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Zool.

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A
MEMOIR
CONCERNING
AN ANIMAL OF THE CLASS
OF
REPTILIA, OR AMPHIBIA,

WHICH IS KNOWN, IN THE UNITED-STATES, BY THE NAMES OF

ALLIGATOR
AND
HELL-BENDER.

BY PROFESSOR BARTON.

PHILADELPHIA:
PRINTED FOR THE AUTHOR.
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1812.

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MEMORANDUM.

SOME of the first pages of this memoir were actually printed off in 1812, as is indicated by the title-page. The essay was then laid aside, principally because the original materials (letters from my correspondents,—memorandums, notices, &c., written upon loose scraps of paper, in my usual way) were mislaid, and could not, without some trouble, be discovered.

The memoir is now finished, for distribution among my friends, especially my *foreign* correspondents. While I venture to flatter myself, that the perusal of this little essay, and especially the inspection of the accompanying Plate, will be somewhat gratifying to the lovers of zoological science, it is my request, that those to whom I may present it, will not, on any account, permit the *entire* essay to be reprinted, or published. I am sensible, that it is too imperfect to meet the *public* eye.

This essay will soon be followed by others, relative to other American animals; especially by one on the species of a genus, belonging to the class

of mammalia, which I have called **TUSA**:—and I am proceeding with my long-promised works, illustrated with many elegant coloured plates, on the **Anatomy and Physiology of the RATTLE-SNAKE**, and on the **Structure, Generation, &c., of the OPOSSUM**.

BENJAMIN SMITH BARTON, M. D.

Philadelphia, August 5, 1814.

THE amphibious animal which is the subject of the following pages, has been incidentally mentioned by several writers*, but has not, so far as I know, been particularly described by any of them. Of its manners and habits little, and of its structure, nothing has been said. Yet this animal, which I have elsewhere denominated "Salamandra Horrida", is one of the largest known species of the natural family to which it belongs, and is not one of the least interesting animals in the great class of *Reptilia*: a class the genera and species of which are extremely numerous in America.

Having had an opportunity of seeing several specimens of this reptile, and of collecting, through the kindness of my correspondents, some interesting circumstances in its history, I have thought proper to draw up the following account of the animal, fully aware of its imperfections, yet willingly indulging a hope, that the account may not prove unacceptable to those naturalists and others, into whose hands it may fall. The anatomical structure of the animal, together with additional physiological facts, may form the subject of a *second* memoir.

NAMES.

This reptile is known in various parts of North-America, and particularly perhaps in the United-States, by the name of Alligator. This, I think, is its most common appellation in the states of New-York, Pennsylvania, and Virginia: and, accordingly, when the people in the western parts of these states, tell us, that the "Alligator" does certainly inhabit the

* See Note A.

waters of their country, and that it is even a common animal, we may be assured, that they allude to no other animal than to that (or to a species of the *same genus*), which is the subject of this memoir. This, too, seems to be the animal to which Captain Carver refers, in the following words, when speaking of the Winnebago-lake. " At its south-west corner a river falls into it that takes its rise near some of the northern branches of the Illinois-River. This I called the Crocodile-River, in consequence of a story that prevails among the Indians, of their having destroyed, in some part of it, an animal, which from their description must be a crocodile or an alligator*." Our animal is, unquestionably, found as far north as the Winnebago-lake, and is even common in the countries adjacent to this lake. But, I believe, it is a fact, that no genuine crocodilus has been found, in a *living* state, in these higher latitudes of North-America†.

I must not omit to mention a very singular name by which this animal is known, in some parts of the United-States. By the negroes in the western parts of Virginia, on the waters of Holsten, where it is common, the reptile is often called Hell-Bender, by reason of its slow twisted motions, when moving in the waters, which the slaves compare to the tortuous pangs of the damned in hell. Is it beneath the dignity of natural history to notice such vulgar names, when they serve to throw any light upon the habits or economy of an animal? And does not the moralist perceive, that there is something melancholy and distressing in the condition and reflections of those who impose such names?

I have collected some of the Indian names of this animal. It is the *Tweeg* of the Delawares. I believe this name, the precise import of which I do not know, has been adopted by the white inhabitants in certain parts of North-America.

* Travels, &c. page 34. Dublin edition. 1779.

† See Note B.

