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PROFESSOR JOHN WHITE WEBSTER, SCIENCE EDUCATOR AND CONVICTED MURDERER

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Abstract. Professor John White Webster (1793-1850) was a nineteenth century American science educator. He was the author of several well regarded university textbooks in chemistry and a geological text on the island of St Michael in the Azores. He had a first degree in science (A.M.) and was also a qualified medical practitioner (M.D). He was a lecturer at Harvard University on chemistry, mineralogy and geology and became the Erving Professor of Chemistry. He was also the associate editor of the *Boston Journal of Philosophy and the Arts*. These were considerable achievements but his personal finances were disorganised. He was deeply in debt to a fellow academic, Dr George Parkman, and was accused and convicted of Parkman's murder. Opinions regarding the quality of his teaching, writing and research vary and this presentation will explore these views. His conviction for murder deeply divided opinion in Boston at the time and now John White Webster is remembered for his crime rather than his many years as a respected science educator. The presentation will attempt to provide a balanced view of Professor John White Webster's personal life and his achievements as a science educator.

Keywords: John White Webster, chemistry textbooks, crime, murderer, George Parkman

Sources

A major source for this presentation is Professor John White Webster's own writings which were extensive and influential. Information about his texts was found in Cole (1988), which is one of the few bibliographies that mention him; the World catalogue (Worldcat) also gives details of his texts (sometimes incorrectly for example, see *Elements of mechanical and chemical philosophy*[1)] which is ascribed to John White Webster, whereas it was written by John Webster of Taunton, UK). Full length copies of John White Webster's works can be found online in Book Google and Hathitrust, for example, John White Webster's revision of Brande's *Manual of chemistry* (Webster, 1826).

Care needs to be taken because the surname Webster is comparatively common, as is a first name of John. At least three John Websters were chemists who wrote chemistry textbooks; it is particularly confusing that two of them wrote similarly titled works called *Elements of chemistry*. Cole (1988) specifically advises that *Elements of chemistry* by John Webster has been mistakenly credited to John White Webster, and World catalogue and Book Google have made this cataloguing error. Similar errors are also made in mistaking the authorship for *Elements of natural philosophy*. John White Webster's first book, *Description of the island of S. Michael*, was written in 1821. Books that are asserted to be written by him prior to this date are thus incorrectly attributed to him. The 'worldcat' timeline for John White Webster indicates that he had 16 publications before 1825. This is incorrect and the statement that he wrote'168 works in 273 publications in 2 languages and [there are] 5170 library holdings' is an exaggeration.' However even allowing for these errors, his record of publication is formidable.

Having noted that care must be exercised in ensuring that works said to be by John White Webster really are his writing, the next sets of sources of information about him and his family are biographical and genealogical. The biographical dictionaries seldom mention John White Webster and even the fifteen volumes *Dictionary of Scientific Biography* (Gillispie, 1971) makes no mention of him. However there are three sources that provide fairly detailed articles on his career. These are *American chemists and chemical engineers (*Miles, 1967, pp. 499-500), *Biographical dictionary of American science: the seventeenth through the nineteenth centuries* (Elliott, 1979) and *Human side of scientists* (Oesper, 1975). Additionally there are a number of genealogies that provide family details; two of these are informative and mutually consistent.[2,3)]

Lastly most of the literature about John White Webster relates to the murder of George Parkman, a crime for which he was tried and found guilty. There are numerous books and articles about the case, from contemporary continuing to the present day. There are a huge number of newspaper reports about this case, much of which is from the time of the trial, but there has been a continuous stream of reports ever since. The use of newspaper reports in historical investigations has been commented upon recently[4)] as an increasingly valuable method of obtaining information. However the large number of reports over an extended timescale with considerable variation between them does partially compromise the methodology in this case.

Family background and early career

John White Webster (John) was born on 20th May, 1793, at the family home in Anne Street, Boston, Massachusetts, to Redford and Hanna Webster (née White) who were

married on 2nd September, 1787. The family were a part of the wealthier elite class in Boston (known collectively as Boston Brahmins). Redford (born 18th June, 1761) was the son of Grant Webster and Hanna Wainwright and Hanna (born 7th September, 1766) was the daughter of John White and Susanna Shattuck.[2,3)] Grant Webster was a successful merchant, well off but not hugely wealthy. His son, Redford Webster, was an apothecary and an excellent businessman who had amassed enough money to allow him to retire early, living as a gentleman. There is little information about John's elementary or secondary schooling. John's father, Redford, sent John to Harvard in 1811. However John rebelled and he broke Harvard's strict rules by absenting himself from the college and from Sunday services. At one stage the faculty temporarily suspended him, sending him to study with the Reverend Mr. Flint in Bridgewater for a term (Chaney, 2004). This seems to have brought John into line and he graduated from Harvard College, Cambridge, Massachusetts, with a science degree focussing on geology.[3)] In 1814 he, with others, founded the Linnaean Society of New England, and he became the cabinet-keeper (Greene & Burke, 1978) of the society's collection of specimens in Joy's Buildings in Boston.[5)]

