

of carbon, as Mr. Brande conjectures, or, what is perhaps more likely, as a gaseous compound, containing a less proportion of sulphur than exists in that liquid.

In whatever state of combination the sulphur may be, it does not affect the salts of lead like sulphuretted hydrogen; nor does it act so readily, if at all, on polished silver and gold. Hence the gas which contains only this impurity, will be less injurious, when any of it escapes unburnt, than such as contains sulphuretted hydrogen; but since it uniformly yields acid vapours during its combustion, one part of the objection remains in full force.

These various objections, whatever weight they may have, apply to coal gas only.

ARTICLE VII.

A Synopsis of the Genera of Reptiles and Amphibia, with a Description of some new Species. By John Edward Gray, Esq. FGS. &c.

(To the Editors of the *Annals of Philosophy*.)

GENTLEMEN,

British Museum, July 12, 1825.

THE reptiles have been comparatively neglected by recent zoologists, perhaps on account of the popular prejudices against this interesting and curious class of animals which Linnæus designates "*Animalia pessima tetra nuda*." It is only necessary to overcome these prejudices, and to examine them even superficially, and we cannot but be struck with the beauty of their colours, the wonderful nature of their structure, and the peculiarities of their habits and manners. Indeed I do not know any class of animals better calculated to excite the wonder and astonishment of a student of nature.

With the hopes of inducing some inquiry into, and examination of, this department of natural history, I have attempted to bring together into the form of a synopsis, the labour of the preceding writers on this class, and have also thrown into it my own notes formed on an examination of the specimens at present under arrangement in the British Museum, which are exceedingly interesting to me in several points of view, first, as containing several undescribed species, and specimens of interesting or obscure genera; and secondly, the older specimens having been examined, and most carefully named by my late uncle, who paid great attention to this department of zoology, and several of whose manuscript species still remain unpublished.

I need not dwell on the distinctness of the two classes of reptiles.

tiles and amphibia, or of the scaly and naked-skinned groups, as they are allowed to be perfectly distinct by all modern naturalists, although they do not agree with regard to the rank of the latter group. I am inclined to follow the opinion of Macleay, Blainville, and others, in considering them both as classes, and consequently of equal rank.

Class III.—REPTILIA.

Body covered with scales or hard plates imbedded in the skin; heart with two auricles and one ventricle respiring by lungs. The blood is cold; the windpipe ringed; the ribs are perfect, and there are several vertebræ; the penis is distinct, sometimes double. The egg is covered with a shell, mostly hatched in the body of the mother.

SYNOPSIS OF THE ORDERS.

Body covered with imbedded hard plates; legs distinct.

Ears closed with a valve. EMYDOSAURI.

Ears naked, valveless SAURI.

Body covered with scales, or two large shields.

Legs 2-4 weak; ears naked SACROPHIDII.

Legs 0; ears 0 OPHIDII.

Legs 4; body covered with two shields. . . CHELONII.

Mr. Macleay, in his excellent *Horæ Entomologicae*, has observed that the order of this class appears to assume a circular disposition; the most visible break in this arrangement is in the passage between the snakes and the tortoises; for the connexion between the latter order and the crocodiles must be visible to every one, if they only consult Shaw's figure of the *Testudo serpentina*, and compare it with that of the crocodile, for it is in fact a crocodile with a shortened body, covered with united instead of distinct shields, and a bird's beak. The passage from the crocodiles to the lizards by means of the *Minitors*, has long been known to naturalists, who have often considered the latter as species of the former genus; and even Linnæus placed them in the same section of his genus *Lacerta*. The *Sincs* have always been placed in the same genus or group with the lizards; but their affinity with the slow-worms did not escape the penetrating eye of Linnæus, who observes that the *Lacerta Chalcides*, is "*Media inter Lacertas et Angues*;" and the union of the genera *Sincus*, *Anguis*, and *Amphisbena*, into an order, although it has not been done by any zoologist that I am aware of, appears to be strictly natural, for the feet in this order exist in such various degrees of developement, that the being with or without them appears to be only a family or generic character, and not ordinal. Linnæus placed the genera *Tortrix* and *Eryx* of the true serpents as species of his

genus *Anguis*, thus showing that he considered them as nearly allied. So far the passage from one order to the other has been very easy and gradual; and indeed sometimes I have been doubtful, as in the last case, to which order I should refer the genera. There is every reason to believe from general structure, that there exists an affinity between the tortoises and the snakes, but the genus that exactly unites them is at present unknown to European naturalists, which is not astonishing when we consider the immense number of undescribed animals which are daily occurring.

Mr. Macleay thought these two orders might be united by means of *Emys Longicollis* (the long-necked tortoise) of Shaw; but the family to which this animal belongs appears to be the one which unites this class to the crocodile: if I may be allowed to speculate from the peculiarities of structure which I have observed, I am inclined to think that the union will most probably take place, by some newly discovered genera, allied to the marine or fluviatile soft-skinned turtles, and the marine serpent.

§ 1. *Body covered with imbedded hard plates; legs distinct, fit for walking. Loricata, Gray; not Merrem.*

Order 1. EMYDOSAURI, *Blainv.*

Ears closed by two longitudinal valves; anus longitudinal; body covered with large imbedded plates; tongue short adnate; legs four; toes four before, five behind; sternum long; clavicles none; lungs not extended to the abdomen; *living in or near water.*

Fam. I. CROCODILIDÆ.

Feet three clawed; hinder ones; palmate or semi palmate tail compressed.

1. ALIGATOR, *Cuv.*

Head blunt; hind feet semi-palmate. *America.*

A. lucius, Gray. Crocodilus lucius, Cuv.

2. CROCODILUS, *Cuv. Champse, Merrem.*

Head blunt; hind feet palmate. *Old and New Continent.*

C. biscutatus, Cuv.

3. GAVIAL, *Oppel. Gavials, Cuv.*

Head very long; hind feet semi-palmate. *Old Continent.*

G. gangeticus, Gray. Crocodilus gangeticus, Cuv.

Fam. II. ICTHIOSAURIDÆ.

Feet paddle-shaped; toes five; cervical vertebra 18. *Marine.*

1. ICTHIOSAURUS, *Kœnig. Proteosaurus, Home.*

Teeth in a groove.

Latreille applied the name *Ichiosaurus* to the larva of a sala-

mander; but the genus has been properly rejected by all latter zoologists.

I. communis, *König*.

2. SAUROCEPHALUS. *Harlan*, 1824.

Teeth in separate sockets.

S. *Harlan*.

Fam. III. PLESIOSAURIDÆ.

Feet paddle-shaped; toes five; cervical vertebra 35 or 41. Marine.

1. PLESIOSAURUS, *Conybeare*.

P. dolichodeirus, *Conybeare*.

Cuvier has described a genus of large lizard fossil under the name of GEOSAURUS, *Oss. Fos. v. ii. 328*, which he says is intermediate between the monitors and crocodiles.

The genus *Megalosaurus* of *Buckland, Geol. Trans.* is, perhaps, allied to this order.

Order II. SAURI, *Blainv.*

Drum of the ears naked, or covered with the skin; anus transverse; body covered with large and small imbedded scales; legs four, toes 5, before and behind; sternum short; clavicles distinct; lungs extended into the abdomen; living mostly on land.

