

RELIEVER OF PAIN

■ ON THE GOOD advice of the leading chemist in Boston, the fledgling dentist with a taste for fancy waistcoats bought some highly rectified sulfuric ether, shut himself in his room and inhaled the drug through a tube. When this produced no desired effect he saturated his handkerchief and held it to his nose; as he glanced at his watch he lost consciousness. When he awoke feeling numbing sensations he discovered by the hands of his watch that he had been unconscious almost eight minutes.

With this experiment William Thomas Green Morton made medical history. Unlike others who had pioneered in anesthetics, he promoted his discovery by successfully demonstrating the painkilling effects of ether before the skeptical eyes of doubting surgeons and students.

YOUTH. He was born on August 9, 1819 at Charlton, Massachusetts, the son of James and Rebecca Morton. His father claimed Scottish ancestors who had fought in the American Revolution, a 100-acre farm, a store. At 13 William was sent to the town of Oxford for higher education, lived at the home of a physician friend of the family, was one day accused of a discrepancy by a schoolmate (Morton claimed the accusation was false); the teacher gave him a hiding so severe the boy was ill for months.

He was sent to school in other Massachusetts towns, saw his formal education come to an end when his father's fortunes were reversed. He briefly worked for a Boston book publisher (apparently as a salesman), returned to his family and clerked behind a counter.

PARTNERS. The end of 1843 found Morton in Boston where he had entered into partnership with Dr. Horace Wells to practice dentistry after an apprenticeship under Wells in Connecticut. The field of dentistry was not a respectable one at this time; of 1200 dentists in the country, only an estimated 200 had sufficient training to know what they were doing. Many learned by apprenticing themselves to a more experienced man; the majority were quacks.

Morton claimed the distinction of having studied dentistry at the newly opened Baltimore College of Dental Surgery, the first dental school in America. It is certain that he did not graduate, but he may have attended lectures; even this possibility is questionable, as some school records were lost.

Business was so poor that Morton went to ask the advice of Dr. Nathan C. Keep, vice-president of the newly formed national society, the American Association of Dental Surgeons. Keep counseled that if Morton developed some new technique, he would have no trouble in finding patients. Morton and Wells were both mechanically inclined; for \$500 Morton bought access to Keep's laboratory, the best in the city.