The *Minsi*, or *Monsees*, who speak a very close dialect of the Delaware, call the animal *Twechk*. With the names of many other Indian tribes, within whose territorial limits, this reptile is a very common animal, I am, as yet, not at all, or but little, acquainted*.

DESCRIPTION.

The annexed figures, though by no means highly finished, will certainly convey a good general idea of the form, and appearance, and proportions of the *Tweeg*. But a description of the animal will be expected, and is now offered to the reader. My description has been made from a very large and perfect specimen, which I received in June 1806, from the river Ohio, at the distance of about sixty miles below Pittsburgh.

The whole length of the animal, measured along the course of its head, back, &c., from the truncated part of the head, to the extremity of the tail, is exactly seventeen inches. From the anterior part of the anus, to the end of the tail, a little more than six inches and a quarter. From the same portion of the anus to a line corresponding to the anterior origin of the fore-feet, seven inches and a quarter. From the same line to the anterior truncated part of the head, three inches and three quarters. The greatest diameter of the head, measured above, was two inches and three quarters.

The shape of the head, viewed above, is somewhat oval, very broad, and flat. Its anterior part, between and including the nostrils, quite flat as though truncated. The anterior part of the head, about the eyes and nostrils, and somewhat further back, has a muricated or papillous appearance.

The eyes are small, rather obscure, and would lead one to suppose, that the reptile sees imperfectly. The nostrils are small, but very patulous, or open.

* See Note C.

The posterior ends of the mouth extend some distance beyond the eyes. This cavity is very large, forming at least the half of a circle.

The edges of the mouth, above and below, are armed with a great number of very small, but very sharp teeth. In the upper-jaw there are two distinct bands of teeth: in the under-jaw only one.

The tongue is short, and broad, and so attached to the lower-jaw as to admit of but little motion.

About midway between the posterior angle of the mouth, and the anterior origin of the fore-leg, but nearer to the latter, we observe, on each side, a very evident opening, which seems to correspond to the opercular opening of the Siren. This opening, however, is not, as in the Siren, supplied with any thing like the pectinated or plumous Gills. But on the anterior part of each opening, there is an evident production of the integuments, which seems to be capable of covering the whole of the orifice. I wish it now to be recollected that I am describing the animal from a specimen preserved in spirits. I have no doubt, however, that the production of which I speak is quite as distinct and prominent (probably more so) in the recent as in the preserved specimen. For more than one of my correspondents, who have seen many living individuals of the Tweeg, have assured me, that the reptile is furnished with two *ears*. The supposed ears can be nothing but the opercular productions.

The Tweeg has four legs. The anterior legs are compressed. Immediately after its origin, the leg is much the widest, where there is, especially upon the upper part, a considerable membranous like production. The structure of the fore-legs plainly points out the animal as destined to swim. Each foot has four toes; the exterior or upper toe is the shortest.

The hind are more robust than the fore legs: they have five toes, the two exterior or upper of which are the broadest. The

exterior or upper toe of all is formed, on its upper part, by a membranous ridge, proceeding from the body.*

The toes, both upon the fore and the hind legs, are as in the Siren, mutic, but do exhibit the *appearance* of obtuse nails, of a brownish colour.

The anterior and the posterior legs are nearly of the same length. Length of the hind-leg from its origin to the end of the longest toe, the leg being extended, two inches and one eighth of an inch. The posterior legs are constructed more like fins (*pedes subpinniformes*) than the anterior.

The anus, or vulva, is a very distinct longitudinal rima: it is surrounded by a callous, beeded-like ring, and is situated a little behind the posterior margins of the hind-legs.

General colour of the animal nearly alike: a kind of bluish slate, with something of a copperish hue. The under side of the head, the neck, the belly and the tail, somewhat lighter.

The whole body is alipedote, or destitute of scales, but is much disposed, on the sides, to a wrinkled appearance. I am assured, that this wrinkled appearance, which is very conspicuous in the drawing, is natural, and not, as might be supposed, the effect of the spiritous menstruum, in which the animal was preserved.

The whole under side of the body, between the fore and the hind legs, is very smooth. The throat and neck are also very smooth.

