

BIOGRAPHICAL MEMOIR  
OF  
JOHN EDWARDS HOLBROOK.  
1794-1871.

BY  
THEODORE GILL.

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My Dear Mother

I have only one minute  
to say farewell being on board the Dover for  
Liverpool from whence I will write you -  
my plan is to return in the Boston packet of  
September when please God I will see you  
again - My wife goes with me as we have  
no family to separate us - in the mean time I send  
you the "Tourneur" which contains an engraving  
sent by every body to resemble her - of which you  
can judge in the fall of the year - Love to family  
and God bless you all

your son  
J. H. Hollbrook

Ship Dover -

## BIOGRAPHICAL MEMOIR OF JOHN EDWARDS HOLBROOK.

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Of the early students in America of the animal kingdom, none was more disinterested in pursuit of knowledge or spent more liberally of his means than JOHN EDWARDS HOLBROOK. His attention was early directed to herpetology, and he devoted time and fortune to the cultivation of that science and to the description and pictorial delineation of the reptiles and amphibians of the United States. After he had finished his labors in that branch he transferred his attention to the sister science of ichthyology, and carried over to it the same desire for perfection and the same high ambition. He hoped to produce a work on fishes that would compare favorably with that on reptiles. Adverse circumstances, however, prevented the completion of his scheme. Under what circumstances he worked we may learn from various sources. There is a pathetic interest in the tale of his endeavors.

### I.

Holbrook was of direct New England origin and of a remote English ancestry. His father and mother were respectively Silas and Mary Holbrook, and his middle name involves a reminiscence of his maternal relations. His grandfather was Daniel Holbrook, and farther back in time appears the name of the first known ancestor in New England—Thomas Holbrook. His father's early home was Wrentham, a town in Massachusetts about 27 miles from Boston and 18 from Providence; but he married Mary Edwards, of Beaufort, South Carolina, and had a residence at the latter place, spending much of his time there after his marriage. The place of Holbrook's birth was Beaufort, as was also that of his brother. According to the best authorities, he was born December 30, 1794. The obituaries published in *Harper's Weekly*, *The American Journal of Science*, the original accounts in *Appletons' Cyclopædia of American Biography*, and *Lamb's Dictionary*, and that by Prof. Louis Agassiz, all concur in giving this date. Nevertheless, in the notice in Allibone's *Critical Dictionary of English Literature* 1795 is specified, and in

the special memoir by his friend and colleague of many years, Dr. T. L. Ogier, 1796 (the year of a brother's birth) is given.

When a year and a half old, the infant was taken by his parents to Wrentham. In that town he spent his childhood, and there he was taught the elements of knowledge. In due time he was sent to the near city of Providence, and went through the regular collegiate course of Brown College, graduating and receiving the degree of A. B. in 1815. He then went to Philadelphia and entered upon a routine of medical study in the University of Pennsylvania, and, after a course of three years, in 1818 received the degree of M. D. Soon afterward he went to Boston, and made a brief trial of practice with a medical friend in that city, but before long came to the determination to become still better grounded in his profession and to see more of the world. He therefore proceeded first to London and Edinburgh, and continued his medical studies in the Scottish capital for a couple of years. Afterward he proceeded to the continent, and spent about two more years in travel through France, Germany, and England, and profited by a sojourn of several months in Paris, enjoying intercourse with some of the eminent naturalists that then glorified France. Among them were Valenciennes and Duméril, the former of whom was collaborating with Cuvier in his great work on fishes, and the latter was even then preparing for his extensive work on reptiles. Professor Agassiz has expressed the opinion that "perhaps nothing in all his European journey had greater influence upon his future life than his stay in Paris, where he worked at the Jardin des Plantes, and became intimate with some of the leading scientific men of the day. He formed relations then which ended only with his life, such as his friendship with Valenciennes, with Duméril, Bibron, and others." Doubtless from them he imbibed the taste for herpetology and ichthyology and the methods of study which he later adopted.

In 1822, the young man returned to his own country and soon settled at Charleston, where he became a candidate for the practice of his profession. He was now twenty-eight years old. When he reached the age of thirty (in 1824) he coöperated with some of the leading physicians of his adopted city in the organization of "The Medical College of South Carolina" and was elected professor of anatomy. This chair he was destined to

hold for over thirty years. His carriage in this situation and his personal character may be best given in the words of an early student, later a colleague in the practice of medicine as well as in the college, and a long-time friend, Dr. T. L. Ogier.

“In 1827 Dr. Holbrook married Miss Harriott Pinckney Rutledge, of South Carolina, one of the most talented and gifted women that ever gave happiness to a family or ornamented society. With a highly cultivated mind and good taste, she encouraged and assisted the Doctor in his scientific pursuits. Never were two persons better suited to each other, and never was there a happier home than theirs. Like her husband, she possessed the rare faculty of attaching warmly to her all who were brought under her influence; and her position in society, which at that time in Charleston was as refined as in any part of the world, was as enviable as the Doctor’s was in his profession. Who that has ever partaken of the hospitalities of Belmont can ever forget the refinement, brilliancy, and kindness of its accomplished hostess? The calamities of the war and the death of many loved friends affected seriously her health. Her nervous system completely broke down, and she died after a short illness in Columbia, November, 1863. Having no family herself, she devoted much of her time in superintending the education of her nieces, who all retain vividly the signet stamped upon them by this refined and accomplished woman.

“Dr. Holbrook, as a practitioner, was very popular. He had the peculiar faculty of attaching warmly to him all who were brought in contact with him. There was something in his manner which was irresistible; hence his patients felt the most entire confidence in his ability to relieve their sufferings; and we all know how much this condition of the patient’s mind contributes in many cases to the success of the treatment. The Doctor had some peculiarities or eccentricities, but these could be easily explained; for instance, his dislike to attend obstetric cases, or to perform any painful surgical operation. He never attended an accouchement in the whole course of his practice; and with his accurate knowledge of anatomy, he never operated if he could get any one else to do it in whom he had confidence. He would advise the operation to be performed, speak of all the details, and often assist until the operation was under way, and then quietly withdraw himself until it was over, when he would

again appear, say something cheerful to the patient, and attend him afterwards with the greatest kindness and efficiency. We believe this was entirely owing to his great dislike to seeing persons suffer pain. It seemed to distress him often quite as much as it did the patient. This feeling no doubt also prevented his ever practicing midwifery, notwithstanding the many solicitations he had to do so. His manner in a sick room was gentle and kind; but, to those who did not know him well, sometimes seemed abrupt; for instance, where a patient was suffering from nausea and seemed likely to vomit the medicine he had just administered, he frequently, without any notice and regardless of bed-clothes, would throw half a tumblerful of water in his face and say, 'Take that, and do not say anything more about throwing up.' The patient would be momentarily startled, and protest against such treatment; but the nausea would pass off, the medicine be retained, and his temporary wrath against the Doctor would be changed to the feeling of gratitude and confidence. One of his eccentricities was followed by a remarkable result. A young waitingman about the house was very liable to fainting fits. In brushing flies at the table he would often exclaim, 'I am going to faint,' and would, if not assisted, fall down in a swoon. The Doctor one day, whilst dissecting the digestive apparatus of a young alligator, called this boy to hold the parts for him, so as to keep the fibers stretched. Just as the Doctor was most interested in tracing some minute muscular fibers, the boy cried out, 'I am going to faint,' and altered the position of his hand, and thus interrupted the dissection at a most important point. The Doctor immediately gave him a sharp slap on the side of his head, saying, 'Well, go faint then, and come back quickly.' The boy did as he was bid, and never fainted after this. He said he 'was cured by holding the alligator.'

"As a lecturer on anatomy, Dr. Holbrook possessed qualities which were never surpassed or very seldom equaled. With a thorough knowledge of the structure of the human body and a peculiar talent for description, he brought his knowledge of comparative anatomy to enforce and enlighten his demonstrations, which made his lectures not only instructive, but most delightful to listen to. The advanced student felt that he had been taught something beyond what his books had taught him, and

the beginner that he had entered upon the study of the most wonderful and beautiful work of God; that he must bring his whole soul into his work; that it would be a crime to be a mere smatterer in this divine science, and worse to pervert it to any other than its intended purpose, the promotion of the happiness of mankind and the benefit of creation. Some of his lectures, particularly those on the brain, were not only highly instructive, but were beautiful sermons, demonstrating by correct diagrams and specimens the nervous system in the lower order of animals, from the acephalous up to the vertebrated, showing how parts were gradually added, according to the necessities of the animals, and finally to man, with the development of his great anterior cerebral lobes, not to perfect his physical qualities, but to enable him, unlike the other animals, to contemplate the works of the Creator, and to look from Nature up to Nature's God."

In other respects, he was, in the language of another friend, "a careless man who never took care of anything," and indeed "he was a type of the *poco curante*," but "was liked by every one and regarded as very able in many departments of research."