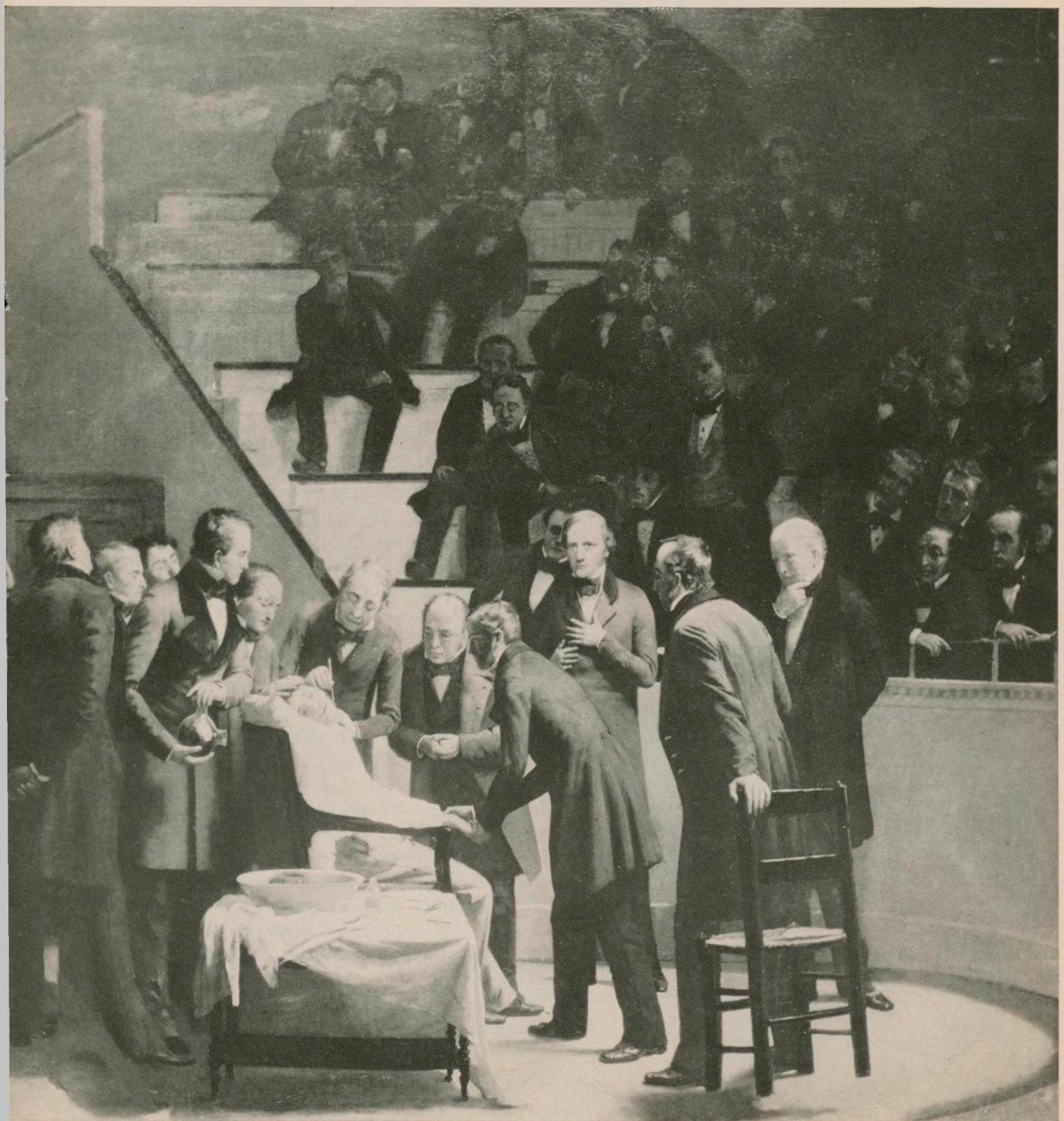
One of Morton's few patients complained of a set of false teeth set by another dentist three weeks before which had made his jaws swell and ache. Morton and Wells examined the false teeth; they were made of hippopotamus tusk and soldered to a hinged gold plate set on the natural teeth roots, the crowns having been knocked off; the plate was held in place by clumsy springs. The compound of the solder had blackened the artificial teeth at the gumline, the tusk had begun to corrode, the natural teeth roots were festering and the man's breath was unbearable.

Morton and Wells saw their opportunity, labored day and night to make a better set of dentures than were produced in Boston, took heart from such tales as George Washington being said to suffer more from his dentures* than from the winter at Valley Forge.

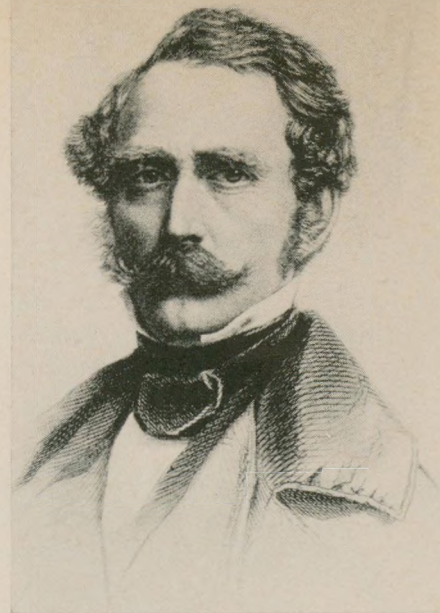
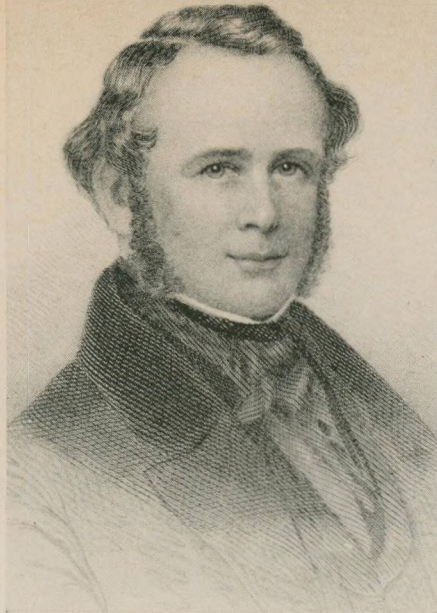
*One set was made by Paul Revere.