Nearly opposite to the commencement of the hind-legs, but somewhat more forward, there begins a ridge, which is very distinctly represented in the drawing, that forms the upper or sharp

* A correspondent speaking of the living animal, says it has a "rim, or wing, of soft, fleshy skin to its legs, which serves it in swimming."

edge of the tail. From the origin of this ridge to the extremity of the tail, is seven inches. The greatest diameter of the tail, including its membranous production, is one inch and a half.

The posterior part of the tail is very much compressed laterally, is very thin, and terminates in a sharp, somewhat triangular point.

As far as can be judged from the state of the specimen which I examined, the greatest diameter of the animal's body is about midway between the fore and the hind legs. The widest part of the body is somewhat wider than the widest part of the head. In all probability, the body is capable of being much distended by food.

The Tweeg, like many of the true salamanders,* secretes from different parts of its body, a lacteous or milky juice. This fluid is served at the pleasure of the animal, or may be made to escape from it by pressure under the hand. The head is said to secrete an unusual portion of this fluid.

No experiments, that I know of, have yet been made, to determine the precise nature, or effect upon other animals, of this milky fluid. This inquiry will, I flatter myself, occupy the attention of some intelligent naturalist, at a future period. We venture, in the mean while, to predict, that it is not an inert fluid. Perhaps, it will prove to be nearly allied to the lacteous fluid of our *Lacerta (salamandra) subviolacea*.

GENUS AND AFFINITIES.

A more difficult task now remains: to determine the genus to which our reptile belongs, and to point out its affinities to

* See my account of the *Lacerta (salamandra) subviolacea*, in the Transactions of the American Philosophical Society, vol. 6. Part i.

† See Note D.

other animals in the great class of reptiles, and in the extensive family of the lacertous animals.

Had Linnæus been acquainted with the Tweeg, he would have had no hesitation in considering it as a species of his great genus of *Lacerta*, the following short and eminently imperfect character of which he has given in the later editions of the *Systema Naturæ*.

LACERTA.—*Corpus tetrapodum, caudatum, nudum**.

Nor is it difficult to see what precise position among the Lizards, the Swedish naturalist would have assigned to our animal. He would have placed it in his fifth section of this genus, which is thus characterised: *Palmis tetradactylis; Corpore alepidoto, nudo*.

This section embraces the lizards now denominated the salamanders.

The Tweeg is, undoubtedly, very nearly allied to the salamanders, if indeed it be not one of them, which are thus *generically* characterised by a late celebrated writer on the animals called Amphibia.

“SALAMANDRA.—Lacertarum genus i.

“*Corpore nudo, poroso, salivam seu mucum exudante, capite depresso, ranino, cauda plerumque ancipite, tympani defectu et unguium facile a reliquis distinguitur. Larva primum, crista et branchiis extus propendentibus aucta in aquis vivit; quædam etiam in siccum egrediuntur species†.*”

* Dr. Shaw (*General Zoology*, vol. 3. part i. page 183,) retains, without any alteration or addition, this insufficient character of the lizards. Gmelin had previously added to the Linnæan character, the words, “pedibus æqualibus.”

† *Historiæ Amphibiorum Naturalis et Literariæ Fasciculus Primus. Autor Ioan. Schneider, Saxo, Jenæ. 1790.*

The body of the Tweeg, I have already said, is naked and porous, and exudes a glutinous or viscous matter. The head is depressed, not unlike that of a frog or toad, and the tail is ancipital, flattened laterally. I can observe nothing like the tympanum, so conspicuous in the family of the Ranae, and the feet are destitute of *true* ungues, or nails.

So far our animal agrees with the salamander: but I have not had an opportunity of seeing any of the young animals, in the larva state, and cannot therefore, determine, whether, like the true salamanders, it is furnished with branchiae, and perhaps with a dorsal crest. It is highly probable that it is: and that those appendages, at least the *appendices fimbriatae*, in the progress of the animal's growth to a more adult state, drop off, or disappear; as is known to be the case in regard to some of the salamanders. But this point must be determined by future and much more accurate investigators.

In the meanwhile, it may be proper to observe, that the learned writer whose character of the genus salamander I have quoted, is not perfectly correct in all his views of the subject. This I have already, in part, shown, in my memoir concerning the Siren, to which I refer my readers. I will only, at present, observe, that falling into a capital error concerning the permanency of the gills in the Sirens, or Protei, or Tritons, he has, in my opinion, very unhappily associated together, under the same genus, these latter animals with the true salamanders.

