Crawford W. Long's Discovery of Anesthetic Ether: Mesmerism, Delayed Publication, and the Historical Record

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Abstract

Recognition for the discovery of anesthetic ether has been contentious from the beginning, although Crawford W. Long's claim for priority, based on his first surgical use in 1842, may be the strongest. However, during most of the applicable history, greater recognition has gone to Thomas Morton, based on his first use in 1846. Morton's was in a public demonstration at Massachusetts General Hospital in Boston, whereas, Long's was with a private patient (but several witnesses) in a rural hamlet, Jefferson, Georgia. Long's claim has been diminished and his reputation at times besmirched because he did not publish his claim until 1849. This paper examines some of the very good reasons why Long delayed his publication.

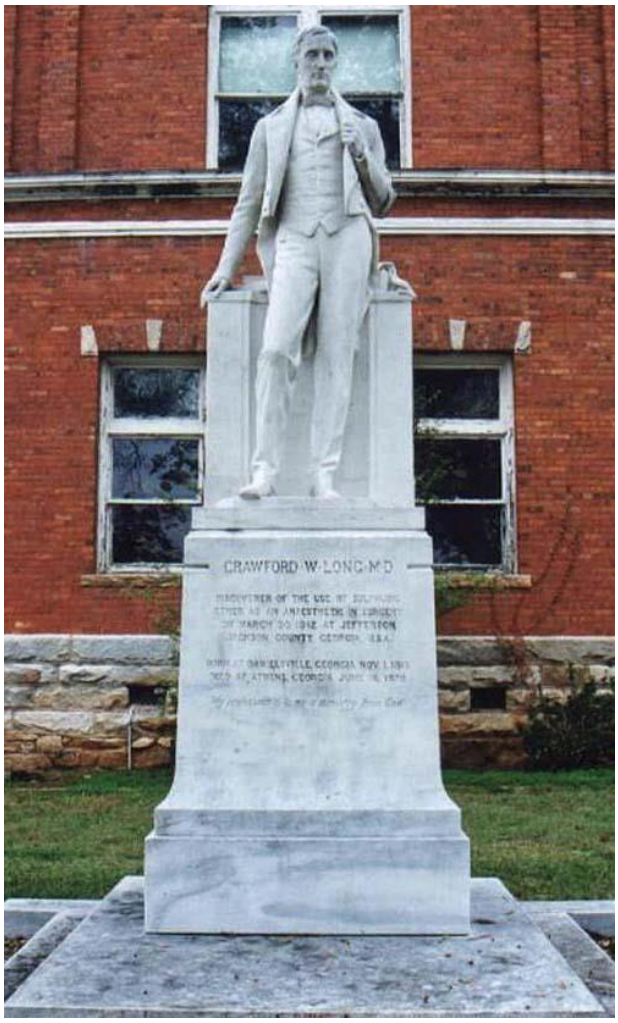
Introduction

The first time I taught History of Psychology (1968), Boring's *History of Experimental Psychology* (1950) was the textbook. Boring's chapter on hypnotism included the discovery of chemical anesthesia, because the discovery of chemical anesthesia led to the demise of the use of hypnosis (or mesmerism) as anesthesia. Most important among the early chemical anesthetics was ether, and Boring attributed the first use of anesthetic

ether to William Morton (1819-1868) of Boston in 1846. Boring's attribution of the discovery of anesthetic ether to Morton caught my attention, because at the time I was teaching in a building at the University of Georgia that bore a brass plaque to recognize the discovery of anesthetic ether by Crawford W. Long (1815-1878) of Georgia in 1842.

A Biographical Overview of Crawford W. Long

Crawford Williamson Long was born on November 1, 1815, in Danielsville, GA, a small town 15 miles north of Athens, the home of the University of Georgia. Long's family home and birthplace still stands as a privately owned residence in Danielsville. As a college freshman at the University of Georgia, Long roomed with and became lifelong friends with Alexander H. Stephens. Although Stephens served in the United States Congress (before and after the Civil War) and as Governor of Georgia, he is best remembered as having served as the Vice President for the Confederate States of America. Long and Stephens are the only Georgians who have statues in Statuary Hall of the United States Capitol. The statue was replicated and placed on the grounds of the Danielsville, GA Courthouse.