Painting by Robert Hinckley (1893) shows the first public demonstration of ether as a surgical anesthetic at Massachusetts General Hospital, October 16, 1846. Surgeon John C. Warren excises a tumor of the jaw of Gilbert Abbott. William T.G. Morton, seen holding an inhalator, administered the ether; its discovery was announced a month later by Dr. Henry Bigelow, third from right. Painting, owned by the Boston Medical Library, is on loan to Massachusetts General Hospital.



Horace Wells, right, and William Morton, far right, in 1843 practiced dentistry as partners in Boston where they worked to develop enameled feldspar dentures. Wells dissolved the partnership, moved to Hartford and became interested in nitrous oxide. Morton stayed in Boston, became successful and in 1844 wed Elizabeth Whitman, below.



The two young dentists read up on porcelain dental art and how to make mineral teeth from feldspar; next they consulted a noted Boston chemist, Dr. Charles Jackson, to perfect a nonreactive solder. Seeking a means of securing the teeth in the mouth without springs, they learned of a newly developed method called "the atmospheric suction principle." Morton talked of building a factory to manufacture false teeth, but Wells objected to the high cost, the need to extract all natural teeth, the pain involved. By gentlemanly letter, Wells dissolved the partnership only a little while after he and Morton had arrived in Boston but he and Morton remained friends.

With great determination Morton continued to persevere alone, began to receive patients and set dental plates, saw his greatest hopes realized when the carriage trade arrived, mainly middle-aged women

who left his office looking years younger. This made his reputation overnight; he paid all his bills, added two assistants to his office, started building a dental factory as orders began to pile up from other dentists for his enameled feldspar teeth.

In May, 1844, he married 18-year-old Elisabeth Whitman, moved into the home of Dr. Jackson, where such dignitaries as Ralph Waldo Emerson occasionally dined (Mrs. Emerson was Jackson's sister); Morton was well on his way to a comfortable annual income of \$10,000, worth four times as much today.

DISCOVERY. Wells retired to a profitable practice in Hartford, Connecticut; in December, 1844 he attended a demonstration of nitrous oxide by a visiting chemist showman. Wells noticed that those who inhaled the gas felt no pain if they bumped themselves or, in one instance, suffered a severe cut. Next day he had an apprentice pull an aching tooth of his while he was under the influence of nitrous oxide; when he came too Wells cried out that he had felt no pain, that it was the greatest discovery ever made. He believed that he had discovered phase II in the inhalation of nitrous oxide, phase I being stimulation, phase III believed to be dangerous.

As Boston was the medical center of New England (called the "Athens of America"), Wells, with Morton's help, arranged to demonstrate nitrous oxide as a painkiller on a student needing surgery at the Massachusetts General Hospital. As the operation began the student let out a scream of fear; this caused Wells to withdraw the gas inhaler too soon. The experiment ended in jeers and ridicule, although the student later admitted that he had felt no pain.

Wells went home disheartened; he tried another demonstration in Hartford, but unfortunately gave an overdose of gas that almost proved fatal. A rumor that Wells had killed a patient was so taken for fact that it appears in Fielding H. Garrison's



History of Medicine; it confirmed for many their belief that nitrous oxide was a poison. Wells had discovered an anesthetic but failed to demonstrate its value; the lesson was not lost on Morton.

TRIUMPH. Many who came to Morton for artificial teeth fled from his office at the prospect of pain; to those who stayed he gave opium, alcohol. He attended lectures at Harvard Medical School and clinics at the Massachusetts General Hospital; he surgically treated harelip and cleft palate through the clever use of artificial devices, also published several papers in medical journals.

His success continued at a phenomenal rate for a man of 26 and his fame spread to Europe, where 100,000 of his manufactured teeth were displayed in a London exhibition. The common use among medical students of both nitrous oxide and ether inhalations for frolics spurred Morton to substitute one for the other; their similarities had been noted in the *English Journal of Science and the Arts* in 1818.