## II.

When Holbrook undertook the labor of monographing the reptiles of the United States, there was no one work to which reference could be made for information as to all the species. The nearest approach to it was a summary of the "Genera of North American Reptilia, and a Synopsis of the Species," by Richard Harlan, in the fifth and sixth volumes of the Journal of the Academy of Natural Sciences of Philadelphia (1826-'27). This itself furnishes excellent testimony to the desirability of a revision of the herpetology of the region in question. Most of the familiar forms of the Eastern and Middle States as well as South Carolina had indeed been described, but the descriptions and figures were in publications inaccessible to the ordinary reader. Many of the common reptiles had been early described by European zoölogists, and most of all by Linnæus, but a large proportion remained for incorporation in or rejection from the systems by native herpetologists. Say and Harlan had made known some; Green (1817 *et seq.*) had described the

salamanders, and Leconte (1829) had monographed the turtles in a way; but much yet remained to be done in the examination of the many doubtful species and the incorporation of all the known forms in one comprehensive work. It was to this task that Holbrook applied himself.

Linnæus had entered about 30 species in the system; other European naturalists had named about 34 which are still recognized; previous American zoölogists had added nearly as many more (about 60) as the European. By the time that Holbrook had finished his work he had named 29 as new, and a very large proportion of these are still retained with his specific names, few having proved to be synonyms.

Holbrook must have outlined his work in herpetology, at least, soon after his settlement in Charleston and after he had entered upon the duties of his professorship. He engaged as an artist, for the representation of the reptiles, an Italian immigrant named J. Sera, as early as 1826, and retained him in his service till the man's death; but Holbrook gave no evidence of his activity till his work, in part at least, was ready for the press, not long before the artist's death, ten years later. Dr. Ogier has remarked that "this excellent artist had a particular fancy for drawing reptiles. We have often heard him say that he could never be satisfied with his work unless he gave 'the particular expression of his subject.' He was as enthusiastic about giving the 'peculiarly hard, cruel expression of the alligator's eye,' or 'the bright, deceitful look of the eye of the black snake,' as if his subjects belonged to the highest order of creation; and his drawings are indeed *fac similes* of the animals he intended to represent and monuments of his talent."

He had early, however, invoked the aid of various friends in different sections of the United States. His own endeavors in South Carolina were seconded by those of Dr. Ogier, Dr. Wurdeman, Dr. Baron, and Dr. Ravenel. In Massachusetts his own collecting was supplemented by that of Dr. Amos Binney and Dr. D. Humphreys Storer, of Boston. The reptiles of New York were collected by Messrs. Charles Hammond, Ogden Hammond, and Wilkens. Others that came to his aid were Dr. Geddings, of Baltimore; Dr. Harlan, of Philadelphia; Mr. T. L. Ogden, of Mobile, and Professor Troost, of Nashville. More general assistance was given by Major J. L. Leconte, then of New York, and,

"above all," by Dr. Charles Pickering, of Philadelphia, who aided "with his accurate knowledge at every step of the work." Later Dr. Harden, of Georgia; Drs. Morton, Hallowell, and Blanding and Professor Green, of Philadelphia, and Dr. Dekay, of New York, gave aid. Scanty material from remote regions (Oregon and Texas) was furnished by Thomas Nuttall and A. Gaillard.

The self-imposed task grew upon him. Even in the preface to the first edition (p. v) he remarked:

"In undertaking the present work I was not fully aware of the many difficulties attending it; indeed, they could scarcely have been anticipated. With an immense mass of materials, without libraries to refer to, and only defective museums for comparison, I have constantly been in fear of describing animals as new that have long been known to European naturalists. In no department of American zoölogy is there so much confusion as in herpetology."

He long intended to supplement the generic definitions by fuller anatomical characteristics; for instance, in a foot-note to the first-described genus (*Testudo*) he indicated that it was his intention "in a subsequent number" to "add the special anatomy of each genus, illustrated by drawings" (I, 41), and in the last volume (III, 27) he referred to "the anatomical part of this work for a full description of the genus" *Kinosternon*. He also evidently intended to extend his publication in the anatomical supplement beyond anatomical features, and to develop some generalities, as in the preface to the second volume (p. 7) he promised that "in the anatomical part of this work it will be shown why one generic name is preferred to another." His intentions, however, were never realized.

Holbrook would have liked to have put his work in regular systematic form, but his determination to have his subjects described and painted from life, for the time being, prevented a strict adherence to such a desirable plan. He was in fact obliged to take the specimens as they came; consequently, the descriptions and plates were very much scattered in the first edition of his work. Evidently, too, other considerations than mere possession influenced him, for the common box tortoise, which certainly could have been easily obtained at any time, was not described till the third volume appeared. Many of the

most common species, such as the alligator, the snapping turtles, the soft turtles, the glass snake, and numerous true snakes, were also left undescribed. He had apparently become dissatisfied with his own work and resolved to wait till he could procure as many of the species as possible, and then commence at the beginning again and issue a new edition in a systematic form.

For three years he had issued a volume nearly each year (1836-'38), but with the subjects irregularly presented, as will appear from the collation hereafter given. So particular was he as to proper coloration of the plates that, because in the first volume two were not colored from fresh specimens, he gave two others in substitution in an appendix to the second volume. Those were *Coluber erythrogrammus* (now *Abastor erythrogrammus*) and *Coluber abacurus* (now *Parancia abacura*). He further promised that whenever the coloring or attitude be faulty a duplicate will be added to the following volume.

The third volume being off his hands, Holbrook ceased publication for several years and devoted the time to the completion and systematization of his work. He accumulated all the materials he could, and put them all in as good systematic order as he was able. He adopted the classification then current, that which Duméril and Bibron had elaborated, and in this framework he introduced all the species inhabiting the United States, east and west, which he could obtain.

That classification, we now know, was a very artificial one, and by no means reflected nature, but for this Holbrook is not blamable. He was not a genius and had not access to large collections, and very naturally he followed the lead of those that had the use of what was then the greatest of all museums. He did the best he could under the circumstances, and that best was nearly, if not quite, equal to the best of what was done in Europe. The classification was based on very superficial characters, and it is possible that it was the contradiction which he observed between such features and the anatomical characters which his scalpel revealed that perplexed him and led to the abandonment of his intentions to give an anatomical supplement.

At last, in 1842, he had brought his work to such a form as was satisfactory enough to himself for publication, and he issued

what was in fact an entirely new edition. This was the new "Herpetology of the United States," and was issued in complete form in five volumes. Much of the text had been modified and many of the plates of the first edition retouched, and the number increased by about 30 per cent. It was published with the following "publisher's note," signed "J. Dobson":

"In consequence of the great number of new reptiles received by the author and the demand for the first three volumes, it became necessary either to reprint them or to make a new edition. The latter course has been preferred, thus enabling the author to introduce the new animals in their proper places and to add a number of new plates. It may be added that many of the plates have been reëngraved and improved."

The work thus completed embraced descriptions and illustrations of 147 nominal species, and few of them have proved to be other than real species in the present sense of the figure. Of these only 91 are now regarded as constituents of the restricted class of reptiles and 56 belong to the class of amphibians or batrachians. Comparatively few species have been added to the eastern fauna by subsequent gleaners in the old field, although among such are several quite common species—for instance, a tree-frog (*Hyla evittata*), abundant and readily found in special localities in and near the District of Columbia, was not discriminated till 1899, when Mr. Gerritt S. Miller, Jr., first described it. On the other hand, Holbrook made known several which have been overlooked till very recent times, as the *Salamandra quadrimaculata* (*Desmognathus quadrimaculata*), rediscovered by Stejneger in 1902.

Fortunately for the truth of his claims, he terminated his work shortly before the acquisition of Texas and California by the United States, and consequently it represented approximately the fauna of the country then possessed by the nation. Soon were to be added regions inhabited by a richer reptilian population, especially of the order of Saurians, and his successors would be able to more than double the number of species inhabiting the enlarged United States.

The descriptions are moderately good and full, but often evince a want of appreciation, or skill in contrast, of characters. He unfortunately did not follow in the footsteps of his French exemplars, Duméril and Bibron, in presenting the species of

large genera in successively narrowed terms or dichotomously, and only gave, for ready comprehension, what he called "Characters," which he intended to be diagnostic, but which deficiency in skill sometimes prevented from being such. After the "Characters" followed the "Synonymes," then the "Description" (limited to external structural features), the "Colour," the "Dimensions," the "Habits," the "Geographical distribution," and, finally, "General remarks."

The illustrations were mostly fairly good, both for drawing and coloration, and quite equal to most of those published contemporaneously in Europe. The illustration was confined, however, to the bare animals, and no background (or ground to stand on) was ever represented, nor were any accessory figures illustrating details of structure furnished. Of the Tortoises, Saurians, and Batrachians, two figures were given on a single plate of each species, an upper or from a lateral aspect and a lower giving a view of the inferior surface, but both were more or less indirect or of the animal canted. Of the Snakes, a single figure suffices for each species; but the animal was twisted to give an idea of what might be seen from all points of view.