Long was graduated from the University of Georgia with an A.M. degree in 1835. Between 1835 and 1838, he taught school in Danielsville, read medicine with Dr. George R. Grant of Jefferson, GA, and studied in the Medical Department of Transylvania University in Lexington, KY. In 1838, Long enrolled at the University of Pennsylvania's Medical Department from which he was graduated in 1839. He then spent 18 months in New York City, apparently going from hospital to hospital to gain as much surgical experience as he could. He was encouraged to become a U.S. Navy surgeon, but acquiesced to his father's wish that he return to Georgia. Long bought Grant's practice in Jefferson in1841.

It was much in vogue in Georgia and elsewhere in the 1840s to use nitrous oxide as a recreational drug, and there was no stigma attached to the physicians from whom

it was obtained and who and sometimes participated in the festivities. Ether, being easier to obtain and store, was also used in what were known as “ether frolics.” Under such influence of ether, Long observed that he and his friends occasionally experienced bumps or tumbles that normally might have caused pain but that did not do so when the person was under the influence of ether. Based on such experience Long proposed to one of his friends, James Venable, that he inhale ether while Long excised a tumor from his neck. Venable’s operation in Long’s medical office in Jefferson, GA, on March 30, 1842, stands, so far, as the first documented case of the use of ether for surgical anesthesia.

The Historical Record Regarding Long

Despite my early interest in the “ether discovery controversy” triggered by the previously mentioned discrepancy between what Boring (1950) wrote and the plaque commemorating Long, the subject was not one to which I devoted much effort, except that over the years as I added some second-hand histories of medicine to my library, I usually looked to see what each included about the discovery of anesthetic ether. Cumulatively, I learned that most often the discovery was attributed to Morton and that, even when Long’s priority was acknowledged, the importance of his discovery was usually diminished on the grounds that he did not publish it until 1849.

Here are a few examples of what some influential historians (and others) wrote about Long and Morton in the discovery of ether as anesthesia.

Sir William Osler, (1921, *The evolution of modern medicine*):

> *Long of Georgia had made patients inhale the vapor until anesthetic and had performed operations upon them in his state, but it was not until October 16, 1846, in the Massachusetts General Hospital, that Morton in a public operating room, rendered a patient insensible with ether and demonstrated the utility of surgical anesthesia.* (p. 206)

Fielding H. Garrison (*History of Medicine*, 3rd edition revised and enlarged, 1924)

> *Crawford Williamson Long . . . having previously noted some accidental effects of ether, removed a small cystic tumor from the back of the neck of a patient under its influence, and subsequently used it in other cases (1842-43), which have been amply certified and vouched for by resident physicians of his locality. But Long published no report of his results, and as Welch has admirably said, "we cannot assign to him any influence upon the historical development of our knowledge of surgical anesthesia or any share in its introduction to the world at large."* (p. 540)

Douglas Guthrie (1958, *A history of medicine*):

> [After noting Long's first case in 1842, Guthrie wrote:] *Long used ether in other cases, but whether from lack of enterprise or failure to grasp the importance, he did not publish his discovery until 1849.* (p. 302)

More recently, the Alabama State Society of Anesthesiologists' website included a short "history" titled *The Fascinating Story of the "Discovery" of Anesthesia* by V. C. Saied, M.D., (originally published in the *Wichita Falls Medicine Magazine* in 1997). Saied's article dwells on Morton and the only excerpt pertaining to Long appears near the end of the article. It is quoted fully here.

> *It is significant that Dr. Crawford Long of Jefferson, Georgia, in whose honor Doctor's Day originated, had been using ether anesthesia for surgery in 1842, 4 years before Morton's public demonstration. He [Long] used it on several minor surgery cases over the next few years. He did not publicize his technique until others had done so. He did not spread the word. He sought no fame or recognition. However, his keeping it isolated in Jefferson, Georgia, and failing to promote ether as anesthesia only prolonged worldwide suffering for 4 years.*

Long has usually fared better in more specialized histories of anesthesia, and a recent book, *Medicine's 10 Greatest Discoveries* (Friedman & Friedland, 1998) includes as chapter five, "Crawford Long and Surgical Anesthesia."