§ 1. Tongue not extensile. *Ascolabata, Merrem*.

Fam. I. STELLIONIDÆ. *Stelliones, Cuvier*.

Toes free; unequal; body subcompressed; throat subpendulous, extensile.

The throat of all, but more especially of the species of the latter section of this family, are more or less capable of being dilated by the processes of the os hyoides, as noticed by Baron Cuvier in his *Essay on the Osteology of Lizards (Ossment Fossiles, v. ii. p. 281)*; and it has lately been described and figured in an excellent paper by Mr. Bell, in the *Zoological Journal*, as existing in the genus *Anolius*.

† Without any teeth in the throat; teeth equal, conical; toes simple, *Agamina, Gray*. *Stellionidæ, Bell*, without character.

Gen. 1. UROMASTRIX, *Merrem*.

Body and head scaly; tail with large whirled pointed scales; femoral pores distinct.

U. Richii, *Gray*. U. acanthinurus, *Bell*, not U. Anthurus, *Merrem*. Common Africa.

2. ZONURUS, *Merren*. *Cordylus, Gronovias*.

Body scaly; head and abdomen shielded; tail whorled; spinose; femoral pores distinct.

Z. Cordylis, *Merren*. L. Cordylus, *Lin*.

3. AGAMA.

Body and head scaly; tail with small scales; femoral pores none; toes 5-5.

This genus contains the following subgenera characterized by the form of the scales, &c.

1. *Stellio*, *Daud*; *St. vulgaris*; *Lacerta stellio*, *Lin*. 2. *Agama*, *Daud*; *A. muricata*, *Daud*. 3. *Tapayia*, *Gray*; *T. orbicularis*; *Lacerta*, *Lin*. 4. *Trapelus*, *Cuv.*; *T. mutabilis*, *nob.* *Calotes*, *Merren*. 5. *Calotes*, *Cuv.*; *C. ophiomachus*, *nob.*; *Lacerta Calotes*, *Lin*. 6. *Lyriocephalus*, *Merrem* (*Lophyrus*, *Oppel.*). *L. margaritaceus*, *Merren*.

4. PNEUSTES, *Merrem*. *Agama*, *Daud*.

Toes four before, five behind; tail prehensile.

P. prehensilis, *Merrem*. *Carapopeba*, *Margrave*.

5. BASILICUS, *Laurent*.

Head and body scaly; tail with a dorsal fin supported by bony rays; femoral pores distinct.

B. mitratus, *Daud*.

6. DRACO, *Lin*.

Head and body scaly; sides of the body with wing-like expansions supported by the spurious ribs; femoral pores none; tail round, scaly.

D. viridis, *Daud*.

7. PTERODACTYLUS, *Cuv*.

The index finger of the fore foot longer than the body "supporting a flying membrane," *Cuv*.

P. longirostris, *Cuv*.

†† *With teeth in the throat*.

8. CLAMYDOSAURUS, *Gray*.

Head and body scaly; tail round scaly; neck with a large plicated frill on each side; femoral pores none.

C. Kingii, *Gray*. New Holland, Capt. P. King; see the inedited Journal of his Voyage. (I am not certain that this genus has palatine teeth.)

9. IGUANA, *Daud*.

Iguanina, *Gray*.

Teeth unequal or compressed, denticulated; head shielded; body scaly; back furnished with a dorsal crest; femoral pores distinct; toes 5-5 simple; tail crested.

I. tuberculata, *Laur*. *Lacerta Iguana*, *Lin*.

10. CYCLURA, *Harlan*.

Head — ? body scaly; back with a dorsal crest; femoral pores distinct; toes 5-5 simple; tail with large whorled pointed scales.

C. carinata, *Harlan*, *Acad. N. S. Phil.* 1824.

11. AMBLYRHYNCHUS, *Bell*.

Head short, truncated, above tuberculated; body scaly; neck back and tail with a spiny crest; toes 5-5 simple, nearly equal; femoral pores distinct; teeth trilobate.

A. cristatus, *Bell*, *Zool. Journ.* ii. t. 12. Mexico.

12. POLYCHRUS, *Cuv*.

Head pyramidical shielded; body scaly, inflatile; not crested; femoral pores distinct; toes 5-5 simple.

P. marmoratus, *Merrem*.

13. ANOLIUS, *Cuv*. *Anolis*, *Merrem*.

Head pyramidical; scaly (or subscutate); body scaly; toes 5-5 very unequal, ends dilated.

This genus may be divided into several subgenera, according to its scales and dorsal crests.

1. *Anolius*. *A. padagricus*, *Daud*. 2..... *Lacerta bulgaris*, *Lin*. 3..... *A. limeatus*, *Daud*. 4. *A. Cuvieri*, *Merrem*; allied to *Basiliscus*?

The fossil genus *Mosasaurus* of Conybeare, according to *Cuvier*, *Oss. Fos.* v. ii. 337, is intermediate between the *Agamina* and the *Iguanina*.

Fam. II. GECKOTIDÆ.

Toes nearly equal, mostly dilated, beneath transversely scaly; body depressed; throat not extensile; teeth conical or three-lobed; none in the palate.

1. PHYLLURUS, *Gray*. *Phyllures*, *Cuv*.

Tail depressed, lanceolate; toes simple, filiform, clawed; body and head scaly.

P. Whitii, *nob*. *Lacerta platyura*, *White's Jour*. *Agama*. *Platyura*, *Merrem*. Perhaps belong to the former family.

2. UROPLATES, *Daud*.

Tail depressed, edged with a membrane; toes semi-palmate, dilated at the ends, scales longitudinally divided, claws sunk in the groove.

U. fimbriatus*. *Stellio fimbriatus*, *Schneid*. ** *Caudiuerbera*, *Laur*. *C. cristatus*. *Lacerta caudiverbera*, *Lin*. * *Gecko tetradatylus*, *Merrem*.

3. PTYODACTYLUS, *Gray*. *Ptyodactyles*, *Cuv*.

Tail round; toes free, dilated at the end, scales longitudinally divided, claws sunk in on the groove; femoral pores none.

P. lobatus. *L. gecko*, *Hasselt*.

4. THECADACTYLUS. *Thecadactyles*, *Cuv*.

Tail round, scaly; toes dilated their whole length, furnished beneath with scales divided by a longitudinal fullow, containing the claws; thumb clawless; thigh poreless. *America*.

T. lævis. *Greco levis*, *Daud*. *Lac. rapicauda*, *Gmelin*.

5. HEMIDACTYLUS. Hemidactyles, Cuv.

Tail round, beneath ringed; toes dilated at the base into an oval disk, formed of two series of scales; claws and femoral pores distinct. *Old Continent*.

**H. tuberculosus*, Gray. Gecko, *Daud.* *H. maculatus*, Gray. Gecko *maculatus*, Merrem. **? *H. triedrus*; *H. aculeatus*; and *H. platyurus*, Gecko, Merrem; belong to this genus.

6. GECKO.

Tail round, scaly; toes dilated their whole length, furnished with transverse series of scales, clawed; thumb clawless; femoral pores distinct.