After the completion of the Herpetology, Dr. Holbrook and his wife paid a visit to Europe and Holbrook renewed acquaintance with some of the persons and scenes he knew in his youth. At the Muséum d'Histoire Naturelle of Paris, according to Dr. Ogier, he "was received with open arms by Valenciennes and other naturalists in 'the Jardin des Plantes,'" and was invited "by those in charge of the museum" to identify or confirm the accuracy of previous identification of North American reptiles. Holbrook often spoke "of this as one of the greatest compliments paid to his knowledge of reptiles."

### III.

The work on herpetology having been completed, and Holbrook having again become settled at home, he now devoted his energy to the preparation of a companion work on the fishes.

Systematic ichthyology, as generally understood, was then in the condition it was placed in 1829 by Cuvier in the second edition of the Règne Animal. A comparatively few large families were recognized, and the series was headed by the Perches.

Although the production of the first comparative anatomist of the age, it was distinguished by the prominence given to superficial characters and the neglect of deeper-seated ones, and especially of osteological peculiarities. The last volume—twenty-second—of the great *Histoire Naturelle des Poissons*, begun by Cuvier and Valenciennes and continued by the last, was published in 1849, and Storer, in 1846, had compiled, chiefly from it, a poor "Synopsis of the Fishes of North America." Dekay, a few years previously (1842), had published the finely illustrated part on Fishes of his "New York Fauna," also adopting the Cuvierian system.

From the same point of view Holbrook commenced his work. He recognized that he could not cover so large a field as he had done for the reptiles, and instead of all the United States, he would limit his attention to the fishes of the "Southern States." With Richard as his artist, he brought out, in 1847, "number two" of a "Southern Ichthyology; or a Description of the Fishes Inhabiting the Waters of South Carolina, Georgia, and Florida." This bore the imprint of "New York and London: Wiley & Putnam, 1847." It contains 32 pages (1-32) and 4 plates, illustrating *Umbrina alburnus* (1, I, 1), *U. littoralis* (10, I, 2), *Micropogon undulatus* (12, II, 2), *Corvina ocellata* (17, II, 1), *Leiostomus obliquus* (21, III, 1), *Lobotes surinamensis* (25, III, 2), *Elacate canada* (30, IV, 1), and *Ephippus gigas* (IV, 2). It is announced on the cover of this second part that "No. 1, containing the anatomical portion of the work, will be published with No. VI," and in the "Notice" to the first edition of the work reviewed, it is affirmed that "two numbers were published under another title in 1845." The number noticed is, however, the only one with which we are acquainted.

The statement is made in the form of a "Notice," dated "November 10th, 1854," issued with the first number of the "Ichthyology of South Carolina," that "much of this work now offered to the public was printed several years since; indeed, two numbers were published under another title in 1845; some few pages have been reprinted and new matter added. So much it is necessary to say to account for the apparent negligence in not referring to late works on ichthyology."

It may be reasonably suspected that the "*poco curante*" habit of the author is responsible for a slight mistake here. Diligent

inquiry has failed to discover any other evidence of printing of any number but "number two." That number is recorded in "A Dictionary of Books Relating to America," by Joseph Sabin (VIII, 368), and no other. In the lapse of time the author may have assumed that, inasmuch as "number two" had been published, number one must also have been printed. and, trusting to an imperfect memory, that 1845 was the date rather than 1847. At any rate, until more evidence is furnished, we are almost, perforce, compelled to believe that "number two" was the only one of the "Southern Ichthyology" published.

When this part had been issued Holbrook must have made a survey of the field he wanted to cover; he must have formed some estimate of the number of West Indian fishes which could be found along the southern Floridian coast and realized how impossible it would be, under the circumstances, to realize his desire for describing and painting his subjects only from life. He paused and paused, finally gave up his intention to wander over so large a field, and at length determined to confine his efforts to the fishes of his own state.

At last, in 1855, he commenced the publication of the "Ichthyology of South Carolina" in parts, and ten of these were issued when the further publication was interrupted by a fire which destroyed the "Artists' Buildings" in Philadelphia, where the pictorial portion of the work was being prosecuted. The original drawings, as well as plates and stones, were all destroyed.

Holbrook took advantage of this loss to better his work in various ways. He explained the circumstances which led to the new edition in his "preface," here reproduced in part:

"The great delay in the publication of the Ichthyology of South Carolina has been caused by the destruction of all the plates, stones, and original drawings in the burning of the 'Artists' Buildings,' in Philadelphia, several years since.

"This made it necessary to have new drawings made of all the different fishes, which has been done at great expense, so great, indeed, that the work could not have been carried on without the aid of the State, which has been freely given.\* The new

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\*I have been unable to find any act of appropriation passed by the legislature of South Carolina for aid to Holbrook's work. A work of kindred character ("Tuomey and Holmes' Fossils of South Carolina")

drawings are from nature, and have been made by the best artists, as A. J. Ibbotson and A. Sonrel. The color of the fish has been, in almost every instance, taken from living specimens by J. Burkhardt, an artist of great merit.

“The delay in the publication of the work has, however, enabled me to give more accurate and highly finished plates, and to correct some errors in the letter press.

“As but few numbers of the work were distributed previous to the destruction of the original plates, &c., and the present edition is so much improved, I have decided to recall the former numbers and to replace them by those of the new edition.”

Thus an entirely new work was published. The artistic efforts of Richard were superseded by the superior results of Ibbotson and Sonrel, both excellent artists trained under Agassiz, and T. Sinclair’s lithographic establishment of Philadelphia was selected for reproducing the illustrations instead of Tappan & Bradford’s of Boston; the printing was done by Welch, Bigelow and Company, of Cambridge, in place of Metcalf and Company, and the publishers were “Russell & Jones,” in succession to “John Russell,” of Charleston, S. C.

Comments on both editions made by the present writer in the American Journal of Science and Arts for 1864, soon after the actual publication of the second edition, are as applicable now as then, and are consequently reproduced.

“In the second edition, the generic and specific descriptions are in most cases entirely the same as those of the first, the principal deviations occurring in the family called Ichthelidæ, which is newly named and defined. The plates are also arranged in the same manner, the only exception relating to xxiii and xxiv, which had the numbers reversed in the first, and the interposition of an additional plate between xxvi and xxvii, which latter, in the second edition, is consequently called xxviii. The figures themselves are mostly new and are, as a rule, superior to those of the original edition; the worst of the first edition are those illustrating the scales of the Sparoid fishes, and another intended to represent the preoperculum of ‘*Homo-*

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was appropriated for and supported six years. To “the sixth year’s subscription” of \$2,000, a proviso was attached “that no further subscription be made for the said work.” (Acts South Carolina, November, 1860, to January, 1861, Statutes at Large, xii, p. 847.)

*prion lanceolatus.*' Dr. Holbrook, adopting the fashion introduced into this country, of figuring three scales of each species, has caused to be thus represented those of the Sparoids, but none in the first edition give an idea of the type of structure peculiar to the representatives of that family and so characteristic of it. When the scales are so especially figured, we might at least reasonably expect a close approximation to correctness, and when it is not found, and it thus becomes apparent that the author himself has not paid special regard to them, we may well ask why the time and space given to these figures could not have been more advantageously bestowed in illustrating more important characters. By what strange optical delusion a preoperculum, like that represented in the enlarged view of that bone in *Homoprion lanceolatus*, could have been imagined by the artist, is difficult to conjecture. With these remarks, however, special criticism may end, for although some of the other figures might be much improved, most are accurate and compare favorably with the best of those published elsewhere."

Under *Homoprion xanthurus* the *specific character* is based on an extract from Cuvier and Valenciennes' description and radial formula of *Leiostomus xanthurus*, while the body of the description and the figure apply to *Bairdiella argyroleuca*, the *Corvina argyroleuca* C. and V., a species of a very different subfamily. If Dr. Holbrook had been correct in his application of Lacépède's name *Leiostomus xanthurus*, he would have been subject to a charge of a perversion of that author's generic name, but by a happy error he has correctly retained it in its true sense.

"On the other hand, some former names, concerning whose application there is no reasonable room for doubt, have not been at all accepted, such as the Linnæan *Labrus auritus* and *Gasterosteus carolinus*. The former was evidently proposed for the species called by Holbrook *Ichthelis rubricauda*, the *Pomotis rubricauda* of Storer, well characterized in the terse Linnæan phrase 'opercula apice membranaceo, *elongato*, obtuso, *nigro*,' and even rendered more certain as to its application by the *doubtful* reference to Catesby's figure of *Pomotis aureus*. It is, however, due to Dr. Holbrook to state that it appeared to him 'certain that the specific name *auritus* was not applied to the *Pomotis vulgaris*,' and that Linnæus's description might 'possibly apply to' either *P. rubricauda* or *P. incisor*. Probably none

familiar with the subject will hesitate to retain the *Linnæan* name instead of *rubricauda*. The *Gasterosteus carolinus* was as evidently intended for Holbrook's *Bothrolæmus pompanus*, notwithstanding this author's opinion to the contrary. The latter species, it may be here remarked, has served, at different stages of development, as the type of three genera, and Holbrook's *Bothrolæmus* is founded simply on very old individuals of *Trachynotus* in which the teeth had fallen out.