Establishing Priority

> *...proving priorities is tantamount to playing Russian roulette, even when the game is entered into by experienced and knowledgeable players, who have a good idea in which chambers the bullets are loaded, for there is always the danger that some fact or prior deed, lurking in the literature, unseen, or unrecognized, or forgotten, will be discovered to ultimately shoot one dead.* (Wolfe, 2001, p. 504)

Establishing priority for the discovery of ether's anesthetic properties was one of the most contentious efforts in medical history. Long and Morton were not the only ones who claimed or were reported by others to have been the first to use anesthetic ether. Here is the list of the five that Wolfe (2001) recently acknowledged.

1. **January 1842. William E. Clarke**, based on his experience with "ether frolics" and while still a medical student in Rochester, NY**,** administered ether to a woman identified only as "Hobbie" to enable a dentist, Elijah Pope, to perform a painless tooth extraction. According to Wolfe (2001) this was not reported until 1881, and not by Clarke but by Henry M. Lyman in his book, *Artificial anesthesia and anesthetics*.

2. **February 1842. Charles T. Jackson**, a Harvard chemist and geologist, allegedly learned of ether's analgesic properties in the winter of 1841-42. In a belated account (1847), written after Morton's demonstration, Jackson claimed that in February 1842 he had inhaled ether to reduce his suffering due to an accidental inhalation of chlorine gas. There is evidence that Jackson encouraged both Wells and Morton (see below to use ether as anesthesia prior to Morton's use of it in 1846 (see Wolfe, 2001). A case based on weak circumstantial evidence has been made that Jackson may have been

in Jefferson, Georgia, prior to this and may have learned then of Long's use of ether (Boland, 1950).

3. **March 30, 1842. Crawford W. Long,** based on personal experience and observations of friends during "ether frolics," removed a tumor from the neck of James Venable in his medical office in Jefferson, GA (Long, 1849/1992).

4. **December 1844. Horace Wells** of Hartford, CT, showed that the inhalation of nitrous oxide might enable painless tooth extractions. He later suggested that ether might be used, and Morton appears to have been one of those to whom Wells recommended the use of ether.

5. **October 16, 1846. Thomas Morton**, a dentist, served as the anesthetist in an operation to remove a tumor from a patient's jaw at Massachusetts General Hospital in Boston. It is pertinent to note that Morton used color and aromatics mixed with the ether to disguise the fact that he was using ether. Morton hoped to patent his anesthetic (ether was in the public domain) under the name Letheon. In view of Long's critics that he did not publish his discovery soon enough, it is also pertinent to note that it was not Morton who published his discovery. That task fell to Henry J. Bigelow, a surgeon and friend of Morton's. Bigelow witnessed the October 16 surgery and reported it to the American Academy of Arts and Sciences on November 3, 1846. Bigelow followed that report with an article in the *Boston Medical and Surgical Journal* on November 18 (Wolfe, 2001).

Most representative of the contentiousness of assigning credit for the discovery of anesthetic ether was a 16-year effort, led primarily by Morton, to have the U. S. Congress assign credit for the discovery to him together with a generous financial award. In the end, the matter died in Congress, and as noted earlier, it is Long's statue that is in Statuary Hall in the U. S. Capitol Building.

Recognition for Morton has recently been undermined by a significant historical work on the discovery of anesthetic ether by Richard Wolfe (2001). Wolfe focused mainly on Morton, who is the subject of the book's title, *Tarnished Idol.* In his concluding chapter, Wolfe (2001) criticized those authors and institutions who

perpetuated "the myth of W. T. G. Morton . . . [and who] . . . enlarged . . . and endowed [Morton] with an added aura of legitimacy." (p. 544) Wolfe concluded:

> *That so unlikely an outcome should accrue to a man possessed of such limited talent and so may flaws, and one lacking in a sense of ethics and decency...was...one of the bitter ironies of history . . .* (p. 544)

Wolfe's general credentials and scholarship are sufficient that *Tarnished Idol* is likely to be influential in the matter of how the discovery of anesthetic ether is recognized. For example, *Tarnished idol* received laudatory reviews in the *Journal of the American Medical Association* (March 2002), the *New England Journal of Medicine* (January 2002), and the *Journal of the History of Medicine* (July 2002). Unfortunately. Wolfe's views are unjustly damaging to Long. Therefore, it will be useful to consider, briefly, some of Wolfe's conclusions regarding Long.