G. verus, Merrem. *Lacerto gecko*, Lin. *G. vittatus* and *G. Spectator*, Merrem, belong to this genus.

7. TARENTOLA, Gray.

Tail round, scaly; toes dilated their whole length, furnished with transverse series of scales; thumb, index, and little fingers clawless; femoral pores none.

T. stellio. Gecko *stellio*, Merrem. *Lacerta Mauritanica*, Lin.

8. PLATYDACTYLUS, Gray. Platydactyles, Cuv.

Tail round, scaly; toes dilated their whole length, furnished with a series of scales, clawless; femoral pores none; thumb very small. *Isle of France*.

P. Cuvieri, Gray. Gecko *inungius*, Cuv. *P. ocellatus*, Gray. Gecko, Cuv. and *P. squalidus*, Gray. Gecko, *Daud.*

9. PHELSUMA, nob.

Tail round scaly; toes dilated their whole length, furnished with a series of scales, clawless; thumb small; femoral pores distinct. *Isle of France*.

P. crepidianus, Gecko, Merrem. *P. ornatum*, Gray. Brown, back ornamented with six rows of red oval spots. Capt. King.

§ 11. Tongue extensile. Sauræ, Merrem.

Fam. III. TUPINAMBIDÆ.

Tongue deeply two cut, very extensile; teeth only in the jaws; tail mostly laterally compressed; subaquatic (allied to the *Emydosauri*).

1. URANUS, Merrem. Tupinambis, Lam. Monitors, Cuv.

Teeth conical; throat collarless; head and body scaly; belly annulated; toes 5-5; femoral pores none. *The Ancient Continent*.

*Tail rounded. *U. Dracæna*, Merrem. *L. Dracæna*, Lin.

**Tail compressed, beneath rounded. 1. *U. varius*, Merrem. *Lacerta varia*, White, N. H.

2. ADA, Gray. Dragonnes, Cuv.

Head shielded; body scaly, with larger shields on the back; throat with two pleats; toes 5-5; femoral pores distinct; teeth conical; tail compressed at the end. *America.*

A. crocodilinus, Gray. *Teius crocodilinus*, Merrem. *La Dragonne*, Lacepede.

3. TEIUS, Merrem. Les Sauvegardés, Cuv.

Head shielded; body scaly, scale of the abdomen long; throat with two pleats; toes 5-5, or 5-4; femoral pores distinct; teeth denticulated; tail compressed. *America.*

T. bicarinatus, Merrem. *Lacerta*, Lin.

4. AMEIVA, Say.

Head shielded; body scaly; scale of the abdomen broad; throat with two pleats; toes 5-5; femoral pores distinct; teeth denticulated; tail round. *America.*

A. vulgaris. *Lacerta Ameiva*, Gmelin.

Fam. IV. LACERTINIDÆ.

Tongue deeply two cut; very extensible; teeth in the jaws and palate; tail round; neck surrounded with a collar of larger scales; toes 5-5.

1. LACERTA, Lin. Cuv.

Head and abdomen shielded; back scaly; a collar of larger scales round the throat; femoral pores distinct; teeth conical.

L. agilis, Lin.

2. TACHYDROMUS, Oppel. Takydrome, Daud.

Head; back, and abdomen shielded; femoral pores none, with two vesicles at the anus.

T. sexlineatus, Daud, t. 39.

The species of this family require further division and examination: the latter genus is allied in form to the next order, or *Saurophidii*.

Fam. V. CAMELIONIDÆ.

Tongue round, club-shaped, very extensile; teeth three-lobed; tail prehensile; body and head minutely scaly; toes 5-5, united; two and three together, clasping; tympanum covered with the skin.

1. CHAMELION, Lin.

The only genus as yet known in the family.

**C. vulgaris*, Latr. *Lacerta chamæleon*, Lin. *Africa.*

C. calcaratus*, Merrem. *C. bifidus*, Brogniart.

This family is allied to several of the *Stellionidæ*, as *Pneustes*, &c. but its affinity with *Lacertunidæ* is not so apparent.

§ 11. *Body covered with scales or a bony case; legs often*

wanting, or too small for walking; sometimes adapted for swimming.

Order III. SAUROPHIDII, Gray.

Drum of the ear deep seated, partly covered with a posterior transverse valve or by the skin; eyes furnished with longitudinal eyelids; skin covered with uniform imbricate scales, or rings of square plates; feet two, or four small, weak, sometimes wanting; occipital condyle three cut; lungs two unequal, or rarely only one; ossa quadratam one on each side; upper maxilla immoveable.

§ 1. *Body covered with imbricate scales; anus transverse, not terminal; tongue extensile?*

Fam. I. SINCIDÆ, Gray.

Body fusiform; scales uniform, shining; tongue fleshy, slightly extensile; teeth denticulated; drum of the ear deep, partly covered with a transverse posterior valve; legs four weak; toes nearly equal.

1. SINCUS, Daud.

Body fusiform, uniformly scaly; head shielded; feet four; femoral pores none; toes 5-5; teeth in the jaws, and two rows in the palate.

S. officinalis, Schneider. *Lacerta Sincus*, Lin.

2. TILIQUA, Gray.

Body fusiform, uniformly scaly; head shielded; feet four; femoral pores none; toes 5-5; teeth only in the jaws.

T. tuberculatus, Gray. *Lacerta Sincoides*, White.

3. GYMNOPHTALMUS, Merrem.

"Body fusiform; head shielded; feet four; femoral pores . . . ? toes 4-5; teeth conical (only in the jaws?); tongue two-forked; eyelids none," Merrem.

G. quadrilineatus, Merrem. *Lacerta*, Lin.

4. TRACHYDOSAURUS, Gray.

Body fusiform; head shielded; back covered with hard bony scales, like the frontal shields in form; abdomen with thin scales; feet four; toes 5-5; femoral pores none; tail short depressed.

T. rugosus, Gray. New Holland, Capt. P. P. King, RN.

5. CICIGNA, Gray.

Body subfusiform, with a distinct lateral line; head shielded; feet four; femoral pores distinct; toes 5-5 unequal.

C. sepiformis, Gray. *Sincus sepiformis*, Schneider.

Fam. II. ANGUDIDÆ.

Body cylindrical; scales uniform, shining; tongue fleshy

necked; drum of the ear, partly covered with a transverse posterior valve; feet four or two, weak; anus transverse, not terminal.

1. SEPS. *Daud.* *Chamæsaura*, *Schneider*.

Head shielded; legs four; toes 3-3; body without any distinct lateral line; scale uniform.

S. chalcidica, *Merrem*. Grey, with nine grey lines above; tail longer than the body; scales of the head unequal. *Lacerta chalcides*, *Lin.* *C. chalcis*, *Schneid.* *Chalcides Seps*, *Latreille*. *Seps. tridactylus*, *Daud.*

S. equalis, *Gray*. Grey; tail thick, half as long as the body (perhaps injured); scales of the head equal; head and body 30-10; tail 17th of an inch; scale of the head numerous, very nearly equal.

2. TETRADACTYLUS, *Merrem*.

Head shielded; legs four; toes 4-4; body furnished with a distinct lateral line; scale of the back quadrade of the abdomen hexagonal; tongue short entire.

