BETWEEN THE FIRST BLIND CAVEFISH AND THE LAST OF THE MOHICANS: THE SCIENTIFIC ROMANTICISM OF JAMES E. DEKAY

By Aldemaro Romero

James DeKay, the man who first described a species of blind cavefish for science, was an unlikely hero in the history of biospeleology: he was a physician by training, not a natural historian; he was closer to the romantic literary writers of his time than to any group of scientists; there is no evidence that he ever visited any cave, and the cavefish he described was collected by someone else in Kentucky, far away from New York State, his area of research. Yet his name is indelibly tied to the beginning of biospeleology in the United States. This article represents an attempt to understand DeKay's scientific approach to his work, particularly to the first scientific description of a blind cavefish.

THE BEGINNINGS

James Ellsworth DeKay (he himself spelled it sometimes as Dekay or De Kay) was born in Lisbon, Portugal, on 12 October 1792. He was the eldest son of George and Catherine (Coleman) DeKay. George was a descendant from a Dutch family that settled in America in the seventeenth century (Fisher 1973) while Catherine was from Cork, Ireland. George was a sea captain sent by the U.S. government to Europe in 1775. He and Catherine met in Lisbon at a dance. James was brought back to Scarsdale, New York, when he was 2 years old. His mother died when he was 6 and his father when he was 10. Apparently his father left him with a pension of $3,000 a year, a sum with which he would live comfortably for the rest of his life.

James received his secondary education in Connecticut and from an early age showed a great deal of interest in natural history. Although he attended Yale from 1807 to 1812 (he seems to have repeated his junior year), he never graduated (Massa Jr., pers. comm.). His may have studied medicine with a physician in the summer of 1811 in Guilford, Connecticut, and may have pursued some other medical studies in New York City. He enrolled in the University of Edinburgh, Scotland, (1818) receiving his M.D. in

1819. This is intriguing since at that time it took three years of study, not just one, to graduate as a physician from that university (Wilson, pers. comm.).

The title of his thesis was *De Erroris Scaturigine in Experimentis Physiologicis* (On observational errors in physiological experiments), a 21-page, uninteresting dissertation about experimental misinterpretations where he provided no new information. Apparently he also traveled to Paris and Germany pursuing his medical studies (Anonymous 1852, Fisher 1973). He may have used previous schooling in order to shorten his stay at Edinburgh. From the dedications in his thesis, it can be inferred that he may have studied with Samuel Latham Mitchill whom he described as a professor of natural history in *Academia Novae Eboracensi* (New York?). The other dedication is to Aemelio (Emil) Osann, M.D., whom he described as professor of "*materia medica*" in the *Academia Literarum Regia Berolinensi* (Berlin). Mitchill, as DeKay, had graduated from the University of Edinburgh, and it is possible that the former played a role in getting James into that University. Also, Mitchill switched from medicine to the natural sciences and was the founder of the New York Lyceum of Natural History, an association in which DeKay participated actively; therefore, it is reasonable to think that Mitchell acted as both mentor and role model to the young DeKay. We know much less of Dr. Osann as to speculate on his influence on the young American.

After returning from Europe, DeKay became very close to Henry Eckford (b. Kilwining, near Irvine, Scotland, 12 March 1775; d. Constantinople, Turkey, 1832), the eminent marine architect and shipbuilder, who built in 1822 the *Robert Fulton* which made the first successful trip by a steam boat from New York to New Orleans to Havana (Eckford & Huxley 1988). DeKay would marry Henry's daughter Janet Eckford (1802-1854) on 31 July 1821. He traveled briefly to Quebec with Fitz-Greene Halleck and later sailed with his father-in-law as surgeon in the frigate built for Constantinople's Sultan's navy. Eckford was to take charge (as superintendent) of the navy yard at that Turkish city but died the year after his arrival. In 1833 DeKay published (anonymously) his impressions of Turkey in a volume called *Sketches of Turkey by an American*, in which he gave a favorable view of the country and its institutions; yet, Hellenists of the day were incensed that an American should appear as a defender of the oppressors of Greece.