It is probable, that naturalists will be far from uniting in sentiment on the subject of our animal. Some of them, from the facts already in our possession, will not hesitate to deem it, a true salamander; while others will be willing to detach it from the salamanders, and to consider it as a new genus. This, I confess, is rather my own view of the subject; and the more so, because the salamanders being now a numerous family of animals, to which my own researches in the United-States have enabled me to add several new species, it may, at least, become *convenient* to distribute these animals under two or more genera. As, how-

ever, I have not yet examined, in all its parts, the anatomy, &c., of the Tweeg, I think it more proper, at present, to associate it with the true salamanders: and I venture to give the following description of it.

Salamandra (gigantea) major, horrida: capite anterius maxime depresso, naso truncato: meatibus lateralibus solitariis, absque appendicibus fimbriatis: corpore subplumbeo, immaculato: pedibus subaequalibus, anterioribus tetradactylis gracilioribus; posterioribus subpinniformibus pentadactylis, omnibus membrana marginatis, et obscure unguiculatis: cauda mediocri, ancipite, acuminata.

This description may not satisfy the systematic naturalist: nor does it, in all respects, satisfy myself. The words or character, "absque appendicibus fimbriatis," might, perhaps, be wholly omitted: and, indeed, I think it would be better to omit them; especially as it appears to me, that the presence of such permanent appendages will, at all times, be sufficient to distinguish the animal having them, from the legitimate salamanders. In my view of the subject, the presence of such gills, or *appendices*, is necessary to constitute an animal belonging truly to the family or genus of the Siren, or Proteus: a genus which ought never to be confounded with that of the salamanders.

Besides the Salamanders, and the Sirens or Protei, the Tweeg holds strong alliances with the Axolotl of the Mexicans, of which I have, by the favour of my respectable friend Mr. Cervantes of the city of Mexico, two good specimens before me, while writing this memoir. But the Tweeg and the Axolotl can never be confounded with each other. For, not to mention other very striking differences, I am persuaded, that the opercular appendages of the latter animal are permanent organs; whereas our salamandra, if it has even ever been supplied with such organs, loses them in its adult stage.

Upon the whole, the Tweeg not only holds manifest and very interesting affinities with almost all the sections of the Linnæan

genus of *Lacerta*, but the discovery of this North-American reptile enables us to render more complete our series of affinities, in what has so generally been denominated the "chain of animals." No class of animals, if I mistake not, exhibits to the contemplation of the naturalist, a more unbroken chain of resemblances in form, in substance, in structure, and in functions, than does the vast class of AMPHIBIA, or REPTILIA. Yet not a few species of amphibia have, doubtless, become *wholly extinct*: and consequently, with respect to these animals, the passage from genus to genus, and from species to species, is still less silent and perceptible now than it was some thousands of years ago*.

HABITATION.

I have said, that the Tweeg is an "amphibious" animal. I mean amphibious in the common acceptation of the word. It is, however, I believe, much less strictly amphibious than most of the true salamanders, the frogs, or even than the proteus, or si-ren, of Carolina, of which I have elsewhere given a particular account*. The Tweeg passes the greater part of his time in the water, and is frequently seen swimming, or creeping, as it were, upon the ground, at the depth of eight, ten, or fifteen, or more feet. It is true, that the reptile often rises to the surface of the water, to respire; but on this head more will be said afterwards. These animals are, also, frequently seen, in considerable numbers, in shallow waters, about ripples, upon stones, &c.; but quickly disappear upon the approach of man. It is probable, therefore, that the sight is not so imperfect as the appearance of the eye would lead us to suppose.

GEOGRAPHICAL RANGE.

The Tweeg may, with great propriety, be said to be a very common animal in many parts of North-America. It inhabits a very extensive tract of country, as well from north to south, as

* See Note E.

from east to west. It is common in many of the most northern streams of the Alleghaney-river; in its continuation, the Ohio, and in the numerous streams which flow into this great and beautiful river, both on its north and on its south side. Accordingly, we find it in the state of Ohio, as in the waters of the Muskingum*, Miami, Siota, &c., and in the Kenhaway, the Kentucky, the Cumberland, and in many other rivers, creeks, &c., which pass, in their progress to the Ohio, through the rich states of Kentucky and Tennessee.