"As Dr. Holbrook has not uniformly adopted a systematic arrangement, but has scattered some species in places where they do not belong, the species given under a family name cannot be considered as members of that family, even in the author's opinion, and many of those have been referred to their proper ones in foot-notes to the text. *Labrax*, *Grystes*, *Serranus*, *Diplectrum*, *Rhypticus*, and *Centropristes* are not Ichthelidæ, but Percidæ;\* *Pagrus* and *Serranus nigritus* not Sciaenidæ, but severally Sparoid and Percoid; and finally *Trachinotus* and *Hæmulon* are not 'Scopelinidæ,' but respectively members of the Scombroid and Sciaenoid families as understood by Dr. Holbrook.

"With regard to the systematic arrangement thus corrected, it may be remarked that it is not an exposition of the views now prevalent concerning the limits of the families. All the Scombridæ of Holbrook are Carangoids, except *Cybium*, *Elacate*, *Echeneis*, and *Temnodon*, members of as many different families. *Ephippus* scarcely belongs to the same family as *Chætodon* and its allies; *Hæmulon* and *Pristopoma* are nearer Sparoids than Sciaenoids, and at least do not belong to the latter family.† *Lobotes* is the type of a peculiar one, and finally *Saurus* is the representative of another.

"The most important modification in the arrangement is undoubtedly the foundation of the family Ichthelidæ for the reception of the North American fresh-water Percoids of Cuvier with six branchiostegal rays. Adopting the family of Percidæ with

\* *Labrax*, *Serranus*, *Diplectrum*, *Rhypticus*, and *Centropristes* were later segregated from the Percidæ by the writer into the nearly related family of Serranidæ and *Grystes* (under the name *Micropterus*) was referred to the family Centrarchidæ.

† *Hæmulon* and *Pristopoma* were later referred to the family Hæmulidæ, which is much nearer the Sparoids than the Sciaenoids.

the boundaries established for it by Sir John Richardson, he has considered that the Theraponidæ of that author taken from it should be itself subdivided, and the family of Ichthelidæ is therefore proposed for some of its constituents. The only positive character of the family mentioned by Holbrook which would remove it from the typical Percoids is the presence of only six branchiostegal rays. As such, if strictly adhered to, would necessitate the expulsion from the latter of *Dules (auriga)*, *Percilia*, etc., and their transference to the Ichthelidæ, the character is not the true one, and is of very secondary importance in itself. The group of genera embraced under Ichthelidæ is, however, so natural and its representatives so well distinguished from the true Percoids by their physiognomy that it is probable that the family itself is a natural one. It has indeed more resemblance to the Cichlids, and its species hold the same place in North America that those fishes do in the southern continent and in Africa. Like them, the Ichthelidæ construct a rude nest, guard their young, and are the most characteristic Acanthopterygian types of their respective regions. Their arrangement of colors and the variation in the number of anal spines are analogous and their forms simulate each other. That form is distinguished by the equal development of and the correspondence of the regions of the body above and below the axis, while in the Percoids and others those regions are obliquely opposed.\*

The descriptions of the fishes were made on the same general plan as those of the reptiles, and the remarks made on the latter are applicable to the former. First was given a quasi-diagnosis after the caption "Specific characters;" then the "Synonymes;" next followed the "Description," the "Colour," the "Dimensions," the "Splanchnology," the "Habits," the "Geographical distribution," and, lastly, "General remarks" respecting relationship, nomenclature, or history. The data respecting splanchnology or abdominal viscera are in small type (brevier), while the rest is in long primer.

The illustrations represent the fish from a direct side view, with the fins extended as much as possible, and there are mag-

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\* The family *Ichthelidæ* was later named *Centrarchidæ* by the writer and is now generally adopted with the latter name and established on osteological characters. The analogical resemblance of the Centrarchoids and Cichlids was first recognized in the article of 1864 quoted.

nified views of three scales of almost every species, one from the lateral line, one from the back, and one from the belly. As already indicated, the supervision over the artist and correction of his work must have been rather lax.

## IV.

Soon after the printing of this work, the civil war, in which South Carolina took so prominent a part, began. Like all other eminent men, Holbrook was obliged to become a participant, and his medical knowledge was utilized by his selection as the "head of the examining board of surgeons in South Carolina."

In 1863 his wife died, and he was left childless and alone. When the forces of the Union took possession of Charleston, the medical college in which his collections were preserved was taken for hospital purposes, and his specimens were wantonly thrown away or seized upon for what they were supposed to be worth; his books were stolen, and finally his drawings and manuscripts were lost or destroyed. An old man now, bereft of most of his fortune, discouraged by adversities, and recognizing that a new order of scientific procedure had begun, he reluctantly ceased to even plan for his work. He continued, however, to go in summer to New England, where he had spent his happy youth, and in the early fall of 1871 (8th of September), stricken by apoplexy, saw the end of life, at his sister's residence in Norfolk, Massachusetts, "breathing his last amidst kind and devoted relatives."

Holbrook was elected a member of the National Academy of Sciences in 1868, during its January session. Had he been in the North at the time of the formation of the Academy (1863), he would probably have been one of its founders; but then he was widely separated by distance as well as by war and sympathies.

The memory of Holbrook has been recalled, in the manner customary to naturalists, in connection with various reptiles, amphibians, and fishes, by a number of zoölogists of eminence. In his honor were named the typical species of *Scaphiopus* by Harlan (1840), one of *Tropidonotus* by Baird and Girard (1853), one of *Callopeltis* by Duméril and Bibron (1854), one of *Trachemys* by Gray (1857), and one of *Lampropeltis* by Stejneger (1902).

Ichthyologists also honored him in such names as *Pomotis*

*holbrookii* (Cuvier and Valenciennes, 1831), *Alutera holbrookii* (Hollard, 1855), *Heterandria holbrookii* (Agassiz, 1859), *Echeneis holbrookii* (Günther, 1860), *Acipenser holbrookii* (Duméril, 1867), *Ophidium holbrookii* (Putnam, 1874), and *Diplodus holbrookii* (Bean, 1878). It is proper to add, however, that most of these names have been shown to be synonyms of older ones.

Those who believe in the influence of heredity and association in the determination of tastes or avocations may have their faith fortified by the knowledge that a younger and the only full brother of the naturalist (Silas Pinckney Holbrook, born 1796), although educated for the law, devoted himself to literary pursuits and in his comparatively short life (he died in 1835) contributed much to the periodical and other literature of the country. Although his literary productions were almost entirely published in the North, he went to the South in 1835 and died at Pineville, South Carolina, May 26.

The author is indebted to Dr. Marcus Benjamin for the loan of the originals from which the portrait and letter of Holbrook have been reproduced. These, as well as various other data which were lent, were obtained by Dr. Benjamin in 1887, when he was preparing the biographical notices of members of the National Academy of Sciences for Appletons' Cyclopædia of American Biography.

Both letter and portrait are undated, but the former was evidently written just before his departure for Europe with his wife, about 1842, and the latter was probably taken about the same time, the copy owned by Dr. Benjamin having apparently been reproduced from an old-fashioned daguerreotype. (The daguerreotype was introduced no earlier than 1839.) The neckwear or "stock" also points to that time, and the appearance is that of a man certainly not more than 48 years old, which age Holbrook had attained in 1842.

## BIBLIOGRAPHY.

The bibliography of Holbrook is by no means extensive. Indeed, there are very few eminent naturalists who have published so few articles. Except the large works on reptiles and fishes, only one contribution is known, an article published in the *Journal* of the Academy of Natural Sciences of Philadelphia. No article on any subject of medical or surgical practice appears in any southern or other medical periodical.

The difficulties incident to the consultation of his works may be inferred from the fact that only one edition of each of his great works is possessed by the wealthiest and most progressive zoölogical society in the world. From the fifth edition of the "Catalogue of the Zoölogical Society of London" (1902), it appears that only four volumes of the North American Herpetology are in its library (the fifth being "wanting") and only the incomplete first edition of the "Ichthyology of South Carolina" is there. The Academy of Natural Sciences, whose library is, perhaps, the best zoölogical one in the United States, is also deficient.

Further, most of the notices of Holbrook, and even the very extended "Dictionary" of Sabin, are replete with errors in mention or description of his works.

On account of this rarity or inaccessibility of all editions of his works, Dr. Stejneger and the writer have correlated the two, and the results are here presented with the addition of the family names adopted by Holbrook. In the first column, the names of Holbrook, and in the last those of the "modern nomenclature" are given. The sequence is that of the last edition, as is also the nomenclature, but when different the nomenclature of the first edition is indicated by indented names.