DeKay's father-in-law at one time had a controlling interest in *The National Advocate*, a New York political journal, and toyed with the idea of installing DeKay as editor. DeKay also wanted to start a literary magazine with Halleck as editor, but nothing came of that initiative either (Dictionary of American Biography, Vol. 3:203-204).

While in Turkey, DeKay made a special study of the Asiatic cholera, about which little was known in America. After his return to New York he had the opportunity to put in practice what he had learned on this disease: in 1832 he became famous because he promoted the use of port wine as a cholera remedy. Despite its uncertain health benefits, the advice was so highly regarded that "Dr. DeKay" became one of the bar pours of New York's cholera days while he was being nicknamed "Dr. Port." Yet, none of the city's doctors had any idea what caused Asiatic cholera (Koeppel 2000). This is the last time we know he practiced as a physician, a practice that he found repugnant (Wilson & Fiske 1888) at a time when anesthesia did not exist and medical treatments were usually more harmful than beneficial.

Shortly after his return from Europe he settled permanently in Oyster Bay, Long Island, devoting himself to cultivate friends in literary circles, studying natural history, and contributing to the New York press. Among the literary men he befriended were Washington Irving (b. New York City, 3 April 1783; d. Tarrytown, New York, 28 November 1859) the author of *The Legend of Sleepy Hollow* and *Rip Van Winkle*; Joseph Rodman Drake (b. New York City, 7 August 1795; d. New York City, 21 September 1820, who would marry Sarah Eckford, sister of DeKay's wife) a noted poet and physician, James Fennimore Cooper (b. Burlington, New Jersey, 15 September 1789; d. Cooperstown, New York, 14 September 1851) who wrote *The Last of the Mohicans* (1826), and Fitz-Greene Halleck (b. Guilford, Connecticut, 8 July 1790;d. Guilford, 19 November 1867), a famous poet. In 1837 they started the Authors Club (Washington Irving president, Halleck vice-president), with all the members being part of America's romantic literary movement.

The main characteristics of the American romantic literary movement were the sense of frontier philosophy (a vast country with the ideas of freedom with no geographic limitations), optimism (greater than in Europe because of the presence of vast frontier lands), experimentation (in both science and institutions), the mingling of races (epitomized by the arrival of immigrants in large

numbers to the US), and the growth of industrialization (with the subsequent polarization of North and South; where North becomes industrialized while the South remains agricultural). We will see how DeKay transferred some of those values into his scientific writings.

SCIENTIFIC CAREER

DeKay's first scientific paper was published in 1821, just two years after his return from Europe. He soon joined the major scientific associations of New York. For example, in 1825 we find him as Curator of the Literary and Philosophical Society of New York. Despite the name of this group, founded in 1814, virtually all its officers were naturalists. This association disappeared by the end the 1820's when most of its members, including DeKay, joined the Lyceum of Natural History of New York, founded in1819 by Mitchill. James was one of the most active members of that association where he acted as a Librarian (1826-1827), Editor of the *Annals* (1819-1830), editing volumes1 and 2, Corresponding Secretary (1824-1836), Recording Secretary (1834-1836), and First Vice-president (1840-1846). He was also largely responsible for the development of the Lyceum's collection. He was a member of the American Association for the Advancement of Science (1848-1851, Kohlstedt 1976). He also published in *The American Journal of Science and Arts*, *Transactions of the Albany Institute*, *Monthly American Journal of Geology and Natural Science* (Philadelphia). Although some claim that he was one of the founders of the Academy of Medicine (Wilson & Fiske 1968), archival papers from that institution do not support such contention (Shaner, pers. comm.).

However, it was a new government-sponsored initiative that placed him in the position of generating his main scientific opus while contributing to the advance of the study of biospeleology in the U.S. On 18 April 1835 the New York State Legislature approved the Geological Survey of New York, which was to include the preservation of specimens of "zoological productions" (Dix 1836). The legislature was responding to lobbying from the Lyceum of Natural History and the Albany Institute, among others, that were seeking a statewide survey of natural resources. That, and the need for coal, convinced the State to pursue this initiative (Sterling 1999). This can also be framed within the movement that started in

the 1840's when several states of the United States inaugurated natural history surveys and published catalogues of the local faunas (Coe 1918). The Survey was established in Albany in 1836, which makes it the oldest continuously functioning geological (and biological) survey in the New World (Fakundiny & Albanese 1988). The Survey hired DeKay as its zoologist in July 1836 with an annual salary of $1,500 (Anonymous 1837).