On the advice of Jackson, Morton applied chloric ether locally in at least one extraction and also tried mixing it with other drugs; he experimented with ether on animals, goldfish, insects. His attempts with a water spaniel finally succeeded; the dog could not be roused from sleep, but in a short while revived and was his normal tail-wagging self.

When derelicts at the dock turned down Morton's request to inhale ether, Morton convinced two of his assistants to try it; they both became violent. Morton discovered that the ether was impure. He consulted with Jackson, who recommended sulfuric ether; witnesses claim that Morton seemed never to have heard of this form. Some

commentators believe that Morton had by now experimented with sulfuric as well as chloric ether but that he feigned ignorance to protect his rights of discovery; also, Jackson's reputation was now shadowed by his extravagant claims to the invention of the telegraph and discovery of collodion, both credited to other men.

Morton experimented on himself with pure sulfuric ether, discovered that it worked. He was explaining his success to an aide when a man appeared at the door with a terrible toothache; afraid of pain, he begged to be mesmerized. Morton assured the man that he had something better, administered ether by handkerchief, pulled the tooth; the man awoke and swore that he had felt no pain.

Several experiments followed (some successful, some not), then Morton spoke with one of his instructors, Dr. John Collins Warren, who had previously used ether inhalation to relieve lung disease; they laid plans for a demonstration at Massachusetts General Hospital. Morton now put great emphasis on building an inhalator, but on the day of the demonstration he found that the artisan had not finished; after a frantic wait, Morton seized the apparatus, rushed to the hospital, hurried high up to the Bullfinch dome where operations were performed.

Warren had just decided that Morton would not appear and was about to slice into a tumor on a man's jaw, when Morton arrived and soon had the patient in a relaxed sleep. Warren operated; the audience was amazed not to hear the usual screams accompanying surgery; afterward Warren said: "Gentlemen! This is no humbug." The date was October 16, 1846.

LOSS OF THE TEETH,

AND THE

MODERN WAY OF RESTORING THEM,

AS PRACTISED BY

W. T. G. MORTON,

Author of "Morton on the Inhalation of Ether," "Voice from Europe," &c.

SURGEON DENTIST, No. 19 TREMONT ROW,
Opposite the New Museum.

SECOND EDITION OF TEN THOUSAND COPIES.

BOSTON:

PRINTED BY WILLIAM A. HALL,
No. 22 SCHOOL STREET.
1848.



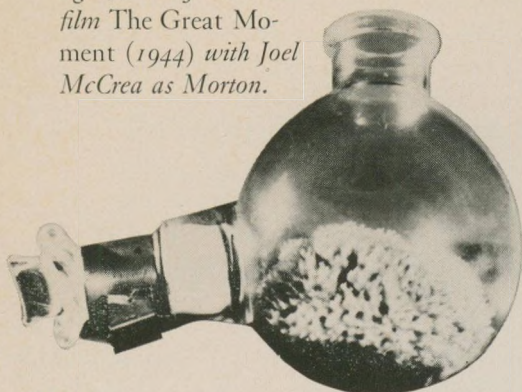
This Plate represents the face of a lady deprived of her teeth; their loss occasioning that close approximation of the nose and chin, so characteristic of old age.



This Plate represents the same face restored to its original and youthful appearance, by the aid of artificial teeth, as supplied by W. T. G. Morton, author of "Morton on the Inhalation of Ether," "Voice from Europe," &c.

Title page of the second edition of a book on dentistry by Morton dated 1848, two years after the surgical demonstration of ether. Plates purport to show a woman without teeth and her improved appearance after being fitted with his dentures.

Morton's inhalator. At right, a still from the film *The Great Moment* (1944) with Joel McCrea as Morton.



In the next few days even more successful operations followed, including one amputation. On November 12 Morton and Jackson obtained a patent extending 14 years for Letheon*; Jackson sold his rights to Morton for 10 percent of all profits realized. Public announcement of the discovery was made on November 18 by Dr. Henry J. Bigelow in the *Boston Medical and Surgical Journal*†, but the magazine disclaimed any endorsement of Bigelow's assertions, indicating a reluctance to accept ether.