In order to collate the different editions of the "Ichthyology of South Carolina," the writer was obliged to use three libraries, those of the Smithsonian Institution, the Academy of Natural Sciences of Philadelphia, and the Brevoort, now owned by the American Museum of Natural History.

The collation and description are rendered difficult and perhaps at first incomprehensible by the method of pagination characteristic of old Philadelphia printers (but not of B. Franklin!). They were in the habit of beginning the pagination

with Arabic figures on about the second signature (*e. g.*, 16, 9, 5, &c.), and space for the prefatory or introductory matter would thus be provided for; but sometimes there would be a hiatus between that matter (unnumbered or with Arabic figures) and the succeeding signature, or more rarely there would be an overlap. In the following descriptions, when no differentiation is indicated, it may be assumed that the pagination (Roman and Arabic) is continuous:

I.

North American | Herpetology | or | a Description | of the | Reptiles inhabiting the United States. | — | By John Edwards Holbrook, M. D. | [4 lines of titles.] — | Vol. I. [*et seq.* to III] | = | Philadelphia: | J. Dobson, [etc.]. | 1836 [—1838]. [3 vols., 4to, viz:]

- I. 120 pp., 23 pl. 1836.
- II. 125 pp. + 1 l., 28 + 2 pl. 1838.
- III. [i]—iv + vii—viii + 9—122 pp., 30 pl. 1838.

According to Sabin, "no more of this edition [was] published; these three volumes were afterward reissued with two others, dated as below, which circumstance will account for the fact that while copies of Vols. I—III are not uncommon, entire sets are rare."

There was no reissue in the technical sense, but a complete rearrangement of text and plates, as will be evident from an inspection of the correlation of the two editions. The edition was discontinued with the third volume and replaced by an entirely new one in 1842.

II.

North American | Herpetology | or | a Description | of the | Reptiles inhabiting the United States. | — | By John Edwards Holbrook, M. D. | [5 lines of titles.] — | Vol. I. [*et seq.* to V] | = | Philadelphia: | J. Dobson, [etc.]. | 1842. [5 vols., 4to, viz:]

- I. title [= 1 l.] + contents [= 1 l.] + preface [= ix —] xv + 17—152 pp., 24 pl.
- II. title + blank l. + preface = [v —] vi + contents [= iii —] iv + 9—142 pp., 20 pl.
- III. title + ii + 3—128 pp., 30 pl.
- IV. vi + 7—138 pp., 35 pl.
- V. vi + 5—118 pp., 38 pl.

According to Sabin, the work was published "1842–43," but the title page of each volume, *mut. mut.*, is alike and bears the date 1842.

The plates are numbered with small Arabic numerals at the bottom, under the legends, but the references to them in the text are given in large Roman numerals. In the following correlation they are indicated by small Roman type.

CORRELATION OF FIRST AND SECOND EDITIONS OF HOLBROOK'S  
NORTH AMERICAN HERPETOLOGY.

Holbrook's nomenclature.	First edition.	Second edition.	Modern nomenclature.
	Vol. Page. Plate.	Vol. I. Page. Plate.	
ORDER I. CHELONTA. <i>Brogniart</i> .*			
FAMILY I. CHERSITES. <i>Dumeril</i> † <i>et Bibron</i> .			
<i>Testudo polyphemus</i> .....	I, 41 i	25 pl. i	<i>Gopherus polyphemus</i> .
<i>Cistuda carolina</i> .....	III, 9 i	31 ii	<i>Terrapene carolina</i> .
<i>blandingii</i> (n.).....	35 v	39 iii	<i>Emydoidea blandingii</i> .
FAMILY II. ELODITES. <i>Dumeril</i> † <i>et Bibron</i> .			
<i>Emys muhlenbergii</i> .....	I, 59 v	45 iv	<i>Clemmys muhlenbergii</i> .
<i>serrata</i> .....	II, 31 v	49 v	<i>Pseudemys scripta</i> .
<i>rubriventris</i> .....	37 vi	55 vi	<i>Pseudemys rubriventris</i> .
<i>reticulata</i> .....	41 vii	59 vii	<i>Pseudemys reticulata</i> .
<i>floridana</i> .....	47 viii	65 viii	<i>Pseudemys floridana</i> .
<i>mobilensis</i> (n.).....	53 ix	71 ix	<i>Pseudemys mobilensis</i> .
<i>picta</i> .....	19 iii	75 x	<i>Chrysemys picta</i> .
<i>guttata</i> .....	25 iv	81 xi	<i>Clemmys guttata</i> .
<i>terrapin</i> .....	13 ii	87 xii	<i>Malaclemmys centrata</i> .
<i>insculpta</i> .....	III, 17 ii	93 xiii	<i>Clemmys insculpta</i> .
<i>geographica</i> .....	.....	99 xiv	<i>Graptemys geographica</i> .
<i>(Emys megacephala)</i> (n.).....	I, 51 iii	.....	.....
<i>Emys pseudo-geographica</i> (n.).....	.....	103 xv	<i>Graptemys pseudo-geographica</i> .
<i>oregoniensis</i> .....	II, 9 i	107 xvi	<i>Chrysemys bellii</i> .
<i>hieroglyphica</i> (n.).....	I, 47 ii	111 xvii	<i>Pseudemys hieroglyphica</i> .
<i>cumberlandensis</i> (n.).....	.....	115 xviii	<i>Pseudemys elegans</i> .
<i>concinna</i> .....	.....	119 xix	<i>Pseudemys concinna</i> .
<i>troostii</i> (n.).....	I, 55 iv	123 xx	<i>Pseudemys troostii</i> .
<i>Kinosternon pennsylvanicum</i> .....	III, 23 iii	127 xxi	<i>Kinosternon pennsylvanicum</i> .
<i>Sternotherus odoratus</i> .....	29 iv	133 xxii	<i>Kinosternon odoratum</i> .
<i>Chelonura serpentina</i> .....	.....	139 xxiii	<i>Chelydra serpentina</i> .
<i>temminckii</i> (n.).....	.....	147 xxiv	<i>Macrochelys temminckii</i> .
FAMILY III. POTAMITES. <i>Dumeril</i> † <i>et Bibron</i> .			
<i>Trionyx ferox</i> .....	.....	Vol. II. 11 pl. i	<i>Aspidonectes ferox</i> .
<i>muticus</i> .....	.....	19 ii	<i>Amyda mutica</i> .
FAMILY IV. THALASSITES. <i>Dumeril</i> † <i>et Bibron</i> .			
<i>Chelonia mydas</i> .....	.....	25 iii	<i>Chelonia mydas</i> .
<i>caretta</i> .....	.....	33 iv	<i>Thalassochelys caretta</i> .
<i>imbricata</i> .....	.....	39 v	<i>Eretmochelys imbricata</i> .
<i>Spargis coriacea</i> .....	.....	45 vi	<i>Dermochelys coriacea</i> .

\* Brogniart's name was erroneously curtailed to Brogniart.

† Duméril's name was invariably given by Holbrook without an accent.

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CORRELATIONS OF FIRST AND SECOND EDITIONS—Continued.