In the wake of his literary friends' vision of an expanding America, DeKay soon began to include as fauna of New York, virtually everything he could think of in the North American continent. He justified it by saying that

> "The State of New York is connected on its southern border with the ocean, and its numerous products; at the north will be found many inhabitants of the arctic regions; while the rivers on its south-western frontier will be found to connect it with the great valley of the Mississippi. From its magnitude and geographical position, it will therefore be found to comprise in all probability, more than two-thirds of all animal species existing within the limits of the United States." (DeKay 1838).

Yet, most of the citations to non-New York species were rather brief. Although DeKay made extensive use of correspondence in order to acquire both information and specimens from farmers, hunters, and fishermen, he also embarked on extensive fieldwork, including a water-borne tour of the Adirondacks. He helped to establish what would become the major elaboration of the story of the Adirondacks as a romantic landscape and setting the pattern for increasingly popular camping trips seeking to recapture the vigor of body and soul weakened by the stresses of modern life. Native Americans were romanticized in those times, now that they had been placed in reservations and, as far as the northeast Americans were concerned, were no longer an obstacle to American expansionism (Terrie 1997). This work took him eight years (1836-1844) and the results were published between 1842-1844 in the form of five quarto volumes titled *Zoology of New York; or, the New York Fauna, comprising detailed descriptions etc.*. It encompassed both recent and fossil organisms, although most the latter were mentioned only briefly.

Additionally, a list of mammals, birds, reptiles, and amphibians, drafted by DeKay prior his death in 1851, were published in the *Catalogue of the Cabinet of Natural History of the State of New York and of the Historical and Antiquarian Collection Annexed Thereto*. For other groups of animals he wrote "The Fishes, Insects, Shells, etc. are for the present omitted, in the hope that they may soon be increased in number, and duly arranged and named" (DeKay 1853).

This contribution by DeKay is still considered a monumental work pioneering the knowledge of a fauna for which very little had been published up to that time. Yet, it did not lack a number of contemporary critics. For example, some complained that the *Zoology of New-York* contained mostly non-New York species (including the Florida manatee). Yet, had he not included those "extralimital" species, some like the blind cavefish would not have been described at that time (see Smallwood 1941 for some insights on this). Also, some were shocked for the alleged cost of the publication ($130,000), an astronomical sum for that time (Welch 1998, p. 99). For many, quality was not necessarily at the level of the expenses and some pounded both the contents and the illustrations, including the emphasis he put in using local or vernacular and Indian names (Dictionary of American Biography Vol. 3:203-204).

THE BLIND CAVEFISH

A number of cavefish tales had been published for China and Europe from the sixteenth throughout the eighteenth centuries (Romero 2001). The first published record of a confirmed troglomorphic fish in the Western Hemisphere was probably that of James Flint (Flint 1822), a Scotsman who lived for several months in Jeffersonville, Indiana, in 1820 and recorded that "a Colonel C – of Indiana told me that a settler in his neighbourhood digging a well, penetrated into a stream of water, and found blind fishes in it." He added as a footnote that "Since the above was written, a notice of blind fishes has appeared (if I mistake not) in the memoirs of the Wernerian Society of Edinburgh"). Yet, such account was never published in that journal. Another early account of a cavefish for North America was by Robert Davidson (1808-1876), who visited Mammoth Cave in Kentucky in October 1836 accompanied by Stephen Bishop (1780-1850). Davidson reported that "*white fish*"

were found here without eyes" whose existence was already known by some of the locals (Davidson 1840) [Italics in the original].