Wolfe's (2001) most damaging assessment of Long was to echo and enhance Raper's (1945) earlier assessment of Long. Wolfe quoted Raper as follows: "*The eternally provocative question about Dr. Long is: Why didn't he pursue the work he started with greater vigor and report it.*" Wolfe continued, "*Raper struggled hard to reply to his own question, and not being able to answer it to his satisfaction, concluded that concept of anesthesia simply did not occur to Long*." (p. 503) Wolfe seemingly endorsed Raper's conclusion when he added, "*In all fairness, it should be pointed out that almost everyone else in that day and age showed the same lack of imagination."* (p. 503)

Wolfe's conclusion that Long lacked imagination regarding the importance of anesthetic ether also echoes Guthrie's conclusion (1958) quoted above. Raper's, Guthrie's, and Wolfe's (2001) conclusions defy well documented evidence that is provided in sources that Wolfe cited. For example, it was well documented (see Boland, 1950; Long, 1849/1992; Taylor, 1928) that Long had performed at least six surgical procedures using anesthetic ether prior to Morton's demonstration in October, 1846. Furthermore, Long's cautious attitude in assessing the validity of anesthesia (see below) resulting from the inhalation of ether shows that he knew very well the significance of what he was doing.

Explaining Long's Delay in Publication

As may be seen below, Long acknowledged that there will likely be those who would question his delay in publication. The fact that his explanation of the delay was, itself, belated may be seen by some as being self-serving. However, the facts, particularly the timing of the availability of his most important test cases, support the validity of his explanation.

> *The question will no doubt occur, why did I not publish the results of my experiments in etherization soon after they were made? I was anxious, before making my publication, to try etherization in a sufficient number of cases to fully satisfy my mind that anaesthesia was produced by the ether, and was not the effect of the imagination, or owing to any peculiar insusceptibility to pain in the persons experimented on.* (Long, 1849/1992, p. p. 710)

Long further discusses the basis of his skepticism regarding "the effect of the imagination" and his efforts to gain more cases below. In addition to the explanations provided in the quotations below, Long also noted that he had made more than one attempt to write something for publication but was invariably interrupted by the distractions of his medical practice. Furthermore, Long indicated that when he learned early in 1847 of several operations with surgical ether reported in the Medical Examiner,

> *. . . I was determined to wait a few months before publishing an account of my discovery to see whether any surgeon would present a claim...prior to the time it was used by me.* (Long, 1849/1992, p. 706)

As indicated, a significantly influencing factor in his delay to publication was his initial skepticism regarding whether ether was causing the anesthesia. His skepticism was based considerably the possibility that his patients may have experienced some form of self-induced mesmerism.

Long's concern regarding mesmerism was well placed. In 1842, mesmerism was well known and was an accepted approach to anesthesia that was included in standard medical training in many institutions. Nevertheless, as may be seen in the following quotation, Long was skeptical of mesmerism.

> *At the time I was experimenting with ether there were physicians in high authority and of justly distinguished character who were advocates of mesmerism, and recommended the induction of the mesmeric state as adequate to prevent pain in surgical operations. Notwithstanding thus sanctioned, I was an unbeliever in the science, and of the opinion that if the mesmeric state could be produced at all it was only on those of strong imaginations and weak minds, and was to be ascribed solely to the workings of the patient's imagination. Entertaining this opinion, I was the more particular in my experiments on etherization.* (Long, 1849/1992, pp. 710-711).

Before quoting Long on the difficulties he faced in gaining appropriate test cases, the following chronological summary of Long's cases that predated Morton's use of anesthetic ether (October 16, 1846) shows how few and far between suitable cases to test the validity of anesthetic ether became available to him.