Holbrook's nomenclature.	First edition.	Second ed. Modern nomenclature.
	Vol. Page. Plate.	Vol. II. Page. Plate.
ORDER II. SAURIA. <i>Brogniart.</i>		
FAMILY. CROCODYLIDA. <i>Cuvier.</i>		
<i>Alligator Mississippiensis</i> .....	53	vii <i>Alligator mississippiensis.</i>
FAMILY. IGUANIDA. <i>Dumeril et Bibron.</i>		
<i>Anolis Carolinensis</i> .....	I, 67 vii	67 viii <i>Anolis carolinensis.</i>
<i>Tropidolepis undulatus</i> .....	III, 51 viii	73 ix <i>Sceloporus undulatus.</i>
<i>Crotaphytus collaris</i> (n.).....	79	x <i>Crotaphytus collaris.</i>
<i>Phrynosoma cornuta</i> .....	III, 55 ix	87 xi <i>Phrynosoma cornutum.</i>
<i>orbiculare</i> .....	61 x	93 xii <i>Phrynosoma cornutum.</i>
<i>coronata</i> .....	65 xi	97 xiii <i>Phrynosoma blainvillei.</i>
<i>douglassi</i> .....	69 xii	101 xiv <i>Phrynosoma douglassi.</i>
FAMILY. LACERTINIDA. <i>Dumeril et Bibron.</i>		
<i>Ameiva sexlineata</i> ....	I, 63 vi	109 xv <i>Cnemidophorus sexlineatus.</i>
FAMILY. SCINCOIDEA.		
<i>Plestiodon erythrocephalus</i> .....	117	xvi <i>Eumeces fasciatus.</i>
( <i>Scincus erythrocephalus</i> )..	II, 101 xxii	.....
<i>Scincus quinquelineatus</i> .....	III, 39 vi	121 xvii <i>Eumeces fasciatus.</i>
<i>fasciatus</i> .....	45 vii	127 xviii <i>Eumeces fasciatus.</i>
<i>Lygosoma lateralis</i> .....	133	xix <i>Leiopisma laterale.</i>
( <i>Scincus lateralis</i> ).....	I, 71 viii	.....
FAMILY. CHALCIDA.		
<i>Ophisaurus ventralis</i> .....	139	xx <i>Ophisaurus ventralis.</i>
ORDER III. OPHIDIA. <i>Brogniart.</i>		
FAMILY. CROTALOIDEA.		
		Vol. III.
<i>Crotalus durissus</i> .....	II, 81 xvii	9 pl. i <i>Crotalus horridus.</i>
<i>adamanteus</i> .....	77 xvi	17 ii <i>Crotalus adamanteus.</i>
<i>oregonus</i> (n.).....	21	21 iii <i>Crotalus oregonus.</i>
<i>Crotalophorus miliarius</i> .....	25	25 iv <i>Sistrurus miliarius.</i>
( <i>Crotalus miliarius</i> ).....	II, 73 xv	.....
<i>Crotalophorus tergeminus</i> .....	29	v <i>Sistrurus catenatus.</i>
<i>kirtlandi</i> (n.).....	31	vi <i>Sistrurus catenatus.</i>
<i>Trigonocephalus piscivorus</i> ....	II, 63 xiii	33 vii <i>Agkistrodon piscivorus.</i>
<i>contortrix</i> .....	69 xiv	39 viii <i>Agkistrodon contortrix.</i>
<i>atro-fuscus</i> .....	43	43 ix ?
FAMILY. ELAPSOIDEA.		
<i>Elaps fulvius</i> .....	II, 87 xviii	49 x <i>Elaps fulvius.</i>
FAMILY. COLUBEROIDEA.		
<i>Coluber constrictor</i> ....	55	xi <i>Bascanion constrictor.</i>
<i>obsoletus</i> .....	61	xii <i>Callopeltis obsoletus.</i>
<i>testaceus</i> .....	63	xiii <i>Bascanion testaceum.</i>

CORRELATIONS OF FIRST AND SECOND EDITIONS—Continued.

Holbrook's nomenclature.	First edition.	Second ed. Modern nomenclature.
	Vol. Page. Plate.	Vol. III. Page. Plate.
<i>Coluber guttatus</i> .....	II, 109 xxiv	65 xiv <i>Callopeltis guttatus</i> .
<i>ecimius</i> .....		69 xv <i>Lampropeltis triangula</i> .
<i>couperi</i> (n.).....		75 xvi <i>Drymarchon couperi</i> .
<i>vernalis</i> .....		79 xvii <i>Liopeltis vernalis</i> .
<i>punctatus</i> .....	II, 115 xxvi	81 xviii <i>Diadophis punctatus</i> .
<i>allegamiensis</i> .....	I, 111 xx	85 xix <i>Callopeltis obsoletus</i> .
<i>quadrivittatus</i> (n.).....	113 xxi	89 xx <i>Callopeltis quadrivittatus</i> .
<i>Coronella getula</i> .....		95 XXI <i>Lampropeltis getulus</i> .
<i>sayi</i> .....		99 xxii <i>Lampropeltis holbrooki</i> .
<i>rhombo-maculata</i> (n.).....		103 xxiii <i>Lampropeltis rhombomaculata</i> .
<i>doliata</i> .....		105 xxiv <i>Lampropeltis doliatus</i> .
<i>Helicops erythrogrammus</i> .....		107 xxv <i>Abastor erythrogrammus</i> .
( <i>Coluber erythrogrammus</i> ).....	I, 115 xxii	
<i>Helicops abacurus</i> (n.).....		111 xxvi <i>Farancia abacura</i> .
( <i>Coluber abacurus</i> ).....	I, 119 xxiii	
<i>Brachyorrhos amoenus</i> .....		115 xxvii <i>Carphophis amoenus</i> .
<i>Calamaria elapsoides</i> (n.).....		119 xxviii <i>Lampropeltis elapsoides</i> .
( <i>Coluber elapsoides</i> ).....	II, 123 xxviii	
<i>Calamaria striatula</i> .....		123 xxix <i>Haldea striatula</i> .
<i>Rhinostoma coccinea</i> .....		125 xxx <i>Cemophora coccinea</i> .
		Vol. IV.
<i>Pituophis melanoleucus</i> .....		7 pl. i <i>Pituophis melanoleucus</i> .
<i>Psummophis flagelliformis</i> .....		11 ii <i>Bascanion flagellum</i> .
( <i>Coluber flagelliformis</i> ).....	I, 107 xix	
<i>Leptophis æstivus</i> .....		17 iii <i>Ophedryas æstivus</i> .
( <i>Coluber æstivus</i> ).....	II, 119 xxvii	
<i>Leptophis sauritus</i> .....		21 iv <i>Thamnophis sauritus</i> .
<i>Tropidonotus fasciatus</i> .....		25 v <i>Natrix fasciata</i> .
( <i>Coluber fasciatus</i> ).....	II, 93 xx	
<i>Tropidonotus sipedon</i> .....		29 vi <i>Natrix sipedon</i> .
<i>erythrogaster</i> .....		33 vii <i>Natrix erythrogaster</i> .
( <i>Coluber erythrogaster</i> ).....	II, 91 xix	
<i>Tropidonotus taxispilotus</i> (n.).....		35 viii <i>Natrix taxispilotus</i> .
( <i>Coluber taxispilotus</i> ).....	II, 113 xxv	
<i>Tropidonotus niger</i> .....		37 ix <i>Natrix sipedon</i> .
<i>rigidus</i> .....		39 x <i>Natrix rigida</i> .
<i>sirtalis</i> .....		41 xi <i>Thamnophis sirtalis</i> .
<i>ordinatus</i> .....		45 xii <i>Thamnophis ordinatus</i> .
<i>leberis</i> .....		49 xiii <i>Natrix leberis</i> .
<i>dekayi</i> (n.).....		53 xiv <i>Storeria dekayi</i> .
<i>Heterodon simus</i> .....		57 xv <i>Heterodon simus</i> .
<i>niger</i> .....	II, 105 xxiii	63 xvi <i>Heterodon platirhinos</i> .
<i>platirhinos</i> .....	97 xxi	67 xvii <i>Heterodon platirhinos</i> .

ORDER IV. BATRACHIA. Brogniart.

SUBORDER II. ECAUDATA. Oppel. Dumeril et Bibron.

FAMILY I. RANOIDEA.

<i>Rana pipiens</i> .....	III, 81 xv	77 xviii <i>Rana catesbeiana</i> .
<i>horiconensis</i> .....	91 xviii	83 xix <i>Rana clamitans</i> .
<i>clamitans</i> .....	89 xvii	85 xx <i>Rana clamitans</i> .

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CORRELATIONS OF FIRST AND SECOND EDITIONS—Continued.

Holbrook's nomenclature.	First edition.			Second edition.		Modern nomenclature.
	Vol.	Page.	Plate.	Page.	Plate.	
<i>Rana fontinalis</i> .....		85	xvi	87	xxi	<i>Rana clamitans</i> .
<i>halecina</i> .....	I,	89	xiii	91	xxii	<i>Rana pipiens</i> .
<i>palustris</i> .....		93	xiv	95	xxiii	<i>Rana palustris</i> .
<i>sylvatica</i> .....		95	xv	99	xxiv	<i>Rana sylvatica</i> .
<i>Cystignathus ornatus</i> (n.).....				103	xxv	<i>Chorophilus ornatus</i> .
( <i>Rana ornata</i> ).....	I,	97	xvi			
<i>Cystignathus nigrinus</i> (n.).....				107	xxvi	<i>Chorophilus nigrinus</i> .
( <i>Rana nigrita</i> ).....	III,	93	xix			
<i>Scaphiopus solitarius</i> (n.).....	I,	85	xii	109	xxvii	<i>Scaphiopus holbrookii</i> .

FAMILY II. HYLOIDEA.

<i>Hyla versicolor</i> .....	I,	101	xvii	115	xxviii	<i>Hyla versicolor</i> .
<i>viridis</i> .....	III,	95	xx	119	xxix	<i>Hyla cinerea</i> .
<i>squirella</i> .....	I,	105	xviii	123	xxx	<i>Hyla squirella</i> .
<i>femoralis</i> .....				127	xxxi	<i>Hyla femoralis</i> .
<i>delitescens</i> .....				129	xxxii	?
<i>Hylodes gryllus</i> .....	III,	75	xiii	131	xxxiii	<i>Acris gryllus</i> .
<i>pickeringii</i> (n.).....				135	xxxiv	<i>Hyla pickeringii</i> .
<i>ocularis</i> .....	III,	79	xiv	137	xxxv	<i>Chorophilus ocularis</i> .

FAMILY III. BUFONOIDEA.

