On the Anomalous Snakes in the Collections of the Zoological Institute, Strassburg.

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Whilst classifying the snakes belonging to the Collections of the Zoological Institute of the University Strassburg, I was struck by the frequent occurrence of morphological anomalities in the head-shields of the specimens. Thinking that they would be of interest to science, I kept a list of them, which is given here.

The Anomalities referred to consist chiefly in a difference of the numbers or arrangement of the shields on either side of the head. Such anomalities have often been noticed already, so for instance by Mr. Boulenger in his „Catalogue of the Snakes in the British Museum“ and also by Mr. Meerwarth in his paper „Die Westindischen Reptilien und Batrachier des naturhistorischen Museums in Hamburg“, and probably by many other authors besides them, but yet every such abnormity is of great interest, showing as it does the great scope open to individual variation in snakes. In a great number of cases I have found that the limit of variation given by Mr. Boulenger in the above-mentioned Catalogue have been surpassed by individuals, whose heads were normal on one side and abnormal on the other. Such cases would seem to me to prove that the limits given by Mr. Boulenger for those species ought to be

extended, as it is obvious that an individual cannot exceed the limit of variation of the species it belongs to.

The anomalities chiefly occurred in the number of the temporals, these seem to me to be on the whole more variable and less constant in form and arrangement than the other head-shields; almost as many deviations from the rule, or from symetry, are to be observed in the upper labials. The other head-shields are much more constant, the postoculars and lower labials being the next most variable. As a general rule, as has been pointed out by Professor Döderlein, the larger the number of shields of any kind, the greater the tendency to produce anomalies. (Döderlein, „Ueber die Beziehungen nahe verwandter Thierformen", in: Zeitschr. f. Morphologie und Anthropologie 1902.)

I have also included such snakes in this list, as have abnormal numbers of rows of scales around the body, or whose anal scale is divided when it should be entire or vice versa, and also in one case a colour-variation.

The terms employed are those used by Mr. Boulenger in his Catalogue, R and L indicating the side of the head referred to; when lower labials are mentioned, only those in contact with the anterior chin-shields are referred to.

Corallus hortulanus (L.).

a) Chili, Frank 1892.
Loreals: R 2, L 3, normal 2.

Polyodontophis annulatus (D. B.).

a) Mexico, Weber 1865.
Temporals R 1 + 2, L 1 + 1, normal 1 + 2 or 2 + 3.

b) Mexico.
Body till vent red with pairs of black bars enchosing a lighter zone, tail grey with 3 longitudinal series of small black spots. Normal: Anterior half of body red with pairs of black bars enclosing a yellow or lavender-grey zone, tail grey with 3 longitudinal series of small black spots.

Tropidonotus ordinatus (L.) *var. sirtalis* (L.).

a) Cambridge, Cambridge Museum, Mass. U. S. A. 1876.
2 superposed loreals, normal one loreal.

b) Cambridge, Cambridge Museum, Mass. U. S. A. 1876.
Upper labials: R 8, 4th + 5th entering eye, L 7, 3rd + 4th entering eye, normal 7, 3rd + 4th entering eye.

c) Cambridge, Cambridge Museum, Mass. U. S. A. 1876.
Upper labials: R 7, 3rd + 4th, L 8, 4th + 5th entering eye.

Tropidonotus saurita (L.).

a) Martinique, Ackermann 1876.
Anal divided; normal, anal entire.

b) New Orleans, Hasslauer 1846.
Upper Labials: R 7, 3rd + 4th entering eye, L 8, 4th + 5th entering eye, normal: 8 (rarely 7) upper labials 4th + 5th (3rd + 4th) entering the eye.

c) Mexico, Weber 1866.
Upper Labials: R + L 7, the 4th alone entering the eye.

Tropidonotus natrix (L.).

a) Triest, Conte Camerata.
Lower labials R 5, L 4, normal 4 or 5.

b) Bosnien, Rolle 1893.
Upper labials: R 8, the 5th being obliquely divided, 3rd + 4th entering the eye, L 7, 3rd + 4th entering eye. Normal: 7, 3rd + 4th entering the eye.

c) Elsass.
Upper labials: R + L 6, 3rd + 4th entering the eye.

d) Elsass.
Upper labials: R + L 5, 3rd + 4th entering the eye.

e) Elsass.
Upper labials: R 6, 3rd + 4th, L 7, 3rd + 4th entering the eye.
Postoculars: R 3, L 2, normal 2, 3 or 4.

f) Elsass.
Upper labials: R + L 6, 3rd + 4th entering the eye.

g) Triest, Conte Camerata.
Upper labials: R 7, 3rd + 4th, L 6, 3rd + 4th entering the eye.

h) Elsass.
Postoculars: R 4, L 3.

i) Elsass.
Upper labials: R 6, 3rd + 4th entering eye, L 7, 3rd + 4th entering eye.

j) Russia, Goette 1894.
Postoculars: R 3, L 4.