In 1815, he obtained a Doctorate of Medicine (M.D.) having written his dissertation entitled *Dissertation upon the diagnosis between hydrocephalus, worms, and fullness of the stomach and bowels*. Later in 1815, he travelled to Britain (Miles, 1967) where he entered Guy's Hospital as a surgeon's dresser on the same day that John Keats, the poet, started his six month course as a student (Bate, 1963). The two became friends. After completing his studies at Guy's, he travelled widely in England, Scotland and France, visiting mines and mineralogists, looking at their collections and building up his own collection which he took back to the USA (Miles, 1967). When in Paris, he visited the Paris morgue, as he was fascinated with anatomy (Chaney, 2004). After leaving Europe he stopped off in the Azores earning a living by practising medicine. In the introduction to his book *A description of the island of St. Michael* which he wrote for the Linnaean Society of New England, he explained that his observations were made 'during a residence of several months in the island of St. Michael, in the years 1817-18' (Webster, 1821). *Karten* appears to be an unpublished version of *A description of the island of St. Michael* ... (Webster, 1821). During his brief stay on St Michael, he fell in love with Harriet F. Hinckling who was the daughter of Thomas and Sarah Hinckling; Thomas Hinckling was a businessman and was the American consul in the Azores. Thomas had married twice and had seventeen children (Chaney, 2004). John and Harriet were married on 16th May, 1818. After the wedding, the couple returned to Boston where John again started in medical practice with Doctor Gorham, who

had been one of his lecturers at Harvard. In 1818 - 1819 he gave a course of lectures by subscription. These were poorly attended and he described the people of Boston as being 'unscientific' and wrote that he would abandon chemistry and mineralogy because 'but four tickets for my lectures have been taken' (quoted Greene & Burke, 1978). In fact, he tired of medicine first, so he sought work that utilised his geological and chemical expertise.

During his time overseas John had built up an extensive collection of minerals (a cabinet of 20,000 specimens which he valued at $10,000) and when he returned he tried to sell it and to use it to obtain a position as a lecturer in mineralogy and chemistry. He approached both Yale and Harvard and wrote a letter (Greene & Burke, 1978) to Benjamin Silliman (Palmer, 2003). He was unsuccessful in this attempt, but by 1824 Harvard had obtained an excellent collection of minerals, as gifts and by a shrewd purchase. Webster arranged the specimens in scientific order and later that year was appointed as a lecturer in chemistry and mineralogy. He had support from Dr Gorham (Miles, 1967) the Erving Professor of Chemistry (URL: Harvard University Archives, 2012a) and also from his friend from university days, Dr George Parkman.[6)]

Webster was a competent mineralogist as shown by his account of the meteorite which fell in Nobleboro, Maine in 1823 and his analysis of sea water from Boston Harbor in 1825 (Greene & Burke, 1978).

He was the secretary of the Linnaean Society of New England and was, with the exception of the Dana brothers the most active mineralogist and geologist in the region. In 1827, on the resignation of John Gorham,[7)] John White Webster was appointed Erving Professor of Chemistry. There were two chemistry professorships at Harvard, the Erving Chair, established in 1816 and the Rumford Chair, established in the same year and held by Eben Norton Horsford from 1847 (Van Klooster, 1949). Horsford had studied under Justus Von Liebig at Giessen and held the Rumford Chair for sixteen years (Whitman, 1898). The occupants of the Erving Chair were Aaron Dexter (1791 - 1816), John Gorham (1816 - 1827), John White Webster (1827 - 1850) and Josiah Parsons Cooke (1850 - 1894) (Cohen, 1950). Strangely it was the less well qualified chemist, Josiah Parsons Cooke, who greatly added to the stature of the Erving Chair rather than the much better qualified John White Webster who had been Cooke's lecturer in chemistry.

His (Cooke's) undergraduate days, which ended in 1848, offered him no opportunity to increase his store of chemical knowledge, because the only instructions given in that subject were a few desultory lectures of Professor Webster, of lamented fame (Dains, 1911).

Webster's career

Webster's career is constantly punctuated by his need for more money than he earned. His father, Redford, was wealthy and had retired from his pharmacy business early to enjoy his wealth. Redford had given John a small allowance when he was young and John later blamed his father's thrift for his own inability to live within his means. John's salary from Harvard was $800 a year on initial appointment rising to $1200 a year[6)] when he was appointed to the Erving Chair. These appear to be average or above average salaries for university lecturers at the time but university lecturers were supposed to provide science apparatus from their salaries. The evidence is that Webster was generous in this respect, purchasing equipment from European and American instrument makers to show his students a variety of demonstrations (Miles, 1967). Webster claimed that other causes of his debt were the great expenses of his chemistry lectures, and his great love for his wife and daughters, which prevented him from letting them go without luxuries.[8)] Webster also enjoyed fine Madeira wine, rare books, and music. He was an accomplished musician, and arranged musical recitals in his drawing room with his family (Chaney, 2004).

