is amply sufficient to avoid confusion with any other form. On the other hand, the Iviza lizard, which has been treated by previous authors as a race equivalent to the vars. *balearica*, *giglioli*, and *lilfordi*, can be well defined and constitutes a quite distinct form.

Having explained my reasons for throwing together the so-called varieties mentioned in the synonymy, I will proceed to a description of the material before me, consisting of 32 specimens from the following localities:—Mahon (Braun in Lataste Coll., Bedriaga, Ferrer), I. del Rey, near Minorca (Braun in Lataste Coll., Ferrer), I. del Ayre, near Minorca (Lilford, Braun in Lataste Coll., Ferrer), I. Dragoneras, near Majorca (Bedriaga), I. la Guardia, near Majorca (Boscá). The specimens from Is. del Ayre and la Guardia are black or blackish, and represent the *L. lilfordi*, *sensu stricto*.

Head (Pl. XXVI. figs. 7 a, 7 b) once and a half to once and two-thirds as long as broad, moderately depressed, its depth in the tympanic region equalling the distance between the anterior border or the centre of the eye and the anterior border of the tympanum; snout usually decidedly pointed. Neck as broad as or broader than the head. Body moderately depressed. Hind limb reaching the shoulder, the collar, or a little beyond the latter in males, the axil or the shoulder in females; foot once to once and one-third the length of the head. Tail once and a half to once and four-fifths the length of head and body, rounded in section, cyclotetragonal at the base.

<sup>1</sup> As happens in the males of our Sand-Lizard, *Lacerta agilis*.

Rostral shield usually narrowly separated from the nostril, but sometimes entering it; nasals forming a suture behind the rostral, separated from the anterior loreal by the postnasal, which is single. Frontal as long as or shorter than its distance from the end of the snout; a series of granules between the supraciliaries and the principal supraoculars, the first of which is often in contact with the first supraciliary. Occipital very variable in size, often longer and broader than the interparietal<sup>1</sup>. Parietals once and one-third to once and two-thirds as long as broad, in contact with the upper postocular. Upper temporal shield entirely absent or broken up into a series of small shields. Temple covered with granular scales; tympanic and masseteric shields usually distinct<sup>2</sup>, the latter separated from the parietal by two to four series of scales. Four upper labials anterior to the subocular.

30 to 40 scales and granules on a line between the symphysis of the anterior chinshields and the median collar-plate; gular fold distinct; collar even-edged, formed usually of rather small plates, 9 to 15 in number.

Dorsal scales granular, round or oval, smooth, 70 to 90 across the middle of the body (Pl. XXVI. fig. 7 c); 4 and 5 transverse series (rarely 3 and 4) correspond to one ventral plate, 42 to 62 to the length of the head. Ventral plates in 6 longitudinal and 26 to 30 transverse series.

Anal plate bordered by one or two semicircles of small plates.

Scales on upper surface of tibia finely granular, smaller than dorsals, smooth; 17 to 25 pores under each thigh. 27 to 32 lamellar scales under the fourth toe.

Upper caudal scales more or less strongly keeled, truncate or very obtusely pointed behind; the whorls subequal in length, the fourth behind the postanal granules containing 30 to 46 scales.

The colour of the back varies from brown to olive, bright grass-green, or blue-green; the sides are brown or reddish brown with paler brown or pale green spots. Three stripes of dark brown or blackish spots or vermiculations extend along the back, but it frequently happens that these stripes lighten in the centre and that their borders become converted into lines, such specimens having six fine dark lines along the back; some specimens have dark marblings or vermiculations all over the back, and such is the case in the single very young specimen I have examined<sup>3</sup>. The lower parts vary from orange to salmon-red, copper-colour, or brick-red, without or with small black spots which may form regular longitudinal series; a series of turquoise-blue spots on each side of the belly; throat spotted or marbled with reddish brown or blackish.

In the specimen from Dragoneras Island, Minorca, named by Bedriaga var. *gigliolii*, the back, at least posteriorly, and the upper surface of the tail are described as of a dark blue-green or peacock-blue, and the outer row of ventral shields lapis-blue. Preserved

<sup>1</sup> Twice as long and twice as broad as the interparietal in a ♂ from Mahon.

<sup>2</sup> Hardly distinct in single specimens from Mahon, Dragoneras Island, and Ayre Island.

<sup>3</sup> From Mahon, in the Lataste Collection.

in spirit, as they are now, such specimens cannot be distinguished from ordinary Minorca lizards.