Our animal is also found in Lake Ontario, and in many of its waters. It is very common in Lake Erie, near Detroit, &c. I have already conjectured, that this is the animal which Carver alludes to, by the name of the Alligator, and which he places in the neighbourhood of the Winnebago lake†.

How far westward the Tweeg extends in our continent, I am yet to learn. The late Governor Lewis, who convinced me that he knew the animal, as an inhabitant of the Ohio, assured me, in April 1807, that he never met with it in any of the *western* waters which he explored. He doubtless meant in those streams, the Columbia, its branches, &c., which flow westward into the Pacific-Ocean. The Tweeg certainly inhabits many of the streams of the Mississippi, even those which flow into this river from the west.

Along the Atlantic side of the United-States, the Tweeg is hardly known. I have never heard of his being found in any of the streams of the Hudson, or Delaware, nor in any of the eastern branches of the Susquehanna. Yet of some of these rivers, or their tributary streams, it is highly probable, that he was once an inhabitant. In a visit which I paid to Virginia in 1802, I was assured, that our animal (or, from the description which I received of it, an animal very closely allied to it) once inhabited the upper waters of the Rappahannock. Here, however, at pre-

* See Note F.

† See page 6.

sent, it is totally unknown; as I believe it is in all the waters of Virginia to the east of the Blue-Ridge, or South-Mountain.

Nor do I know that the Tweeg inhabits any of the rivers which flow between this great ridge and the North-Mountain. But immediately after crossing the Alleghaney-Mountains, we meet with this animal, as in the waters of the Holsten, and other streams which run westward into the Ohio, &c. We also find it in the brooks, creeks, &c., among the Alleghaney and Laurel mountains; and among their continuations, under other names, to the southward.

Upon the whole, the Tweeg may be said to be one of the western animals of the continent: and such it is probable, it has always been. I have little doubt, however, that it was once seen in many situations in which it is now entirely unknown.

I am unacquainted with the northern and the southern limits of this animal. I trace it at least as far north as latitude 45: and southward to about latitude 32. But, although I have paid much attention to the geographical range of the American animals, I am not yet prepared to assert, whether the Tweeg be more properly a northern or a southern species. I incline to consider it a northern animal; while I am confident, that the siren Lacer-tina, the Axelotl, &c., are more properly southern reptiles.

FOOD, &c.

The food of the Tweeg is various, but consists principally of fish, frogs, worms, and other aquatic animals. And how many opportunities he enjoys of obtaining an abundance of such food, must be evident from our account of the habitation of this singular reptile. He is often caught with the hook that has been baited with worms, or other animal matter. In particular, he is caught with what is called the "trotting line," which is used for catfish*.

* See Note G.

It is probable that, like the siren, the Tweeg often preys upon various species of aquatic and land insects. Whether vegetable matters form any part of his aliment, I have not yet learned. It may, however, be presumed, that he feeds upon certain aquatic plants, such as lemna, leptanthus, and the like.

If the Tweeg feeds upon fish, he is, in his turn, devoured by them. He is, doubtless, the food of various species of fish, and especially of the larger species of Pike (*Esox*), and Cat-fish (*Silurus*). Our reptile is often found in the stomach of the latter animal, a most ravenous genus, which abounds in the rivers, lakes, and other waters of North-America, and often attains to an enormous size and weight.

MANNERS, &c.

The Tweeg appears to be an harmless animal. When taken with the hook, indeed, it discovers its anger; and attempts to bite. But its bite, it has been ascertained, is in *general* no ways injurious; in this respect, if I do not greatly mistake, agreeing with *all* the Lacertous animals with which we are acquainted*. Yet there seems to be a general prejudice against the reptile. "They have (says one of my correspondents) such an ugly appearance, that no Indian will touch them, and rather lose the hook (when taken accidentally on the same) than draw near them with their hands."

This animal is often killed by the instrument called the gig. But many of the fishermen avoid the practice of taking the prey by the gig, believing, that it might poison the useful fish which it is their object to obtain by this instrument.

The general abhorrence in which this reptile is held, is hardly to be wondered at. The form and aspect of the animal are extremely unpleasant, and even repulsive. The lacteous fluid which

* See Note H.

it emits, at pleasure, or when under the pressure of the hand, does not diminish our suspicion, that there is something deleterious in the constitution of the animal: and its slow, tortuous movements, far from being graceful, as are those of many other reptilia,—even the Crotali,—increase our prejudices against the animal*.