				Vol. v.		
<i>Bufo lentiginosus</i> .....				7	pl. i	<i>Bufo lentiginosus</i> .
( <i>Bufo clamosus</i> ).....	I,	79	xi			
<i>erythronotus</i> .....	III,	99	xx	11	ii	?
<i>quercicus</i> (n.).....				13	iii	<i>Bufo quercicus</i> .
<i>americanus</i> .....	I,	75	ix	17	iv	<i>Bufo americanus</i> .
<i>cognatus</i> .....				21	v	<i>Bufo cognatus</i> .
<i>Engystoma carolinense</i> (n.).....	I,	83	x	23	vi	<i>Engystoma carolinense</i> .

FAMILY II. CAUDATA.

<i>Salamandra gutto-lineata</i> .....	II,	61	xii	29	vii	<i>Spelerpes guttolineatus</i> .
<i>salmonea</i> .....	III,	101	xxii	33	viii	<i>Spelerpes porphyriticus</i> .
<i>rubra</i> .....				35	ix	<i>Spelerpes ruber</i> .
<i>glutinosa</i> .....				39	x	<i>Plethodon glutinosus</i> .
<i>erythronota</i> .....	III,	113	xxvii	43	xi	<i>Plethodon cinereus</i> .
<i>auriculata</i> (n.).....		115	xxviii	47	xii	<i>Desmognathus auriculata</i> .
<i>quadrifasciata</i> (n.).....				49	xiii	<i>Desmognathus quadri-</i> <i>maculata</i> .
<i>jeffersoniana</i> .....				51	xiv	<i>Ambystoma jeffersonia-</i> <i>num</i> .
<i>cirrigera</i> .....				53	xv	<i>Spelerpes bilineatus</i> .
<i>bilineata</i> .....				55	xvi	<i>Spelerpes bilineatus</i> .
<i>symmetrica</i> .....	II,	59	xi	57	xvii	<i>Diemictylus viridescens</i> .
<i>haldemani</i> (n.).....				59	xviii	?
<i>longicauda</i> .....	III,	111	xxvi	61	xix	<i>Spelerpes longicaudus</i> .
<i>granulata</i> .....				63	xx	<i>Ambystoma jeffersonia-</i> <i>num</i> .
<i>quadridigitata</i> (n.).....				65	xxi	<i>Manculusquadridigitatus</i> .

CORRELATIONS OF FIRST AND SECOND EDITIONS—Continued.

Holbrook's nomenclature.	First edition.			Second edition.		Modern nomenclature.
	Vol.	Page.	Plate.	Nol. V.		
				Page.	Plate.	
<i>Salamandra venenosa</i> .....	III,	105	xxiv	67	xxii	<i>Ambystoma maculatum</i> .
<i>fasciata</i> .....		103	xxiii	71	xxiii	<i>Ambystoma opacum</i> .
<i>talpoidea</i> (n.).....		117	xxix	73	xxiv	<i>Ambystoma talpoideum</i> .
<i>Triton dorsalis</i> .....				77	xxv	<i>Diemictylus viridescens</i> .
( <i>Salamandra dorsalis</i> ).....	II,	57	x			
<i>Triton tigrinus</i> .....				79	xxvi	<i>Ambystoma tigrinum</i> .
( <i>Salamandra tigrina</i> ).....	III,	109	xxv			
<i>Triton niger</i> .....				81	xxvii	<i>Desmognathus nigra</i> .
<i>porphyriticus</i> .....				83	xxviii	<i>Spelerpes porphyriticus</i> .
<i>ingens</i> .....				85	xxix	<i>Ambystoma tigrinum</i> .

TRIBE II. IMMUTABILIA.

FAMILY I. CRYPTOBRANCHOIDEA.

<i>Amphiuma means</i> .....	89	xxx	<i>Amphiuma means</i> .
<i>tridactylum</i> .....	93	xxxi	<i>Amphiuma means</i> .
<i>Menopoma alleghaniensis</i> .....	95	xxxii	<i>Cryptobranchus alleghaniensis</i> .
<i>fusca</i> (n.).....	99	xxxiii	<i>Cryptobranchus fuscus</i> .

FAMILY II. PHANERORRANCHOIDEA.

<i>Siren lacertina</i> .....	101	xxxiv	<i>Siren lacertina</i> .
<i>intermedia</i> .....	107	xxxv	<i>Siren lacertina</i> .
<i>striata</i> .....	109	xxxvi	<i>Pseudobranchius striatus</i> .
<i>Menobranchius maculatus</i> .....	111	xxxvii	<i>Necturus maculosus</i> .
<i>lateralis</i> .....	III, 119	xxx	115 xxxviii <i>Necturus maculosus</i> .

III.

Southern Ichthyology: or, a Description of the Fishes inhabiting the Waters of South Carolina, Georgia, and Florida. No. 2. New York: Wiley & Putnam. 1847. [4to, pp. 1-32, colored plates i-iv.]

No more appears to have been published; see page 59.

The species described and illustrated and the names now generally accepted are herewith given:

Holbrook's names.	Page.	Plate.	Fig.	
<i>Umbrina alburnus</i> .....	1	I	1	<i>Menticirrus alburnus</i> .
<i>Umbrina littoralis</i> .....	10		2	<i>littoralis</i> .
<i>Micropogon undulatus</i> .....	12	II	2	<i>Micropogon undulatus</i> .
<i>Corvina ocellata</i> .....	17		1	<i>Sciænops ocellatus</i> .
<i>Leiostomus obliquus</i> .....	21	III	1	<i>Leiostomus xanthurus</i> .
<i>Lobotes surinamensis</i> .....	25		2	<i>Lobotes surinamensis</i> .
<i>Elacate canada</i> .....	30	IV	1	<i>Elacate canada</i> .
<i>Ephippus gigas</i> .....		IV	2	<i>Chatodipterus faber</i> .

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IV.

An account of several species of Fish observed in Florida, Georgia, &c. *Journ. Acad. Nat. Sci. Phila.*, III, Art. V, pp. 47-58, pls. v, vi, 1855.

Descriptions and illustrations of eight fresh-water fishes are published, viz:

Holbrook's names.	Page.	Plate.	Fig.	Modern names.
<i>Pomotis elongatus</i> .....	47	v	1	<i>Lepomis auritus solis</i> .
<i>speciosus</i> .....	48	"	2	<i>holbrookii</i> .
<i>marginatus</i> .....	49	vi	2	<i>megalops</i> .
<i>Bryttus fasciatus</i> .....	51	v	3	<i>Enneacanthus obesus</i> .
<i>gloriosus</i> .....	52	"	4	<i>Enneacanthus gloriosus</i> .
<i>Calliurus floridensis</i> .....	53	vi	1	<i>Chaenobryttus gulosus</i> .
<i>Pimelodus marmoratus</i> .....	54	"	4	<i>Ameiurus nebulosus marmoratus</i> .
<i>Boleosoma Barratti</i> .....	56	"	3	<i>Boleichthys fusiformis</i> .

V.

Ichthyology | of | South Carolina. | By John Edwards Holbrook, M. D., | [7 lines of titles] | Charleston, S. C. : | Published by John Russell. | 1855 [-1857]. [4to, t. p. (= 1 l.) + notice (= 1 l.) + pp. 1-184, pl. 1-29 + pl. unnumbered.] 27 colored plates.

Only the date 1855 is given on the title page, but the issue of the parts extended over nearly three years. The author's "notice" is dated "November 10th, 1854."

VI.

Ichthyology | of | South Carolina. | By John Edwards Holbrook, M. D., | [7 lines of titles.]—Vol. I. | Charleston, S. C. : | Published by Russell and Jones. | 1860. | [4to, vii + 205 pp., 28 pl.]

The species described and illustrated are enumerated in the following correlation of both editions:

CORRELATION OF EDITIONS OF 1855-'57 AND 1860 OF HOLBROOK'S FISHES OF SOUTH CAROLINA.

Holbrook's names.	Text.		Illustrations.	Pls.	Modern names.
	1. ed.	2. ed.			
FAMILY PERCIDÆ.					
<i>Perca flavescens</i> .....	2	2	i,	1	<i>Perca flavescens</i> .
FAMILY ICTHELIDÆ.					
<i>Pomotis vulgaris</i> .....	6	8	i,	2	<i>Eupomotis gibbosus</i> .
<i>Ichthelis incisor</i> .....		12	ii,	1	<i>Lepomis pallidus</i> .
( <i>Pomotis incisor</i> ).....	13			1	

JOHN EDWARDS HOLBROOK.

CORRELATIONS—Continued.