The Ayre Island specimens are described by Günther (*Zootoca lilfordi*) as uniform deep shiny black above and of a beautiful sapphire-blue beneath. But some specimens from the same island sent to me alive by Sr. Ferrer are only of a very dark brown, with the dark markings (lines and spots) of the main island form perfectly distinguishable; pale bluish-green or turquoise-blue spots on the sides of the lapis-blue belly, which may bear small black spots. Now that they have been in spirit for many years, Lord Lilford's specimens also show very distinctly the dorsal markings. Some of the black specimens from La Guardia Island, near Majorca, collected by Señor E. Boscá, have numerous pale bluish-green spots on the sides of the body and on the limbs. The young of these melanotic insular forms are described by Braun as brown above, with dark spots and lines, dark brown or black on the sides, with numerous blue spots, the tail dark green; the belly is greenish in the middle, black spotted with blue on the sides<sup>1</sup>.

Measurements (in millimetres):—

	Mahon.		Ayre Id. (types).	
	♂.	♀.	♂.	♀.
From snout to vent . . . . .	70	62	64	61
„ „ fore limb . . . . .	28	22	28	23
Length of head . . . . .	18	14	17	15
Width of head . . . . .	12	9	12	9
Depth of head . . . . .	9	7	9	7
Fore limb . . . . .	26	22	25	23
Hind limb . . . . .	40	36	37	35
Foot . . . . .	21	19	19	18
Tail . . . . .	120	100	110	65 *

\* Tail reproduced.

Particulars of some of the specimens examined (as in preceding table):—

	1.	2.	3.	4.	5.	6.
♂. Mahon . . . . .	70	78	27	15	37	24-25
„ „ . . . . .	66	90	28	11	35	25-22
♀. „ . . . . .	61	70	29	10	30	23
„ „ . . . . .	60	82	27	11	37	22
♂. Minorca . . . . .	62	80	26	10	36	21
♂. I. del Rey . . . . .	64	85	27	11	35	22-24
„ „ . . . . .	64	83	30	9	37	23-24
„ „ . . . . .	67	79	28	11	35	20

<sup>1</sup> Very detailed descriptions of the colours and markings in living specimens have been given by Braun, *l. c.*



	1.	2.	3.	4.	5.	6.
♂. I. del Ayre . . . . .	72	78	28	10	39	23
" " . . . . .	64	90	27	11	36	23-22
" " . . . . .	64	83	27	10	31	20
♀. " . . . . .	64	80	30	10	35	20
" " . . . . .	61	80	27	10	38	20-19
" " . . . . .	53	88	27	13	40	21
♂. I. Dragoneras . . . . .	64	77	27	13	37	24-23
" " . . . . .	56	75	29	10	32	24
♂. I. la Guardia . . . . .	62	76	28	14	32	18-19
" " . . . . .	62	85	26	12	35	19
" " . . . . .	60	86	26	15	36	22-21
♀. " . . . . .	56	70	28	11	30	17
" " . . . . .	52	72	27	15	32	19-20
" " . . . . .	51	79	28	14	34	18-17

Specimens from Mahon are figured on Pls. XXIII. fig. 1 and XXVI. fig. 6. One of the types of *L. lilfordi* from Ayre Island is represented on Pl. XXVI. fig. 7.

The absence of any trace of a keel on the dorsal scales distinguishes this variety from the preceding as well as from the vars. *serpa* and *tiliguerta*.

#### IV.—ITALY AND SICILY.

A. Typical form, var. *BREVICEPS* Blgr., var. *BRUEGGEMANNI* Bedr., and var. *NIGRIVENTRIS* Bonap. (Plates XXII., XXIII., XXIV., XXVIII.)—

In dealing with the variations of the Wall-Lizards in Central Europe, we have had no difficulty in satisfying ourselves that, however great the differences between individuals brought together under the name of *L. muralis*, we are not mixing up forms which, if better understood, might be regarded as distinct species or subspecies, and that even if any of the differences noticed should prove constant in a district, we are only uniting under one name local or geographical variations for the future recognition of which the name of the species coupled with the locality is amply sufficient. But as soon as we extend our investigations south of the Alps, the problem becomes more difficult, and we find ourselves confronted with several more or less distinct forms, which, as they sometimes occur side by side in a locality, it is imperative to distinguish by different names—be they called species, subspecies, races, or varieties.

On the rank to be accorded to such forms, the opinions of the best herpetologists have differed very considerably in the past.

In the last revision of these lizards<sup>1</sup> I have, following the lead of the highest authority on this difficult subject, grouped the Wall-Lizards of Italy under three headings: the *forma typica* (subsp. *fusca* Bedr.), var. *brueggemanni* Bedr. (on

<sup>1</sup> Cat. Liz. iii. p. 28 (1887).