After what I have said, it seems hardly necessary to add, that the Indians do not eat the Tweeg. But they endeavour to turn our ugly reptile to some useful purposes. The north-western Indians, about Lake-Erie, &c., procure the animal, and dry it, for the purposes of witchcraft. I am not prepared to say any thing specific on this head. Nor, indeed, will philosophical naturalists expect that I should. After observing, that the American Indians, like their Asiatic ancestors the Semoyads, the Tounguses, the Koriaks, &c., are some of the most superstitious nations in the world, it will be sufficient to add, that the *dried* Tweeg may be presumed to be at least as innocent as the living animal†.

ANATOMY AND PHYSIOLOGY.

I have already observed, that the anatomical fabric of this animal will engage my attention in a separate memoir. At present I shall only observe, that so far as I have yet prosecuted the subject, the structure of our reptile appears to be very similar to that of the true Salamanders. Its pulmonary system, in particular, is very similar to that of the *Lacerta lacustris*, and other Newts, which have been so carefully examined by Du Fay, Townson, and other naturalists: and is extremely unlike that of the Sirens, or Protei.

I have collected some facts concerning the respiration of the Tweeg. But these facts are not yet sufficiently numerous or important to induce me to give them a place in the present memoir. I flatter myself, that I shall soon have it in my power to

* See Note I.

† See Note K.

attend to the subject, in a series of experiments made under my own eyes. The *living* animals are promised to me, by several of my attentive correspondents*.

One observation only I shall make on this subject, at present. The respiration of the Tweeg appears to be very similar to that of the *Lacerta lacustris*, of which I have said something in my memoir on the Sirent.

Of the phenomena of generation in this animal, little, as yet, is known to me. The eggs, by one of my correspondents who has seen them, are compared to the row of fish. I am yet to learn whether the animal be oviparous or viviparous.

* See Note L.

† See Note M.

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* *

APPENDIX:

CONTAINING

NOTES AND ILLUSTRATIONS.

Note A. page 5. THE first intimation, that I have been able to procure concerning this reptile, is in the manuscript papers of the ingenious Mr. John Bartram, well known as an indefatigable collector of plants, &c. In one of his journals, under the head of Fort-Pitt, or Pittsburgh, in Pennsylvania, in 1762, he mentions, that the inhabitants speak of a small kind of "Alligator." At this time, Mr. Bartram does not appear to have seen the animal. But I have no doubt, that he became better acquainted with it at a future period, as he travelled much over those very parts of North-America, where this reptile is now known to be a very common animal.—If, as is possible, the large Newt mentioned by Dr. Shaw, of which I am presently to take further notice, should prove to be our Tweeg, it is probable, that it was sent by Bartram to Peter Collinson, with whom the American collector corresponded, on subjects of natural history, for many years.

Dr. George Shaw has given some account of a large Salamander, which there is some reason to believe is the Tweeg of our memoir. I shall here give the whole of what the English zoologist has said on the subject. By comparing the figure of our animal with the specimen in the Leverian Museum, it will be easy to determine, whether they are the same.

"LEVERIAN WATER-NEWT.—In the Leverian Museum is a specimen of an extremely large water-newt, supposed to be a non-descript species. Its total length is seventeen inches and a half, of

which the tail measures six inches and a half, from the setting on of the thighs, but if measured from the commencement of the upper membranaceous edge, only four inches and three quarters. The head is flattened and shaped somewhat like that of a burbot; the mouth moderately wide; the upper-jaw furnished in front with two concentric rows of very numerous, small, setaceous teeth; the rows being set about the eighth of an inch apart: in the under-jaw is a single row only: the eyes are small, round, and situated on each side the front of the head, and consequently very remote from each other, and not near so far backward as the corners of the mouth: the body is longish, moderately plump or thick, and is pale brown, marked in a confluent manner, with darker variegations: from the fore to the hind legs runs an obscurely-elevated lateral line: the legs are about an inch in length, and both fore and hind legs are furnished along the whole length of their back part with a dilated skin or crest, which, just above each foot, is sinuated by two pretty deep scollops or incisions: the tail resembles that of the common water-newt, but is neither so long nor so deeply finned or crested in proportion, and its termination is rather obtuse than acute: the feet are very small: the fore-feet furnished with four, and the hind with five toes, all destitute of claws, or at least the appearance of those parts is but very obscure. No particular history is annexed to the specimen, nor is its native place known*."