T. Chalcidicus, *Merrem*. *Lacerta tetradactylus*, *Lacep.* *Ann. Mus.*

3. MONODACTYLUS, *Merrem*. *Chamæsaura*, *Schneid.*

Head shielded; body with acute keeled scales; feet four; toe one to each foot; tongue short entire.

M. anguinus, *Merrem*. *Lacerta anguina*, *Lin.* *Chalcides pinnata*, *Laur.* *C. anguinea*, *Laur.*

4. BIPES, *Laup.*

Head shielded; body with imbrical scales; fore feet hid in the skin; hind feet with two toes; tongue short apex necked.

B. anguinus, *Merrem*. *Lacerta bipes*, *Lin.*

Merrem describes from *Gronovius* an animal under the names of *Pygodactylus Gronovii*, but he doubts it being distinct from the former; it is only said to differ in having only one toe to the hind feet. *Cuvier*, *R. A.* describes the former as only having one; on what authority I do not know.

5. PYGOPUS, *Merrem*.

Head shielded; body with a distinct lateral line ("back scaly; abdomen with small shields," *Merrem*); femoral pores distinct; eyes large; drum of the ear large; teeth in the jaws only; tongue short, entire; fore feet hid in the skin; hind feet clawless; rounded, lobed.

P. lepidopus, *Merrem*. *Bipes lepidopus*, *Lacep.* *N. Holland.*

6. PSEUDOPUS, *Merrem*. *Sheltopusik*, *Latreille*.

Head shielded; body furnished with a distinct lateral line; fore feet wanting; hind feet short, two or three lobed; tongue two-forked; teeth blunt only in the jaws.

P. serpentinus, Merren. *Lacerta apus*, Pallas. *Chamaesaura apus*, Schneid. *Bipes sheltopusik*, Bonnat. *Sheltopusik didactylus*, Lat. *Seps. sheltopusik*, Daud. Russia.

7. *OPHIOSAURUS*, Daud. *Hyalinus*, Merrem.

Head shielded; body with a distinct lateral line; feet none, (hid under the skin); drum of the ear apparent; teeth in the jaws and palate.

O. ventralis, Daud. *Anguis*, Lin. *Chamaesaura*, Schneid.

8. *ANGUIS*, Lin. Cuv.

Head shielded; body without any lateral line; feet none (hid under the skin); drum of the ears covered with the skin; teeth only in the jaws.

A. fragilis, Lin.

9. *ACONTIAS*, Cuv. *Eryx*, Daud.

Head shielded; the anterior shield projecting over the mouth, lateral line not distinct; feet none, nor no bones (hid under the skin); drum of the ears covered with the skin; teeth in the jaws and palate, allied to the next family.

*Eyes distinct. *A. Meleagris*, Merrem. *Anguis*, Lin. *Eryx Meleagris*, Daud. **Eyes hid with the skin. *A. cæcus*, Cuv.

§ 2. *Body covered with intricate scales; anus terminal.*

Fam. III. *TYPHLOPIDÆ*, Gray.

Body cylindrical, covered with imbricate scales; feet or legs none; head shielded, muzzle advanced; tongue long, forked extensile; anus terminal; drum of the ear hid under the skin.

1. *TYPHLOPS*, Schneider.

Eyes visible under the skin.

Dr. Wagglar has published a genus under the name of *Stenostoma* which does not appear to differ from this or *Acontias*.

§ 3. *Body covered with rings of square scales.*

Fam. IV. *AMPHISBÆNIDÆ*, Gray.

Body cylindrical, covered with rings of square scales; feet or legs none; head and sometimes the chest shielded; tongue short, cut; teeth conical only in the jaws; anus terminal; drum of the ear hid under the skin.

1. *AMPHISBÆNA*, Lin.

Body covered with rings of uniform sized square scales; head shielded; anus with a series of pores in front.

A. alba, Lin.

2. LEPTOSTERMON, *Wagler*.

Head and chest shielded; body covered with rings of square scales; anus without any pores.

L. microcephalus, *Wagler* 10, t. 26, f. 2.

Fam. V. CHALCIDIDÆ.

Body cylindrical, covered with rings of uniform square scales; legs two or four; head shielded; tongue; teeth; anus transverse submedial; drum of the ear hidden.

1. CHIROTES, *Cuv.* Bipes, *Latr.* Bimanus, *Oppel*.

Legs two, posterior; toes five, clawed.

C. canaliculatus, *Merrem*. *La Cannell*, *Lacep.* *Lacerta lumbricondes*, *Shaw*.

2. CHALCIDES, *Daud.* Chalcis, *Merrem*.

Legs four; toes three, clawed.

C. flavescens, *Bonnat*. *Le chalcide*, *Lacep.* *Chamaesaura Cophias*, *Schneid.* *Chalcis Cophias*, *Merrem*.

3. COPHIAS, *Gray.* Colobus, *Merrem*, not *Illiger*.

Legs four; toe one, clawed.

C. Daudini, *Gray*. *Colobus Daudini*, *Merrem*. *Chalcides Monidactylus*, *Daud.*

Order IV. OPHIDI, *Brogniart.* Serpentes, *Lin.*

The drum of the ear wanting; eyes destitute of the third lid; skin covered with imbricate scale or plates; feet none; chest and blade bones wanting; ribs encircling the body; body of the vertebra uniting by a convex and a concave surface; the os tympanum or pedicel of the lower jaw moveable, and suspended to another similar bone or mastoide, attached to the skull only by ligaments. The branches of the jaw only united together by ligaments, so as to let them separate more or less from each other, and allow the animal to swallow large bodies; the palatine arches movable, armed with sharp recurved teeth.

§ 1. *Upper jaws with fangs only.* Venati.

The jaws are very dilatible; the tongue very extensile; head large behind; the upper maxillary bones small, supported on a long pedicel, and very mobile, furnished with a fang, pieced with a little canal, which give passage to the liquor secreted by a considerable gland under the eye. The fang, when the animal is not irritated, is hid in a plait of the palatine integuments; viviparous.

Fam. I. CROTALIDÆ.

Body and tail covered beneath with simple transverse plates; head usually scaly. America.

*With a Rattle.

1. CROTALUS, Lin.

Head covered with scales ; the muzzle perforated with a small fovea behind each nostril ; tail furnished with a rattling appendix formed by the dry terminal scales. *America.*

C. horidus, Lin.

2. CROTALOPHORUS, Lin. Gray.

Head covered with plates ; muzzle with a small fovea behind each nostril ; tail furnished with a rattling appendix. *America.*

C. miliaris, Lin.

**Without any Rattles.

3. ECHIS, Merrem. Scytales, Latr. not Gronov.

Head covered with scales ; the muzzle not perforated ; tail simple. Allied to Viperadæ, Merrem.

S. zic zac, Daud. *Boa horrata*, Schneider.

4. ACANTHOPIS, Daud. Ophyas, Merrem.

Head with large scales in front ; no pores behind the nostrils ; tail with double plate only beneath the end, which terminate in a very acute point.

A. cerastinus, Daud. *Boa palpebrosa*, Shaw. *Ophryas Acanthopis*, Merrem.

5. LANGAHA, Brug. Langaya, Shaw.

Head covered with large plates ; muzzle long, pointed ; tail surrounded by ring-like plates, except at the end which is scaly.

L. nasuta, Shaw. *L. madagascariensis*, Merrem. Is this genus allied to *Dryinus*?

Fam. II. VIPERIDÆ.