The first time that an American troglomorphic fish was mentioned in the scientific literature was in a short note in the Proceedings of the Academy of Natural Sciences of Philadelphia (Anonymous 1842). There it was reported that a W. T. Craigie donated to the Academy at the 24 May 1842 meeting a specimen of "a small white fish, also eyeless (presumed to belong to a subgenus of *Silurus*), taken from a small stream called the 'River Styx' in the Mammoth Cave, Kentucky, about two and one-half miles from the entrance." Today, at the collection of the Academy there are three specimens of *Amblyopsis spelaea* in alcohol, that appear linked to this donation. Two are catalogued as ANSP 7964 collected by W.T. Craigie, and the other, ANSP 7964, collected by 'Mrs. C.H. Graff, Messrs. Craigie & Lambert'. All three specimens were captured in Mammoth Cave, but no dates are given (Romero 2001).

Yet, following the Rules of the Zoological Nomenclature, none of these references count as a scientific description since no scientific name was given. It was DeKay who did so in his *Zoology of New York* where he named the fish "*Amblyopsis spelaeus*" (known today as *Amblyopsis spelaea*). The description was not very detailed nor of a great quality. This could have been due to the fact that it was based on a poor specimen in the Cabinet of the Lyceum of Natural History of New York (Putnam 1872) or to the fact that DeKay was not a trained ichthyologist (Smallwood 1941). Yet, we must be careful in judging scientific procedures with standards that were not in common place until almost 100 years later. Although this cavefish was captured in Mammoth Cave, DeKay included it in his New York faunal list because "It cannot therefore fail to be perceived that the Ichthyology of New-York will embrace a very large proportion of the Fishes of the United States" (DeKay 1842:iv). He actually placed this new species under a list of fishes under the subheading '(EXTRA-LIMITAL)'. Again, this is consistent with his romantic views of an expanding frontier but also with his desire of making sure that a potential species, whose specimens had been circulated already in scientific circles, did not go unnamed and, therefore, he included it in a footnote although without illustration.

What is less clear is what happened to the original specimen (holotype) used to describe the species. The specimen belonged originally to the Cabinet of the Lyceum of Natural History of New

York and cannot be located today. I strongly suspect that it was lost during the 1866 fire that destroyed the Lyceum collections (Fairchild 1887). The New York Survey Museum (NYSM), which is the depository of the specimens collected by the NY Geological Survey, has two specimens of *A. spelaea*; one NYSM11464, was collected at River Styx in Mammoth Cave on May 1844 by J.A. Granger of Canandaigua, NY. The transferal letter is to T. Romeyn Beck, a physician from Albany, who was head of the Albany Medical College. His brother, Lewis Caleb, was a mineralogist with NYSM. A second specimen at the same collection lacks information. Neither seems to be the one used by DeKay in his description of the first North American cavefish. DeKay would never write again about *Amblyopsis* (or any other fish); however, this fish caught the attention of a number of anatomists who immediately began studying it (Romero 2001).

DeKay's Last Days

From the time of his retirement from the New York Geological Survey in 1844 until his death, DeKay lived at his house in Oyster Bay and did not publish anything else. Some .biographical notes seem to indicate that he spent his last years trying to recover from the physical demands of his work on the New York Fauna ("The vast labors, demanded of him in the preparation of his State Reports on Zoology, impaired his health, which he never afterward fully regained," Anonymous 1852). I have not been able to ascertain what was his medical condition nor the causes of his death. He died at Oyster Bay, on 21 November 1851 at the age of 57, a rather above-average age for people at that time. He was buried in St. Georges Churchyard in Hempstead, New York. (Anonymous 1851, Welch 1996) and according to his testament and last will, left all his estate to his wife.

Although James and Janet had four sons and four daughters (for their names and biographies see Fisher 1973), only four of them survived him. He was described as a man of "uprightness, amiability and cheerful temperament." (Anonymous 1852)

This unlikely pioneer of biospeleology left us with the first scientific description of a cavefish for the Western Hemisphere, a voluminous zoological work, and a sense of science as a romantic endeavor. All three legacies are worthy of a man's life dedicated to the pursue of knowledge.

Only known portrait of James Ellsworth DeKay

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