Three days later Dr. Oliver Wendell Holmes hailed the discovery and suggested the name "anesthesia," which had been used by Plato. On December 15 sulfuric ether was used successfully as an anesthetic in Paris, four days later even more successfully in an amputation by Robert Liston in London; in ringing praise Morton was compared to Harvey and Jenner.

BACKGROUND. Early attempts to control pain in surgery included pressure on nerves or blood vessels in ancient Egypt and drops of chewed cocoa leaf extract applied to the surgical area in Inca Peru. In many parts of the world (China, India, Europe) preparations were made from hemp, henbane, mandragora, opium; intoxication was also popular, often in combination with a drug.

About 1275 the Spanish alchemist Ramon Lull discovered "sweet vitriol"; Paracelsus recommended its use as a soporific to relieve pain in 1540; that same year Valerius Cordus described its synthesis. In 1730 Wilhelmus Frobenius renamed it ether.

Joseph Priestley discovered nitrous oxide in 1772; a few years later ether was introduced by Richard Pearson in England as a medication by inhalation for diseases of the respiratory tract (catarrh, croup, whooping cough). Despite this progress, and although morphine was discovered in 1806 and chloroform in 1831, the anesthetic use of these agents was not developed until the 1840s, supplanting a

fad of mesmerism that had been hailed as an anesthetic and then became a subject for ridicule.

CONTROVERSY. Religious ultraconservatives claimed that God had given man pain and therefore man had no right to relieve his fellow man's pain. A large number of physicians remained unconvinced on medical grounds, having seen mesmerism hailed and then denounced; many also believed the rumor that nitrous oxide had killed a patient.

When death occurred after surgery where ether anesthesia had been used, the rumor flew that the ether was the killer. Morton demanded an autopsy and learned that death had been caused by cerebral hemorrhage, but he failed to squash the rumor completely. Many of the quacks in dentistry saw Morton as a threat to their own endeavors and joined in the clamor against him. Wells and Jackson came forward to claim credit in the discovery; Wells was modest but Jackson raised a great hullabaloo.

Morton busied himself in writing articles in defense of ether, in setting up an elaborate network of licensed anesthetists throughout the country at a good profit, in having 1000 inhalators built so he could sell them; he envisaged making a fortune. The Mexican-American War was then raging and at the Battle of Buena Vista American wounded lay all over the field. While Morton corresponded with authorities in Washington about the use of ether at the battlefield, only to be turned down, physicians at the front quickly adopted the drug without regard to patent, sometimes administering fatal overdoses.

Those physicians throughout the country who believed in the efficacy of ether followed the military in disregarding Morton's patent; all the men Morton had sold licenses to now demanded their money back. Morton resigned himself to this loss, paid his debts, realized also that a handkerchief soaked in ether was better than his inhalator; by the fall of 1847, a year after his discovery, Morton was in severe financial straits and Jackson's lawyers demanded 25 percent of all profits.

*Named after the mythical river of forgetfulness.

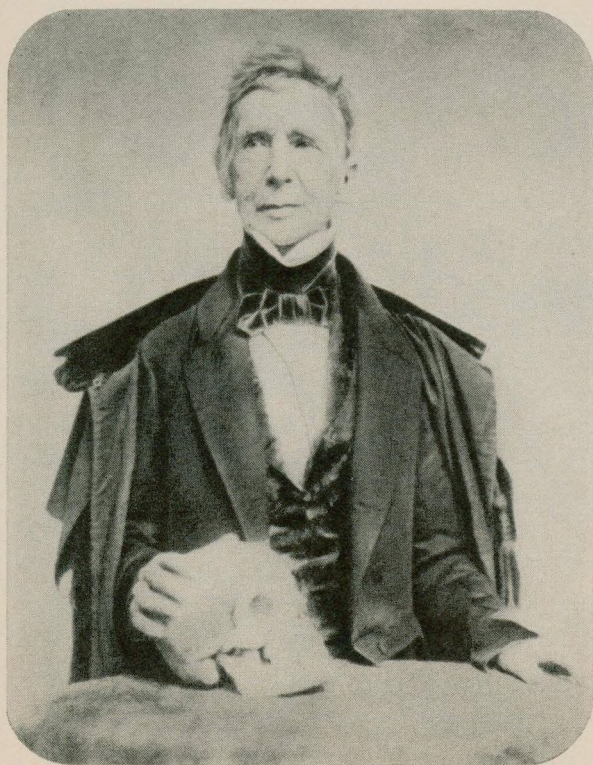
†Expanded from a speech delivered a few days before.