In specimens c and d the fewness of the upper labials is caused by fusions, in c of the 6th and 7th, and in d of the 5th, 6th and 7th.

Tropidonotus parallelus Blgr.

a) China.
Postoculars: R + L 2, normal 3.

Tropidonotus piscator Schneid.

a) (origin unknown).
Upper labials: R 9, 5th entering eye, L 9, 4th + 5th entering eye, normal 9, 4th + 5th entering eye.
Suboculars: R 1, L 0, normal 0.

The subocular here prevents the 4th labial from entering the eye.

b) Java, Kugler 1890.
Upper labials: R 10, 5th + 6th entering eye. L normal.

c) Java, Kugler 1890.
Upper labials: R 10, 5th + 6th entering the eye, L normal.

Tropidonotus tessellatus (Laur.).

a) (origin unknown).
Postoculars: R 3, L 2, normal 3.

Tropidonotus viperinus (Labr.).

a) Sicily.
Temporals: R 1 + 3, L 1 + 2, normal 1 + 2 or 1 + 3.

b) Sicily.
Temporals: R 1 + 3, L 1 + 2.

c) Italy.
Temporals: R 1 + 4, L 1 + 2.

d) Algiers, Sol 1845.
Upper labials: R 8, 4th + 5th entering eye, L 7, 3rd + 4th entering eye, normal 7, 3rd + 4th entering the eye.
Lower labials: R 5, L 4, normal 4 or 5.
The left anterior temporal is semidivided.

e) + f) Algiers.
Postoculars: R 3, L 2, normal 2.
g), h) + i) Algiers.
Temporals: R 1 + 3, L 1 + 2.
j) k) l) Algiers.
Temporals: R 1 + 2, L 1 + 3.
m) Algiers.
First right lower labial fused with the anterior chin-shield.
n) Algiers.
Lower labials: R 4, L 5.
o) Algiers.
Upper labials: R 7, L 6, 3rd + 4th entering eye in both cases.
p) Algiers.
19 rows of scales, 21 or 23 normal.
q) r) Vallerange, Hérault 1835.
Lower labials: R 4, L 5.
s) Vallerange, Hérault 1835.
Temporals: R 1 + 2, L 1 + 3.

Tropidonotus validus (Kennicott).
a) Matamoros, Mexico.
Postoculars: R 3, L 2, normal 2 or 3.

Tropidonotus fasciatus (L.).
a) Monterey, Mexico, Speyer 1901.
2 superposed loreals on the right side, on the left a single one as normal.
b) Martinique, Ackermann 1836.
Temporals: R 1 + 3, L 1 + 2, normal 1 + 1 or 1 + 3.

Tropidonotus tigrinus Boie.
a) India, Frank 1892.
Upper labials: R 8, 4th + 5th + 6th entering the eye, L 7, 3rd + 4th + 5th entering the eye, normal 7, 3rd + 4th + 5th entering eye.

Tropidonotus taxispilotus Holbr..
a) North America, Leroy 1856.
Temporals: R 2 + 3, L 2 + 2, normal 2 + 4 or 5 (or 1 + 3).

Tropidonotus stolatus (L.).

a) Pondichery, Spielmann 1843.
Postoculars: R 4, L 3, normal 3.

Tropidonotus nigrocinctus Blyth.

a) (origin unknown).
Upper labials: R + L 9, 3rd + 4th + 5th entering the eye, normal 9, 4th + 5th + 6th entering the eye.
Temporals: R + L 2 + 2, normal 1 + 2 (2 + 2 rare).

Tropidonotus subminiatus Schleg.

a) Museum Paris 1835.
Temporals: R 2 + 3, L 2 + 2, normal 2 + 2 or 2 + 3.

Helicops carinicauda (Wied).

a) Brazil, Weigel 1901.
Scales rugose, with serrated keels.
b) Rolle 1901.
Frontal only two-thirds as long as the parietals, normal: as long as or a little shorter than the parietals.

Ischnognathus dekayi (Holbr.).

a) (origin unknown).
Upper labials: R 7, 3rd + 4th, L 6, 3rd + 4th entering the eye, normal: 6, rarely 7, 3rd + 4th entering the eye.

Cyclocorus lineatus (Reinh.).

a) Mindanao, Schneider.
Pupil vertically oval, normally round.

Stegonotus modestus (Schleg.).

a) New Guinea, Redemann 1894.
Temporals: R + L 2 + 3, normal 1 + 2 or 2 + 2.
b) New Guinea, Redemann 1894.
Temporals: R 2 + 2, L 2 + 3.
c) New Guinea, Redemann 1894.
Temporals: R 2 + 3, L 2 + 2.