The body scaly ; the abdomen covered with annulated plates ; the tail with divided scale beneath ; anus without spurs.

Head distinct, scaly, behind broad. Viperina.

1. TRIGONOCEPHALUS, Oppel. Lachensis, Daud. Cophias Merrem.

Head triangular with a distinct fovea behind the nostrils ; tail round ; apex simple, conical, sometimes armed.

T. atrox, Merrem.

2. CRASEDOCEPHALUS, Kuhl. Bothrops, Wagler.

Head truncated, with a distinct fovea behind each nostril ; tail round, the plates towards the anus entire, apex simple, conical, plates halved.

C. crotalinus, Kuhl. *Crotalus Mutus*, Lin.

3. COBRA, Laur. Vipera, Laur. Echidna, Merrem, not Geoff.

Head covered with scales without any fovea behind the nostrils ; tail round.

V. Cerastes, Laur. *Coluber Cerastes*, Lin.

5. PELIAS, *Merrem*. Coluber, *Laur*.

Head scaly, with three larger plates, without any fovea behind the nostrils; tail round.

P. Berus, *Merrem*. Coluber Berus, *Lin*.

****Head broad behind, with plates.** Naiina.

5. NAIA, *Laur*.

Head, with nine plates behind, broad; neck very expansile, covering the head like a hood; tail round.

N. tripudians, *Merrem*. Coluber Naja, *Lin*.

*****Head indistinct, with plates; mouth small.** Elaphina.

6. SEPEDON, *Merrem*.

Head with nine plates, without any fovea behind the nostrils; tail round.

S. Hæmachates, *Merrem*. Hæmachate, *Lacep*.

7. ELAPS, *Schneid*.

Head rarely distinct from the body with plates, without any fovea behind the nostrils; tail round.

E. Lenniscatus, *Schneid*. Coluber henniscatus.

The fangs of this genus are said not to be perforated; it is, therefore, closely allied to *Coluberidæ*, and the tribe should be removed to the latter family; I have at present considered it as the passage between the two sections of *Ophidii*.

8. MICRURUS, *Wagler*.

Head indistinct with nine plates, without any fovea behind the nostrils; tail very short, acute; subcaudal plates one and two rowed.

M. spixii, *Wagler*.

9. PLATURUS, *Latr*.

Head with plates; tail compressed, broad two edged, allied to *Hydridæ*.

P. fasciatus, *Latr*. Coluber laticaudatus, *Lin*. Laticauda scutata, *Laur*. Hydrus colubrinus, *Schneid*.

§ 11. Upper jaw with teeth, and with or without fangs; oviparous.

Fam. II. HYDRIDÆ.

Nostrils on the top of the head, operculated; teeth and usually fangs; body covered above with scales, and beneath with scales or narrow plates.

***Tail compressed.** Living in water.

1. AIPYSURUS, *Lacep*.

Head shielded; belly with a row of small shields; tail beneath scaly; neck dilatible.

*A. lævis, *Lacep*. Enhydris lævis, *Merrem*.

2. ENHYDRIS, *Merrem*.

Head shielded; belly with a row of small shields; tail beneath scaly; body keeled; neck simple.

E. spiralis, *Merrem*. *Hydrus spiralis*, *Shaw*.

3. DISTERIA, *Lacep*.

Head shielded; belly with a row of shield apparently formed of two rows of scales soldered together; tail beneath scaly; neck simple.

D. doliata, *Lacep*. N. H. Capt. P. P. King.

4. HYDROPHIS, *Daud*. *Leioselasma*, *Lacep*.

Head shielded; belly and tail, beneath shielded.

H. nigro anctus*, *Daud*. *Russel, Ind. Serp.* t. 6. *Leiose- lasma striata*, *Lacep*. *Ann. Mus.* iv. ***? *H. spiralis*, *nob.* *H. spiralis*, *Shaw*.

5. PELAMIS, *Daud*. *Hydrophis*, *Latr.* and *Daud*.

Head shielded; body and tail entirely scaly.

P. bicolor, *Daud*. *Anguis platyura*, *Lin*.

6. CHERSYDREAS, *Cuv*. *Acrocordus*, *Shaw*.

Head and body entirely covered with small scales; tail com- pressed.

C. granulatus, *Merrem*. *Hydrus*, *Schneider*. *Pelamis*, *Daud*.

***Fangs none; tail round*.

7. ACROCORDUS, *Hornstedt*.

Head and body entirely covered with small scale; tail round; fangs none.

A. Javanicus, *Hornstedt*.

Fam. V. COLUBRIDÆ.

Jaws furnished with teeth, and sometimes fangs; head covered with plates; abdomen covered with broad ring-like plates; tail with two, and sometimes only one series of plates beneath; anus destitute of spurs.

**Mouth with fangs*.

1. TRIMERESURUS, *Lacepede*.

Head narrow, shielded; body with broad smooth scales on the sides, and narrow keeled scales on the back; tail with whole and divided scales.

T. leptcephalus, *Lacepede*, *Ann. Mus.* N. H.

2. BUNGARUS, *Daudin*.

Head blunt with nine plates; body scaly with the dorsal scales larger than the rest. Subcaudal scale one rowed, entire.

B. cæruleus, *Daud*. *Boa lineata*, *Shaw*.

3. OPHIS, Wagler.

Head with small imperforate teeth placed before but not behind the fangs; abdominal plates broad, the subcaudal plates two rowed.

O. Merremi, Wagler.

****Mouth without fangs; without any fovea before the eyes.**

4. COLUBER, Lin. Natrix, Laur. Coronella, Laur.

Head with eight or nine plates; nostril simple, solid, convex; mouth large, bent down at the angles; tail beneath with all the lower divided; scales of the back equal.

*C. albus, Lin. C. brachyurus, Shaw. ****Coronella, Laur.**
C. cervina, Laur. Coluber stolatus, Lin. *****Homalopsis, Kuhl.** H. monilis, Coluber, Lin.

5. DIPSAS, Laur. not Leach. Bungarus, Oppel. not Daud.

Head large, oblong, with eight or nine plates; rostral scale, simple, solid, convex; mouth large, angle bent down; shield beneath the tail all divided; scales of the centre of the back hexangular, larger than those of the sides.

*D. indica, Laur. Coluber bucephalus, Shaw. *Bungarus, Catesbeii, Coluber, Catesbeii, Merrem.

6. AHÆTULLA, Gray.

Head distinct, oblong, with nine plates, before rounded very blunt, depressed; rostral plate single, convex, with a concave arch on the labial margin; mouth large, angles recurved; subcaudal shields two rows; scales of the sides linear, adpressed, those on the centre of the back, forming the dorsal series larger, triangular; body long, slender.

A. decorus, nob. Coluber decorus, Shaw. A. cærulescens. C. cærulescens, Lin. A. Sagitalis, Coluber Sagitalis, E. W. Gray's MSS. C. sagittatus, Shaw. A. punctulatus, Gray, N. Holland. Capt. P. P. King.

7. MACROSOMA, Leach, without character.

Head long with nine plates; rostral plate single, convex, with a concave excavation on the labial margin; mouth large, angle bent down; shield beneath the tail all two rowed; scales of the back uniform; body long, slender.