March 30, 1842. Extirpation of the first tumor from the neck of James Venable. Venable had two tumors, but it was decided beforehand that extirpation would be limited to one.

June 6, 1842. Extirpation of the second tumor from James Venable.

July 3, 1842. Amputation of a toe from a boy, "Jack" (surname unstated).

September 9, 1843. Extirpation of a "wen" (cyst) from the head of Mary Vinson.

January 8, 1845. Amputation of a finger from a boy, "Isam" (surname unstated).

The cases of Mary Vinson and Isam afforded Long the opportunity to test the anesthetic properties of ether using some experimental control procedures. Here is how Long described the operations.

> *Surgical operations are not of frequent occurrence in a country practice, and especially in the practice of a young physician; yet I was fortunate enough to meet with two cases in which I could satisfactorily test the anesthetic power of ether. From one of these patients, [Mary Vinson] I removed three tumors the same day; the inhalation of ether was used only in the second operation, and was effectual in preventing pain, while the patient suffered severely from the extirpation of the other tumors. In the other case, [Isam] I amputated two fingers of a negro boy; the boy was etherized during one amputation and not the other; he suffered from one operation and was insensible during the other.* (Long, 1849/1992, p. 711)

In addition to these "surgical" cases that predated Morton, there is also documentation (see Boland, 1959, Chapter 6) to show that Long extracted a tooth from Mary Ware during the summer of 1846 while she was anesthetized with ether. Additionally, Long delivered his second child on December 27, 1845, while his wife was being given anesthetic ether. As far as I know, Long never tried to establish priority for the first use of anesthesia in obstetrics, but his use of ether with his wife predates by slightly more than a year that of the Scottish physician, James Y. Simpson, who is credited with the first obstetrical use of anesthesia (January, 1847; ether was the anesthetic).

All these uses of anesthetic ether, especially the cases of Mary Vinson and Isam, show clearly that Long understood the significance of what he was doing and, thus, they refute the contentions of Guthrie (1958), Raper (1945), Wolfe (2001) and others that Long "lacked imagination" regarding the significance of what he was doing. It also shows that he was being appropriately cautious in determining that ether was, indeed, a reliable anesthetic before announcing it to the world.

References

Boland, F. K. (1950). The first anesthetic: The story of Crawford Long. Athens, GA: University of Georgia Press.

Brooks, R. P. (1956). *The University of Georgia under sixteen administrations, 1785-1955.* Athens, GA: University of Georgia Press.

Friedman, M., & Friedland, G. W. (1998). *Medicine's 10 great discoveries*. New Haven: Yale University Press.

Garrison, Fielding H. (1924). *An introduction to the history of medicine*. (3rd Ed.). Philadelphia: W. B. Saunders Co.

Government Document. (1926). *Crawford W. Long Proceedings in Statuary Hall of the United States Capitol upon the unveiling and presentation of the statue of Crawford W. Long by the state of Georgia*. Washington: Government Printing Office.
Guthrie, D. (1958). *A history of medicine*. Philadelphia: J. B. Lippincott Co.

Long, C. W. (1849/1992). An account of the first use of Sulphuric Ether by Inhalation as an Anaesthetic in Surgical Operations. *Southern Medical and Surgical Journal*, *5*, 705-713. Reprinted facsimile, except that page numbers in the reprint are 5-13, in *The history of anesthesiology: Reprint series, Part one*. Park Ridge, Ohio: The Wood Library Museum.

Osler, Sir W. (1921). *The evolution of modern medicine*. New Haven, CT: Yale University Press.

Raper, H. R. (1945). *Man against pain: The epic of anesthesia*. New York: Prentice-Hall, Inc.

Saied, V.C. (1997). The Fascinating Story of the "Discovery" of Anesthesia." *Wichita Falls Medicine Magazine.*

Taylor, F. L. (1928). *Crawford W. Long & the discovery of ether anesthesia*. New York: Paul B. Hoeber, Inc.

Wolfe, R. J. (2001). *Tarnished idol: William Thomas Green Morton and the introduction of surgical anesthesia, a chronicle of the ether controversy*. San Anselmo, CA: Norman Publishing.