Pseudaspis cana (L.).

a) Cape Colony.
Temporals: R 2 + 3, L 3 + 3, normal 2 + 3 or 3 + 4

Zamenis mucosus (L.).

a) Bengal, Paris Museum 1837.
Temporals: R 2 + 2, L 2 + 3, normal 2 + 2.

Zamenis gemonensis (Laur.).

a) Morea, Museum Paris 1829.
Lower labials: R 5, L 4, normal 5 (rarely 4).

Zamenis hippocrepis (L.). All from Algiers.

a) Temporals: R 3 + 2, L 2 + 2, normal 2 + 3 or 3 + 3.
Upper labials: R 10, L 9, normal 8 or 9 (rarely 10).
Lower labials: R 5, L 4, normal 4.

b) Postoculars: R 2, L 3, normal 2.
Upper labials: R 9, L 10.

c) Praeoculars: R 1, L 2, normal 1 or 2.
Suboculars: R 3, L 4, normal 3 or 4.
Upper labials: R 9, L 10.

d) Temporals: R 3 + 4. L 2 + 3.

e) Praeoculars: R 2, L 1.
Temporals: R 3 + 3, L 3 + 2.

f) Praeoculars: R 1, L 2.
Temporals: R 2 + 2, L 3 + 3.

g) Praeoculars: R 1, L 2.
Temporals: R 2 + 3, L 3 + 3.

h) Upper labials: R 9, L 10.

i) Temporals: R 2 + 4, L 2 + 3.

k) Praeoculars: R 1, L 2.
Lower labials: R 5, L 4.

l) Upper labials: R 8, L 9.

An auxiliary shield is interposed between the 3rd and 4th upper labials, the loreal, the praeocular and the first subocular in many specimens, it is present on the left side only in specimens a, e, f, and on both sides in specimens c, d, g, h, i, j.

Drymobius bifossatus (Raddi).

a) Rio Janeiro, Museum at Cambridge, Mass. U. S. A.
Upper labials: R 7, 3rd + 4th entering eye, L 9, 4th + 5th entering eye, normal 8, 4th + 5th entering eye.

Spilotes pullatus (L.).

a) Cayenne, Nessler.
Upper labials: R 9, 4th + 5th + 6th entering eye, L 8, 4th + 5th entering eye, normal 7, 3rd + 4th entering eye.

Coluber longissimus (Laur).

a) Baden Baden 1834.
Frontal as broad as long, normally once and one fourth to once and one third as long as broad.

Coluber climacophorus Boie.

a) Tokio, Döderlein 1881.
Postoculars: R 3, L 2, normal 2.
b) Tokio, Döderlein 1881.
Postoculars: R 2, L 1.
c) — Kugler 1890.
No subocular, normal one subocular.

Coluber melanurus Schlegel.

a) Sumatra, Redemann 1894.
Upper labials: R + L 8, 3rd + 4th + 5th entering the eye, normal 9, 4th + 5th + 6th entering the eye.

A small shield is interposed between the praeocular, praefrontal supraocular and frontal of the left side.

Coluber enganensis Vinciguerra.

a) (origin unknown).
Posterior chin-shields much longer than the anterior, the reverse is normal.

Herpetodryas carinatus L.

a) Chili.
Upper labials: R 10, 5th + 6th + 7th entering eye, L 9, 4th + 5th + 6th entering eye, normal 8 or 9 + 4th + 5th, or 5th + 6th or 4th + 5th + 6th entering eye.

Dendrophis calligaster Günther.

a) New Britain.
Upper labials: R 9, L 7 (4 + 5 fused, as also 7 + 8), normal 8 + 9.

Dendrophis punctulatus (Gray).

a) New Guinea, Redemann 1894.
Temporals: R 1 + 2, L 2 + 2.
Upper labials: R 8, 5th + 6th, L 8, 4th + 5th entering the eye, normal 8 or 9, 4th + 5th (rarely 5th + 6th) entering the eye.

Dendrophis lineolatus H. J.

a) Neu Guinea, Boucard.
Loreals fused with the praefrontals.

Chlorophis angolensis (Bocage).

a) Durban, Paris Museum 1843.
Temporals: R + L 2 + 2, normally 1 + 2.

Gastropyxis smaragdina (Schleg.).

a) Gaboon, Bauer 1865.
Temporals: 2 + 2, normally 1 + 2.

Dromicus antillensis (Schleg.).

a) Antilles, Schimper 1843.
Temporals: 1 + 1, normally 1 + 2.

Liophis poecilogyrus (Wied.).

a) Rio Janeiro, Cambridge Museum, Cambridge, Mass. U. S. A.
Temporals: 1 + 1, L 1 + 2, normal 1 + 2.