M. elegans, Leach. Bowdich Ashantee, Coluber elegans, Shaw.

8. PASSERITA, Gray. Dryinus, Merrem, not Fabr. Natrix, Laur.

Head with nine plates; snout moveable, acute, with two scales in front, one before the other; plates under the tail rowed; fangs distinct; body very thin; scales like the genus *Ahetulla*; tail very long.

D. mysterizans, Merrem. Coluber mysterizans, Lin.

9. HURRIA, *Daud.*

Head with nine plates; scale of the body uniform; plate under the tail entire and divided.

*Head narrow, indistinct. *H. lineata*, *Daud.* *Hurriah*, *Russel.*

**Head very broad. *Ibiba*, *Gray.* *I. irregularis.* *Hurria pseudo-boa*, *Daud.*

10. SCYTALE, *Gronovius.*

Head with nine plates; scale of the body uniform; plates under the tail all entire.

*Head distinct, blunt. *S. coronata*, *Merrem.* **Head indistinct. *S. anguiformis*, *Merrem.* *Anguis scutatus*, *Laur.*

11. ERPETON, *Lacep.* *Rhinopirus*, *Merrem.*

Head with large plates, with two soft scaly appendices at the end of the nose; abdomen largely shielded; tail above and below scaly.

E. tentaculatus, *Lacep.* *Rhinopirus.* *Erpeton*, *Merrem.*

Fam. V. BOIDÆ.

Jaws furnished with teeth, and sometimes fangs; head scaly, or with a few plates in front; abdomen and tail covered beneath with narrow short plates; anus furnished with spurs.

*Head distinct. *Boia.*

1. *Boa*, *Lin.* *Cenchris*, *Lin.* *Constrictor*, *Laur.*

Head distinct, scaly; mouth and tail above scaly, below broadly shielded; tail long, round, tapering.

B. Constrictor, *Lin.*

2. *CENCHRIS*, *Lin.* *Boa*, *Laur.* *Xyphosoma*, *Wagler.*

Head distinct; shielded over the nose; trunk and tail above scaly, below broadly shielded; tail round, tapering; body compressed, subfusiform.

C. murina, *Boa Cenchria*, *Lin.* *Boa Cenchris*, *Gmelin.*

3. *PYTHON*, *Daud.*

Head distinct, scaly, or subshielded over the nose; trunk above scaly, beneath broadly shielded; tail round, beneath with divided, and sometimes a few entire plates.

P. tigris, *Daud.* *Coluber Nepa*, *Laur.* *C. boæformis*, *Shaw.*

Obs. Some of the species of this genus are somewhat allied to *Hydridæ*.

**Head indistinct; body cylindrical; mouth small. *Totricina.*

4. *TORQUATRIX*, *Haw.* *Tortrix*, *Oppel.* not *Lin.*

Head not distinct; from the trunk mouth small; body above scaly, below covered with small hexangular shields; tail blunt, round, scales simple and divided; mouth small; tongue short, cut.

T. Scytale, *Gray.* *Anguis Scytale*, *Lin.* *A. Corallina*, *Laur.*
New Series, VOL. X. P

5. *ERYX*, Daud. *Erix*, Cuv.

Head distinct from the trunk; body covered above with hexagonal scales, below with small narrow subquadrate shields; tail short, blunt, with one row of scales beneath.

E. turicus, Daud.

6. *CLOTHONIA*, Daud.

Head distinct from the trunk; body covered above with hexagonal scales, below with small narrow subquadrangular shields; tail short, blunt, with simple and double shields.

C. anguiformis, Daud.

Order V. *CHELONII*, Latreille. Chelonien, Brogniart. Testudinata, Oppell.

Body short, inclosed between two horizontal shields, with the head, neck, tail, and four legs, passing out between; mouth toothless, often covered with a horny bill; tongue short.

The upper shield, or *Carapace*, is formed by the ribs (eight pair) enlarged and united together, and to the annular part of the dorsal vertebra, by toothed sutures, so as to be immovable; the lower shield, or *plastron*, is formed of the pieces which represent the chest bone (usually nine), and a circle of bones analogous to the sternal cartilages of quadrupeds. The vertebra of the neck and tail alone are movable. The two bony envelopes are immediately covered with the skin or scales, and surround the muscles of the extremities.

§ 1. *Feet and head retractile into the carapace; carapace solid, covered with horny scales.* Cryptopodi.

Fam. I. TESTUDINIDÆ.

Body covered with horny shields; carapace convex solid; sternum, attached by the greater part of its sides to the carapace; legs horny; feet club shaped; toes indistinct, bluntly clawed; dorsal plates, 13; sternal, 12. Terrestrial.

TESTUDO, Dumaril. Chersini, Merrem.

T. græca, Lin.

Fam. II. EMYDIDÆ, Bell MSS.

Body covered with horny shields; carapace depressed; sternum attached to the carapace by a small surface; lips horny or soft; feet digitate; fingers distinct; claws sharp; fluviatile or lacustral.

**Beak horny; sternum entire.* Emydina.

1. *EMYS*, Brogn.

Toes 5-4, or 4-4; depressed elongated, palmated; sternum immovable.

*Sternum very narrow. *Rapara*. *R. serpentina*, Gray.

Testudo, *Lin.* **Sternum 11 or 12 scaled, broad. *E. centrata*, *Merrem.* *T. concentrica*, *Shaw.* ***Toes 4-4; sternum 13 scaled. *E. longicolis*, *Gray.* Testudo, *Shaw.*

The plastron of the last subgenus is covered with 13 scales; that is six pair marginal, and an unequal sided hexangular, one in the middle of the anterior lobe. I have only observed an approximating distribution of the plates in a species of *strenotherus*; all the other *Emyda* that I have seen have had only the six pair of marginal plates, the first pair sometimes soldered so as to form only 11 plates.

Beak horny; sternum transversely sutured. Terrapenina.

2. TERRAPHENE, *Merrem.* Cistula, *Say.* Tortuis a boit, *Cuvier.*

Body convex; sternum of 11 or 12 plates, moveable; the two central plates united to the carapace by ligament; the posterior lobe broad fixed, the anterior one, of five or six plates, separated by a transverse ligamentous hinge.

T. clausa, *Merrem.* Testudo, *Gmelin.*

This genus forms the pass between the Emydæ and the Testudinidæ, for it has the convex form and solid shell of the latter, and the feet and general characters of the former. It is also intermediate in point of habits, for it is often found in hot dry places.

Mr. Bell observes, that Testudo Europea is a species of this genus; if so the name of it should be changed, as that was certainly the *Emys* of the ancients.

3. STERNOTHERUS, *Bell, MSS.* Tortues a boit ***Cuv.*

Body depressed; sternum of 11 or 12 plates; the central part of two plates united to the carapace by two long processes fixed; the anterior lobe moveable, separated by a transverse ligamentous hinge; the posterior lobe narrow, fixed.

S. odorata, *Gray.* Testudo, *Latr.* *S. pensylvanica*, Testudo, *Gmelin.*

Obs. Cuvier describes the anterior and posterior lobes of the sternum of these species to be moveable; but the hinder was fixed on the specimens which I have examined, which were all dry.