Wells had gone to New York; he attempted another demonstration of nitrous oxide but failed. To relieve his humiliation he semi-chloroformed himself; dazed, he stumbled out into the street and threw acid at a woman. He was arrested and put in a cell; on January 24, 1848, he took chloroform to dull his pain, slashed his femoral artery, and died.

Morton was by now a nervous wreck; he thrashed about at night unable to sleep, screamed from convulsive pains in his stomach, felt tremors in legs and hands. He retired to a farm, his practice destroyed, his health ruined, his appeals contested.

The French Academy of Medicine awarded its Montyon prize both to Morton and Jackson. Morton refused his half, but it was then sent to him in the form of a large gold medal. In 1852 Dr. Edward Robinson Squibb devised a method of producing ether by fractional distillation to provide it in a uniform consistency; only after this did physicians opposed to ether anesthesia begin to accept it.

The battle between Morton and Jackson continued in Congress and Wells' heirs also came forward. In April, 1854 several new names were introduced into the controversy, including that of Crawford Williamson Long. He was the town physician of Jefferson, Georgia; he also served the town as druggist-chemist. As such, he had substituted sulfuric ether for nitrous oxide in inhalation frolics in Jefferson in the early 1840s. When one of his ether frolickers came to him to have two tumors removed from the back of his neck, Long suggested that the man sniff ether as a painkiller.

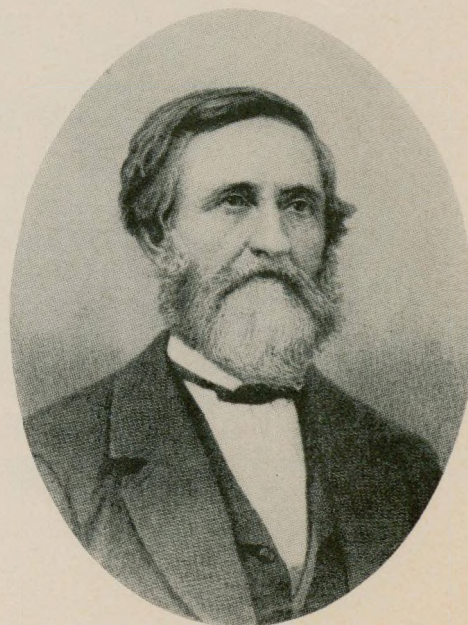


On March 30, 1842 Long had removed two tumors surgically without pain; he subsequently used ether about five times for minor surgery. Long made no effort to publicize his use of ether until three years after Bigelow's initial article announcing Morton's success; Long then wrote of his use of ether in the *Southern Medical and Surgical Journal* in 1849.

It appears that Long's name was put forward finally in 1854 not through his own efforts but because Jackson wanted to embarrass Morton. Jackson was implicated in other instances with blackmail and slander, but with Long, it was learned that he was truly the discoverer of ether inhalation for anesthesia in point of time, further damaging Morton's claims.

The remainder of Morton's life was spent in fruitless attempts to reclaim the fortune that had eluded him. The young man who had made such a brilliant start grew into a deeply embittered middle age. In July, 1868, doctors called at his residence in New York, found him near a nervous breakdown; they prescribed leeches for his temples, ice for his head, cups for his spine. Instead he rushed from the house, drove his buggy to the upper end of Central Park and plunged his head in a lake to cool it. He collapsed soon afterward and died in the hospital at 49, the cause assigned: apoplexy. Five years later Jackson went insane and he died in an asylum.

SUMMING UP. By Dr. Oliver Wendell Holmes: "The deepest furrow in the brow of agony has been smoothed forever."



Surgeon in the first public demonstration of sulfuric ether was John Collins Warren, left. Dr. Crawford Williamson Long of Georgia, right, used it in surgery first in 1842 but did not publicize the fact until 1849.