Lystrophis d'orbygni (D. B.).

a) Brasilien, Weigel 1901.
Praefrontals separated by a pair of small shields instead of by a single one.

b) Buenos Ayres, Klappenbach 1866.
Suboculars: R 2, L 1, the 4th left labial enters the eye.

Heterodon platyrhinus Latr..

a) (origin unknown).
9 shields exclusive supraocular surrounding the left, 10 the right eye, normally 10 or 11.

Heterodon simus (L.).

a) North America.
9 shields in addition to the supraocular surrounding the left, 12 the right eye, normally 10 or 11.

Aporophis lineatus (L.).

a) Surinam.
Upper labials: R 8, 4th + 5th entering eye, L 9, 5th + 6th entering eye, normal: 8, 4th + 5th entering the eye.

b) Hasslauer.
Upper labials: R 7, 3rd + 4th entering eye, L 8, 4th + 5th entering eye.

Rhadinaea merremii (Wied.).

a) (origin unknown).
Anal entire, normally divided.

Coronella austriaca Laur.

a) + b) Trieste, Conte Camerata.
Temporals: R 2 + 2, L 2 + 3, normally 2 + 2 or 2 + 3.

c) Basel, Schneider 1887.
Temporals: R 1 + 3, L 2 + 3.

d) Semur, France, Naudot.
Upper labials: R 8, 4th + 5th entering eye, L 7, 3rd + 4th entering eye, normally 7 (rarely 8), 3rd + 4th (4th + 5th) entering the eye.

e) Nuremberg, Hammer 1827.
Temporals: R 1 + 3, L 2 + 2.

Coronella girondica Daud.

a) South France.
Temporals: R 2 + 3, L 3 + 3.

Simotes arnensis Shaw.

a) Ceylon, Redemann 1892.
Anal entire, normally divided. Jan depicts it also with an entire anal (Jan, Icon. gén. 11. VI. 1).

Prosymna meleagris (Reinh.).

a) Niger 1893.

Upper labials: R 5, 2nd + 3rd entering the eye, L 6, 3rd + 4th entering the eye, normally 5, 2nd + 3rd entering the eye.

Contia aestiva (L.).

a) Matamoros, Mexico, Blind 1882.
Scales in 17 rows, normally 15.

Petalognathus nebulatus (L.).

a) (origin unknown).
Upper labials: R 7, 4th + 5th entering eye, L 8, 5th + 6th entering the eye, normal 7 (rarely 8), 4th + 5th (5th + 6th) entering the eye.

Calamaria linnaei Boie.

a) (origin unknown).
Upper labials: R 4, L 5, normally 4.

Dipsadomorphus dendrophilus (Boie).

a) Sumatra, Redemann 1894.
Scales m 19 rows, normally m 21 or 23.

Dipsadomorphus irregularis Merr.

a) (origin unknown).
Anal divided, normally entire.

Tarbophis fallax Fleischmann.

a) (origin unknown).
Loreal separated from the eye by the praeocular, normally entering the eye below the praeocular.

Leptodira annulata (L.).

a) (origin unknown).
Subocular on the right side, left side without as is normal.

Philodryas aestivus (Schleg.).

a) (origin unknown).
Temporals: R 1 + 2, L 2 + 2, normally 1 + 2. N. B. The right anterior temporal is semi-, the left entirely divided.

Macroprotodon cucullatus (Geoffr.).

a) Guelma, Algiers, — 1840.
Temporals: R 1 + 2, L 1 + 3, normally 1 + 2.

b) Algiers, Dürr 1849.
Temporals: R 1 + 3, L 2 + 3.

c) Algiers, Dürr 1849.
Temporals: R + L 1 + 3.

d) Algiers, Sol 1840.
Temporals: R + L 1 + 3.

e) Lothringen (??).
Temporals: R + L 2 + 3.

f) Algiers, Sol 1840.
4th right upper labial diametrically divided.

Dispholidus typus Smith.

a) Cape Colony, Paris Museum 1832.
Upper labials: R 7, 3rd + 4th enter eye, L 8, 4th + 5th entering the eye, both can be normal.

Chrysopelea ornata (Shaw.).

a) Malacca, Schneider.
Temporals: R + L 2 + 3, normally 2 + 2.
Lower labials: R + L 6, normally 5.

Miodon collaris Peters.

a) West Africa, Victoria, Speyer 1899.
Lower labials: R 3, L 4, normally 4 or 5.

Elapops modestus Günther.

a) West Africa, Victoria, Speyer 1899.
A loreal on the right side of the head, normally none.

Dendraspis jamesoni (Traill.).

a) (origin unknown).
Right lower anterior temporal fused with the 7th upper labial, 8th upper labial on both sides fused with the posterior temporal.