4. KINOSTERNOM, *Spir.*

Body depressed; sternum central part fixed; anterior and posterior lobes moveable; throat bearded.

K. longicaudatum.

**Beak soft.* Chelidina.

5. CHELYS, *Dumeril.* Matamata, *Merrem.*

Claws 5-4; body depressed; lips soft; nose produced.

C. fimbriata. Testudo matamata, Brug.

This genus is allied by its soft lips to the next family.

§ 11. Feet and head not or only partly retractile into the carapace; carapace mostly soft. Gymnopodi.

Fam. III. TRIONICIDÆ.

Body covered with a coriaceous skin; lips fleshy; feet digitate palmate; five toed, three clawed. Fluvatile.

1. TRIONIX, Geoff.

Nose produced.

T. ferox, Geoff. Testudo ferox, Pennant.

Fam. IV. SPHARGIDÆ.

Body covered with a coriaceous skin; lips horny; feet fin-shaped. Marine.

1. SPHARGIS, Merrem

S. mercurialis, Merrem. Testudo coriacea, Lin. Luth, Daubenton.

Fam. V. CHELONIDÆ.

Body covered with horny shields; lips horny; feet fin-shaped. Marine.

1. CHELONIA, Brogn. Caretta, Merrem.

C. Mydas. Testudo Mydas, Lin. Caretta cephalo, Merrem.

A Table of the Affinity of the Orders of Reptiles.

Normal Groups.

Annectant Groups.

Order I.—Sauri.

1. Stellionidæ.

3. Lacertinidæ.

2. Geckotidæ.

4. Chamælionidæ.

5. Tupinambidæ.

Order II.—Emydosauri.

1. Crocodilidæ.

3. Plesiosauridæ.

2. _____?

4. Icthosauridæ

5. _____?

Order III.—Chelonii.

1. Testudinidæ.

3. Trioncidæ.

2. Emydidæ.

4. Sphargidæ.

5. Carettidæ.

Order IV.—Ophidii.

1. Crotalidæ.

3. Hydridæ.

2. Viperidæ.

4. Colubridæ.

5. Boidæ.

Normal Groups.

Annectant Groups.

Order V.—*Saurophidii*.1. *Sincidæ*.3. *Typhlopsidæ*.2. *Anguidæ*.4. *Amphisbænidæ*.5. *Chalcidæ*.

The last family agrees with some of the *Sauri*, in having four legs and plates.

The first of these columns represents the natural groups which have the characters of the order in the most perfect state, and consequently are not directly allied to the other order, except through the medium of the annectant families, which are the first (No. 3) and last (No. 5) of the right hand column which are themselves united together by the central (No. 4) family of each group.

The two fossil families may be the type of *Emydosauri*, but the group is so imperfectly known at present, that it is impossible to determine it.

Class IV.—*AMPHIBIA*.

Body with a soft naked skin; heart with one auricle and one ventricle; respiring by lungs and gill, and often by lungs only when perfect; claws none; head articulation to the vertebra by two condyles. Blood cold; windpipe membranaceous; ribs none, or very short and imperfect; egg skin membranaceous. Animal often changes its form and habit during growth; egg fecundated after they are deposited, hatched in the water where they are laid. They do not only differ from the perfect animal by having gills, but they often change their external and internal conformation, and generally gain legs.

This class contains so few genera that it is scarcely necessary to divide it into orders. I shall, therefore, for the present merely divide it into families, which may be considered as either,

§ 1. *Undergoing transformation; gills deciduous; eyelids three distinct; spiracule none.* Mutabilia, Gray. The larva elongated, respiring by deciduous gills.

Order 1. *ANOURA*, Dumeril. Salientia, Laur. Batrachia, Blainv.

Fam. I. *RANADÆ*.

Body short, thick; feet four, long; tail none; drum of the ear apparent; sternum and clavicles distinct. Larva elongate tailed, apodous; gills turfted on four cartilaginous support, covered by the skin, pierced with one or two lateral spiracules.

†*Skin shining.*

**Hyliæ*

HYLA, Laur. Calamita, Schneid.

Body slender; skin mostly smooth; toes all dilated at the end, the fourth one of the hind feet, of a moderate length.

H. tinctoria*; *Laur.* *Rana tinctoria*, *Shaw.* *C. intermixtus*, *Merrem.* ****Calamita*, hind feet semipalmate. *H. arboreus*, *Schneid.* *Rana arboreus*, *Lin.* *****Boana*, *Gray.* Granulated feet palmate, β maxima. *Rana Boans*, *Lin.*

***Ranina.*

RANA, *Lin. Laur.* *Ranaria*, *Raff.*

Body subventricose; skin smooth; back angular; paratoid glands none externally; toes attenuated, hind ones palmate, the fourth of the hind foot very long; teeth in the jaws and palate.

R. temporaria, *Lin.*

MEGOPHRYS, *Kuhl.*

Body ventricose; skin smooth; back convex; toes attenuated, the hinder ones semipalmate; head angular, with a conical horn over each eye. The Old Continent.

M. Kuhlii, *nob.* Java?

CERATOPHRYS, *Desm.*

Body ventricose; skin rough; back convex; toes attenuated, the hinder ones semipalmate, nearly equal; head angular, with a conical horn over each eye. America.

C. Sebæ, *nob.* *Rana cornuta*, *Lin.*

††*Skin dull, warty.*

****Bombinatorina.*

BREVICEPS, *Merrem.*

Body ventricose; back convex; skin warty; no external paratoids; toes attenuated; the head blunt, confluent; mouth small, not extending beyond the front angle of the eye; teeth in the jaws.

B. gibbosus, *Merrem.* *Rana gibbosa*, *Lin.*

BOMBINATOR, *Merrem.*

Body ovate; back convex; skin warty; no external paratoids; toes attenuated, the fourth of the hind foot longest; head rounded, confluent; mouth large, extended to the back of the eyes; teeth none.

B. ventricosa. *Rana ventricosa*, *Lin.*

*****Piprina.*

PIPRA, *Laur.*

Body ovate, depressed; back flat; skin warty; no external paratoids; toes attenuated; head triangular, confounded with the body; mouth large; the young are hatched on the back of their mother.

P. Tedo, *Merrem.* *Rana pipa*, *Lin.*

******Bufonina.*

BUFO, *Laur.*

Body ovate; back convex; skin warty; paratoids porous,

distinct; toes attenuated; head rounded, confounded with the body; mouth toothless.

**B. vulgaris*, *Laur.* *Rana Bufo*, *Lin.* *O. nasutus*, *Spir.*

***Head beaked.* *Oxyrhychus*, *Wagler.*

My late friend Dr. Kuhl has noticed another genus of this family under the name of *Occidogyna*, but he only observes that the body is regularly oval, and that the hind legs are peculiar and intermediate between the frogs and toads.

Order 2. Urodela, *Dum.* Caudata, *Oppell.* Pseudosaurii, *Blainv.*

Fam. II. SALAMANDRIDÆ.

Body subcylindrical, long; feet four, short; tail distinct; sternum and clavicles none. Larva with four feet; branchia turfted, three on each side exposed, supported by cartilaginous rings, covered by a membranaceous operculum.

1. SALAMANDRA, *Laur.*

Tail round; paratoids porous; toes 4-5.