Holbrook's names.	Text.		Illustrations.	Modern names.
	1. ed.	2. ed.		
<i>Ichthelis rubricauda</i> .....		15	2	<i>Lepomis auritus</i> .
( <i>Pomotis rubricauda</i> ).....	10		2	
<i>Centrarchus irideus</i> .....		18	iii, 1	<i>Centrarchus macropterus</i> .
		15	1	<i>Enneacanthus obesus</i> .
<i>Labrax Americanus</i> .....		20	2	<i>Morone americana</i> .
( <i>Labrax rufus</i> ).....	21		2	
<i>Labrax lineatus</i> .....	17	24	iv, 1	<i>Roccus lineatus</i> .
<i>Grystes Salmoides</i> .....	25	28	2	<i>Micropterus salmoides</i> .
<i>Serranus erythrogaster</i> .....	29	32	v, 2	<i>Epinephelus morio</i> .
<i>Diplectrum fasciculare</i> .....	32	35	1	<i>Diplectrum fasciculare</i> .
<i>Pomoxis hexacanthus</i> .....		39	vi, 1	<i>Pomoxis hexacanthus</i> .
( <i>Centrarchus hexacanthus</i> ).....	36		1	
<i>Rhypticus maculatus</i> (n.).....		42	2	<i>Rypticus maculatus</i> .
( <i>Rypticus maculatus</i> ).....	39		2	
<i>Centropristes atrarius</i> .....	42	45	vii, 2	<i>Centropristes striatus</i> .
<i>trifurca</i> .....	47	49	1	<i>Centropristes philadelphicus</i>
FAMILY SPARIDÆ.				
<i>Sargus ovis</i> .....	51	53	viii, 2	<i>Archosargus probatocephalus</i> .
<i>Lagodon rhomboides</i> .....		59	1	
( <i>Sargus rhomboides</i> ).....	56		1	
FAMILY SCOMBRIDÆ.				
<i>Temnodon saltator</i> .....	62	64	ix, 2	<i>Pomatomus saltatrix</i> .
<i>Cybium maculatum</i> .....	66	68	1	<i>Scomberomorus maculatus</i> .
<i>Seriola carolinensis</i> (n.).....	70	72	x, 2	<i>Seriola carolinensis</i> .
<i>zonata</i> .....	73	75	1	<i>Seriola zonata</i> .
<i>chloris</i> .....		79	xi, 1	<i>Chloroscombrus chrysurus</i> .
( <i>Seriola cosmopolita</i> ).....	77		1	
<i>Bothrocara pampanus</i> (n.) ..	81	83	2	<i>Trachynotus carolinus</i> .
<i>Caranx defensor</i> .....	85	87	xii, 1	<i>Carangus chrysos</i> .
<i>hippos</i> .....	88	90	2	<i>Carangus hippos</i> .
<i>falcatus</i> (n.).....	92	94	xiii, 2 (sup.)	<i>Hemicarax amblyrhynchus</i> .
<i>Richardi</i> (n.).....	94	96	xiii, 1 (inf.)	<i>Carangichthys latus</i> .
<i>Elacate canada</i> .....		97	xiv, 2	<i>Elacate canada</i> .
		95	1	
<i>Echeneis lineata</i> (n.).....		102	xiv, 1	<i>Echeneis neucrates</i> .
( <i>Echeneis albicauda</i> ).....	101		2	
FAMILY SQUAMIPINNIDÆ.				
<i>Ephippus gigas</i> .....	105	107	xv, 2	<i>Chætoäipterus faber</i> , old.
<i>faber</i> .....	108	110	1	<i>Chætodiæpterus faber</i> , young.

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CORRELATIONS—Continued.

Holbrook's names.	Text.		Illustrations.		Modern names.
	1. ed.	2. ed.		Pls.	
FAMILY SCLERIDÆ.					
<i>Pogonias cromis</i> .....	112	114	xvi,	2	<i>Pogonias chromis</i> , old.
<i>fasciatus</i> .....	118	119		1	<i>Pogonias chromis</i> , young.
<i>Hæmulon chrysopteron</i> .....	120	121	xvii,	1	<i>Hæmulon chrysopteron</i> .
<i>arcuatum</i> .....	123	124		2	<i>Hæmulon plumieri</i> .
<i>Otolithus regalis</i> .....	127	129	xviii,	1	<i>Cynoscion regalis</i> .
<i>thalassinus</i> (n.).....	132	133		2	<i>Cynoscion thalassinus</i> .
<i>nothus</i> (n.).....	134	134	xix,	1	<i>Cynoscion nothus</i> .
<i>carolinensis</i> .....	133	136		2	<i>Cynoscion nebulosus</i> .
<i>Umbrina alburnus</i> .....	136	137	xx,	1	<i>Menticirrhus alburnus</i> .
<i>littoralis</i> (n.).....	142	144		2	<i>Menticirrhus littoralis</i> .
<i>Micropogon undulatus</i> .....	145	146	xxi,	1	<i>Micropogon undulatus</i> .
<i>Corvina ocellata</i> .....	149	150		2	<i>Scienops ocellatus</i> .
<i>Larimus fasciatus</i> (n.).....	153	154	xxii,	1	<i>Larimus fasciatus</i> .
<i>Pristipoma fulvomaculatum</i> ....		157		2	<i>Orthopristis fulvomaculatus</i> .
( <i>Hæmulon fulvomaculatum</i> ).	156			2	
<i>Leiostomus obliquus</i> .....		160	xxiii,	1	<i>Leiostomus xanthurus</i> .
	163		xxiv,	1	
<i>Homoprion xanthurus</i> .....		164	xxiv,	2	<i>Bairdiella chrysuræ</i> .
	170		xxiv,	2	
<i>lanceolatus</i> (n.)....		167	xxiv,	1	<i>Stellifer lanceolatus</i> .
	168		xxiii,	1	
<i>Lobotes surinamensis</i> .....	159	169		2	<i>Lobotes surinamensis</i> .
<i>Pagrus argyrops</i> .....	175	174	xxv,	1	<i>Stenotomus chrysops</i> .
<i>Serranus nigritus</i> (n.).....	173	177		2	<i>Garrupa nigrita</i> .
FAMILY ELOPIDÆ.					
<i>Elops saurus</i> ....	179	180	xxvi,	2	<i>Elops saurus</i> .
FAMILY SCOPELINIDÆ.					
<i>Saurus fetens</i> .....	184	187	xxvi,	1	<i>Synodus fetens</i> .
<i>Trachinotus glaucus</i> .....		192	xxviii,	1	<i>Trachinotus glaucus</i> .
<i>Hæmulon quadrilineatum</i> .....		185		2	<i>Bathystoma rimator</i> .
FAMILY ESOCIDÆ.					
<i>Esox affinis</i> (n.).....		198	xxvii,*	1	<i>Lucius reticulatus</i> .
<i>ravenelii</i> (n.).....		201		2	<i>Lucius americanus</i> .

\*The references in the text under *Esox affinis* and *Esox ravenelii* are to plate xxviii, but the plate itself is numbered xxvii, while the plate numbered xxviii is referred to in the text as xxvii.

## VII.

## UNPUBLISHED ENGRAVED PLATES.

The last part of the first edition of the Ichthyology of South Carolina issued ended with page 184, in the midst of the description of the *Saurus fetens* and of the dentition with the words "the palate;" the last plate was number "XXVII," containing the figures of two pikes, which were unnamed, but in the new and revised edition named *Esox affinis* and *Esox ravenelii*.

The copy of the first edition in the Library of Congress (Smithsonian deposit) is imperfect, pages 1 to 16, as well as 177 to 184, being wanting. I have not been able to ascertain definitely whether the description under the name *Centrarchus iridens* is applicable to that species (now known as *Centrarchus macropterus*) or not, but it probably is; the figure, however, is that of the entirely different *Enneacanthus obesus*.

Holbrook had ready for issue, all engraved, three plates, of which proofs were obtained by the Smithsonian Institution, and have been bound at the end of the imperfect copy of the first edition.

Two of these were numbered ("Pl. XXVIII" and "Pl. XXIX") and apparently had been drawn by Richard; they had been "printed by Tappan & Bradford, Boston." The other was unlettered and much more finely executed; the artist probably was Sonrel, and the plate had probably been drawn and engraved much later than the others.

On "Pl. XXVIII" are represented the Tailor Herring (*Pomolobus mediocris*) and Shad (*Alosa sapidissima*).

On "Pl. XXIX" are delineated the Menhaden (*Brevoortia tyrannus*) and Gizzard Shad (*Dorosoma cepedianum*).

On the unnumbered plate are ten figures representing various species of Cyprinodonts or Pöeciliids, viz., *Fundulus majalis* (♂ and ♀), *Cyprinodon variegatus* (♂ and ♀), *Mollinesia latipinnis* (♂), *Fundulus chrysotus* (♂), *Gambusia affinis* (♂ and ♀), and *Heterandria formosa* (♂ and ♀).

The second part of the "Southern Ichthyology," supposed to be the only one published, is not in any of the great libraries, and the only copy I ever saw has disappeared from view. Recently I applied in vain for information respecting it to the Library of Congress, the Fish Commission, the Academy of Natural Sciences of Philadelphia, Mr. Samuel Garman of the Museum of Comparative Anatomy, and Dr. Anthony Woodward of the American Museum of Natural History.