The younger Michaux, in a work not remarkable for containing much correct or important information, has made mention of our animal. "In the torrents, he says, we found a species of salamander, called by the inhabitants the mountain alligator; many of which are upwards of two feet in length. It was (he adds) in Doe river that my father caught the one which is described in *The New Dictionary of Natural History*, published by Deterville*."

* General Zoology, or Systematic Natural History, by George Shaw, M. D., &c. vol. 3. part 1. pages 303, 304. London: 1802.

* Travels to the West of the Alleghaney Mountains, &c. Pages 262, 263. English translation, London: 1805.

Michaux seems to have seen this specimen among the mountains on the confines of North-Carolina and Tennessee. I have quoted the whole of what he has said on the subject. I regret that I have not been able to procure the work, published by Deterville, to which he alludes.

I believe Michaux is correct in asserting, that the animal is found more than two feet in length: but such large specimens are not, I think, very common. A salamander two feet long exceeds, if I mistake not, any thing, in this genus of amphibious animals, that has been found in the old continent. This circumstance has induced me to impose upon the Tweeg, until a better name shall be thought of, the specific appellation of *gigantea*. In my memoir concerning the Siren lacertina, I had denominated the Tweeg, *Salamandra horrida*.

Note B. page 6. So far as I can learn, the most northern latitude in which any of the true crocodyles have been found in America, is about latitude 37: but in an extensive memoir concerning these animals, which I am preparing for the press, I shall render it probable, that the common alligator of North-America (*Crocodylus borealis, mihi*) once inhabited further north than he does at present. Remains of *extinct* species of this genus have been found still further north.

Note C. page 7. I do not know the precise meaning of the Indian words *Tweeg* and *Twechk*. This is to be regretted, as the Indian names of animals are, in general, very significant and impressive, as I shall show in my History of the Mammalia of the United-States, and in other works.—*Mok-do-mus* is the Delaware (Indian) word for a Lizard. I am informed, that the Chippeway-Indians call our animal (the Tweeg), *To-ko-meg*. This may be supposed to bear some affinity to the word *Attick*, which signifies a Frog in the language of the Knisteneaux-Indians of North-America: and to the word *Aticaming*, which signifies a certain species of fish in the language of the same Indians, and of the Algonquins.

D

Note D. page 10. In my experiments, I found the juice of the salamandra subviolacea to taste like a solution of corrosive-sublimate: and it produced an evident salivation, which continued for some time.

Note E. page 14. There can, I think, be very little doubt, that the abrupt passages which are so often observed between the different genera of animals, are, in a great measure, owing to the ravages of time, and the revolutions of our earth, in effecting a *total* disappearance of species. It is, doubtless, owing to such disappearances, that our series of the mammalia is much more broken, less harmonious, than that of the birds. In the former class, many species have already disappeared: *and many more will disappear*. In the vast class of birds, the species that have disappeared, have been comparatively very few. Our series of the amphibia, or reptilia, is more harmonious than that of the mammalia; principally, I suppose, because fewer of the former than of the latter class of animals, have become extinct.—A more full and particular exposition of my views on this subject, will be exhibited in a memoir on the past extinction, and on the future disappearance, of animals.

Note F. page 15. All the specimens that I have seen, of the Tweeg, are evidently *one* species, differing in size, but not in form; and very inconsiderably in colour. I have been assured, however, that there is in the Muskingum, a species truly distinct from that which is found in the Ohio. The points of difference between them have not been very distinctly, or satisfactorily, related to me.—An intelligent correspondent informs me, that, in general, the male Tweeg is not so large as the female: and that the former has somewhat more of a copperish hue, more or less intimately blended with the prevailing leaden colour of the animal.

Note G. page 16. The trotting line is a floating line, the hook of which is armed with a piece of red woollen, or rag, instead of meat, or worm.

Note H. page 17. That the bite of the Tweeg is *sometimes* followed by pain, swelling, and other marks of inflammation, there is no room to doubt. And such effects have been induced by the bite of other reptilia, the general innocence of which is well established. I have heard of one instance, in which the bite of the Tweeg produced very considerable inconvenience.