S. maculosa, *Laur.* *Lacerta salamandra*, *Lin.*

2. TRITON, *Laur.* not *De Montf.* *Triturus*, *Rafinesque.* *Molge*, *Merrem.*

Tail compressed; paratoids none; toes 4-5.

The axolotle appears to be the larva of an animal of this genus, although Sir E. Home has discovered that it contains eggs, for, according to Baron Cuvier, they are to be found in the tadpoles. The *Sirex opercularis* of *Beauvois* (*Phil. Trans. Philad.*) and the *Proteus New Cæsariensis* of *Green* (*Jour. Acad. Nat. Sci. Phil.*) appear also to be larvæ. The *Trois doigts* of *Lacepede* is said to be a true lizard. *Latreille* formed the genus *Ichytheosaurus* of the larvæ of this genus.

§ 11. Not undergoing any transformation; gill none or permanent; eyelids two; spiracules distinct. *Amphipneusta.*

Order 3.—Sirenes, *Lin.*

Fam. III. SIRENIDÆ.

Branchia persistent. Skull formed of several distinct bones; body compressed; legs two or four.

**Gill flaps distinct.* *Proteina.*

HYPOCHTHON, *Merrem.* *Proteus Laur.* not *Muller.*

Legs four; toes 3-2; branchia three on each side, fringed; body subdepressed; tail compressed, finned; muzzle depressed, long; jaws with teeth.

H. Laurentii, *Merrem.* *Proteus anguinus*, *Laur. rept.* 37, t. 4, f. 3. *Cuvier*, *Humboldt*, *Obs. Zool.* i. 119. *Rusconi*, *Anat.*

Laurentii included in his genus the Axolotle, and the larva of a species of Triton.

MENOBANCHUS, *Harlan*. *Necturus*, *Raffinesque*.

Legs four; toes 4-4; branchia three on each side; body sub-depressed; tail compressed; muzzle truncated, depressed; two rows of teeth in the upper and one in the lower jaw.

M. Sayii, *nob.* Above brown, with irregular black spots, and a black band arising from the nostrils passing through the eye, and dilated on the sides, becoming obsolete at the tail.

Triton lateralis, *Say*, *James*, *Travels*, i. 303; and *Anatomy*, *Jour. of Nat. Sci. Phil.* iii; *Siren*, *Barton*; *Proteus*, *Mitchell*, *Silliman's Journal*, iv.; *Siren lacertina*, *Schneid. H. Amph.* i. 48. *Le Comte*, l. c. 57; *Menobanchus lateralis*, *Harlan Acad. N. S. Phil.* iv.; *Necturus maculatus*, *Raffinesque*, *Ann. Nat.?* *Icon*, *Acad. Nat. Sci. Phil.* iv. t. xxi.

Inhabit. Ohio, North America.

Mr. Say, in his description of this animal, pointed out the necessity of, and the character by, which this animal should be distinguished from *Triton* and *Proteus*.

M. tetradactylus. Two rows of teeth in each jaw, a duplication of skin forming a collar just before the gills.

Le tetradactyle, *Lacepede*, *Ann. Mus.* x. *M. tetradactylus*, *Harlan*, l. c.

This animal is considered by Mr. Say to be a larva.

***Operculum none.* *Serenina*.

SIREN, *Lin.*

Legs two, anterior; toes five; branchiæ three on each side, tripinnatifid; operculum none; spiracles three; body long, subcylindrical; tail compressed; head rounded; teeth in the jaws and palate?

S. lacertina, *Lin.* *Muraena Siren*, *Gmelin*, *S. N.* i. 1136; *Mud. Iguana*, *Ellis*, *Phil. Trans.* t. vi. 189. *Siren*, *Pennant*, *Arctic Zool.* ii. 335.? *Siren*, *Camper. in Berl. Naturf.* viii. 482. *Cuv. Humb. Obs. Zool.* i. 98. *Anat.*

PSEUDOBANCHUS.

"Legs two, anterior; toes three; body subcylindrical; tail compressed; spiracles three, furnished with a fleshy trilobate covering (branchia), the lobes entire and naked; teeth none."

P. striata, *Siren striata*, *Le Comte*, *Ann. Lyceum Nat. Hist. New York*, i. 54, t. 4.

Mr. Le Comte has the idea that neither the *Siren* nor this animal breathe by the lateral appendages usually called gills, which he thence considers as the covers of the spiracles.

Fam. IV. AMPHIUMIDÆ.

Branchia none; skull formed of a solid bony substance; gill flaps open during life; body subcylindrical; tail compressed; legs four.

1. ABRANCHUS, *Harlan*. Protonopsis, *Barton*?

Legs four, strong; toes 4-5; the outer edge of the feet fringed; the outer toes of the hind feet palmated.

A. alleganensis, *Harlan Journal Nat. Sci. Phil.* iv. Salamandra gigantea, *Barton's Account of Siren Lacertina*, p. 28. S. alleganensis, *Latr. Rept.* ii. 253. Molge gigantea, *Merrem*, 187, not Larva. Hell bender, *Ohio*.

Inhab. Lakes of North America.

2. AMPHIUMA, *Garden*. Chrysodonta, *Mitchel*?

Legs four, boneless; toes 2-2, outer longest; body subcylindrical; tail end compressed; teeth one row in each jaw, and two in the palate.

Amphiuma Means, *Garden*. Letter to Ellis, in the *Correspondence of Linnæus*, i. 399, to Linnæus, l. c. i. 333. Sireni similis, *Linnæus's Letter to Garden*. Siren Lacertina, *Garden*, *Amer. Acad.*—R. Harlan, *Jour. Acad. N. S. Phil.* vii. 54. (Anatomy.) *Phil. Mag.* 1824. Chrysodonta larvæ formis, *N. Y. Medical Reporter*, i. 529. Inhab. North America.

Order 4. Apoda, *Merrem*. Pseudophidii, *Blain*.

Fam. V. CÆCILIADÆ.

Branchia none; head depressed, formed of a solid bony substance; teeth in the jaws and palate; legs none; body cylindrical; tail short, blunt; anus round, nearly terminal.

1. CÆCILIA, *Lin*.

C. tentaculata, *Lin*. Ibiare, *Lacepede*.

So very little is known of this curious class of animals, that it is impossible to say any thing with respect to the connexion which exists between the families or orders; but that such an affinity does exist must be obvious to every one who considers the difficulty of distinguishing them. I have attempted to bring together all the species that have been described of the Siirenidæ and Amphisumidæ, as *Merrem* (the last work published on the species of Amphibia), describes only two of these animals. It is to be hoped that Mr. Say and Dr. Harlan will continue their researches, that have so much illustrated a group, which has particularly attracted the attention of Ellis, Garden, Linnæus, Cuvier, Schreiber, Rusconi, and Sir Everard Home.



Gray, John Edward. 1825. "A Synopsis of the genera of Reptiles and Amphibia, with a description of some new species." *Annals of Philosophy* n.s. v. 10 (1825), 193–217.

View This Item Online: <https://www.biodiversitylibrary.org/item/20125>

Permalink: <https://www.biodiversitylibrary.org/partpdf/218438>

Holding Institution

Natural History Museum Library, London

Sponsored by

Natural History Museum Library, London

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.