Note I. page 18. The water-lizards, in general, and the siren lacertina, are both remarkable for the beautiful agility with which they swim in the water.

Note K. page 18. The fact which I have mentioned, renders it probable, that some of our lacertous animals are held in veneration by the Indians. In regard to the true alligator (*crocodilus borealis*), it is certain, that this huge animal was greatly venerated by some of our southern tribes. This I shall more particularly show, in my memoir on this animal.

Note L. page 19. Though the Tweeg is, in strict propriety, a water animal, he sometimes forsakes the water, for a minute or two, perhaps a much longer time, and is seen sitting upon stones, &c., in the water. How long he is capable of living upon the dry ground, I am not prepared to say. In this situation, one of them has been known to live three or four hours, after having been caught with a hook. There is not the most distant reason to believe, that our animal, like the Siren to which he is, in many respects, so much allied, ever spontaneously forsakes the water, and passes over land, from water to water.

Note M. page 19. See a small memoir, entitled "Some account of the Siren lacertina, and other species of the same genus of Amphibious animals. In a letter from Professor Barton, of Philadelphia, to Mr. John Gottlob Schneider, of Saxony."—Printed at Philadelphia, in 1808. 8vo.

EXPLANATION OF THE PLATE.

Fig. 1. represents a side-view of the *Salamandra gigantea*, correctly drawn after a specimen seventeen inches in length.

Fig. 2. An under view of the head, the fore-legs, and the upper part of the body of the animal. In this figure, the two breathing apertures are distinctly seen. A line is drawn from the centre of one of them, to represent the opening still more distinctly.

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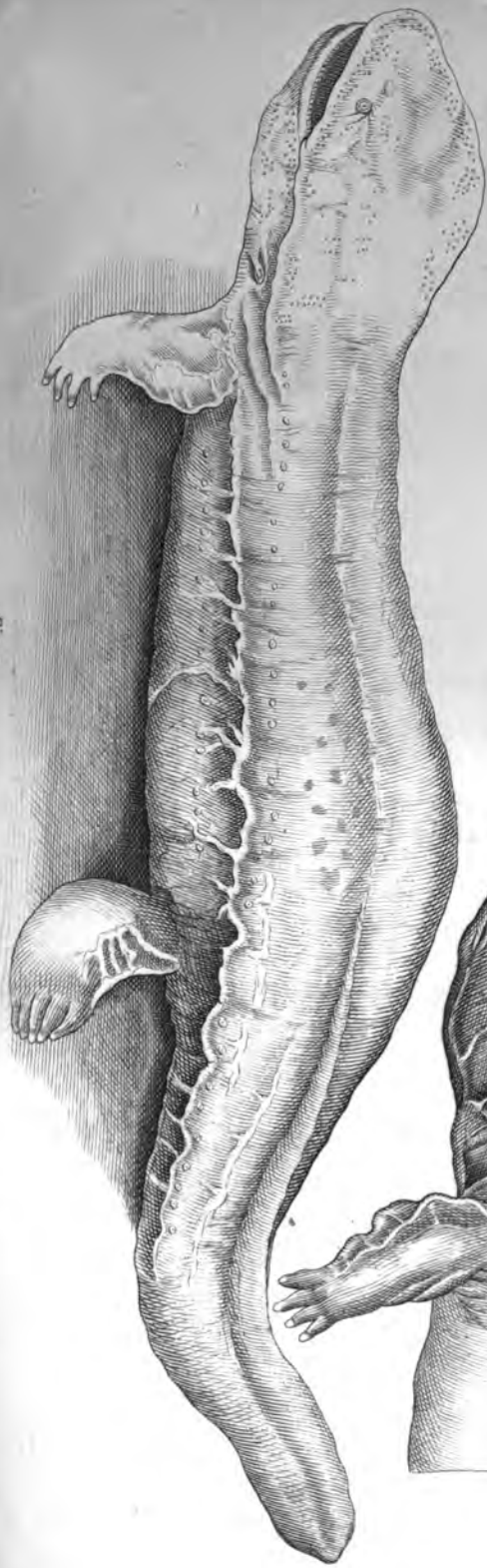


Fig. 1.



Fig. 2.





5.1
Dbe