John and Harriet had a family with four daughters, Susan, born in 1826, Marianne born in 1829, Catherine born in 1833 and Harriet born in 1834; dates are approximate.[2)] He also had a social position as a 'Boston Brahmin' to maintain for himself and his family, hosting and attending numerous parties and social events. He frequently entertained and his guests included Henry W. Longfellow, Oliver Wendell Holmes and on one occasion Charles Dickens who was visiting from Britain. An incident at a Dante Club dinner at which Webster was present, was recalled by Longfellow: It was possibly with a retroactive sense that they had all felt something uncanny in him, but, apropos of the deep salad-bowl in the centre of the table, Longfellow remembered a supper Webster was at, where he lighted some chemical in such a dish and held his head over it, with a handkerchief noosed about his throat and lifted above it with one hand, while his face, in the pale light, took on the livid ghastliness of that of a man hanged by the neck (Howells, 2004).

Webster's income of $1200 was not sufficient for all the calls upon it. He tried other ways to make ends meet, whilst also fulfilling a role as a communicator of current science. He offered public lectures on mineralogy and chemistry in 1826 and 1829 (Miles, 1967) and in 1839 lectured to the Cambridge Lyceum, probably giving paid lectures on other occasions. Harvard Medical College used the corpses of executed criminals for anatomy classes and Webster would have had access to such corpses; in one instance he used electrical stimulation on two bodies, those of Sylvester Colson and Charles Marchant. He arranged this as a public demonstration and invited the local press (*Columbian*

Centinel, February 3, 1827). Each body was attached to a battery and he obtained bizarre movements depending on the placement of the electrodes. After the demonstration was finished, Webster declared that it had been 'a great success'. This macabre use of science would have earned him both money and a public profile for future lectures.[9)]

John White Webster also worked as a consultant for private clients and gave expert chemical testimony in trials mainly relating to poisons. He and many other scientists advised the local authorities about issues related to the water supply for Boston (Struik, 1991). There was income from textbooks that he wrote, but this was comparatively small, since he was writing books for university students and staff and at this time, the tertiary sector was very small. In 1826, he wrote *A manual of chemistry on the basis of Professor Brande's* aimed at providing an up to date chemistry textbook for his own students. In 1827, he edited and revised *Elements of chemistry* by Andrew Fyfe of Edinburgh (Nietz, 1966) for the American market. These books were popular and widely used, for example, at Dickinson College by W. H. Allen's (1808-1882) students (Miles & Gould, 1994).

In 1833/ 1834, John's father, Redford Webster died: he left John $50,000 in his will. It would be imagined that this would have solved all John's financial problems. However John soon spent it, as indicated in the quotation below, and was forced to borrow money.

In 1834, he inherited approximately $50,000 from his father's estate. He immediately transferred his deceased family members from the Copp's Hill Burying Ground in the North End to the more fashionable Mt. Auburn Cemetery in Cambridge. He purchased a plot for $600 on Narcissus Lane near Judge Story's tomb. He also built a lavish house on Harvard Street in Cambridge that his detractors dubbed Webster's Folly. The expense eventually forced him to sell the property and lease a house on Garden Street near the Harvard campus in 1836 (Chaney, 2004).

Eventually, Webster and his family lived in a respectable but not grand house in Cambridge, which they leased from Jonas Wyeth.[8)] He carried on with his writing and research. Between 1841 and 1843, he edited and updated translations of Liebig's two volume book on organic chemistry as applied to agriculture and as will be shown later, he carried out this task competently. Webster was a pleasant man 'with a mild, kind and unassuming disposition, with eminently social feelings and manners of uncommon affability'[8)]) and was often of assistance to his friends. His friend Henry Longfellow's youngest brother Samuel, twenty-four years old and with some health problems, was looking for a tutorial position. In 1843, Webster suggested a position in Fayal in the Azores with the Dabney family and Samuel accepted the offer and was very happy there (Abdo, 2007); Samuel's diaries give some perspective on Webster's family and his trial.

The next question to be considered is how well Webster performed his main task of teaching medical students between 1824 and 1850; it is also instructive to see what students, colleagues and townspeople thought of his character. It has to be stated that the evidence on this is bifurcated. On the one hand, because he was later convicted of murder, one group consider that his experimental work, his teaching and his character are all bad. On the other hand, another group considers him successful professionally and many of this group consider him to be unjustly convicted of murder. Amongst the three major sources cited at the start of this paper Miles (1976) concludes that 'Webster was a kindly man, liked by his students and ...it seems certain that Webster would not have been convicted today. Oesper (1975) is less informative about Webster's teaching, mentioning one widely quoted experiment 'his volcano' without much enthusiasm for it. He is enthusiastic about Webster's writing of the *Manual of chemistry*, which he thinks 'represents an important advance in chemical education.' As to Webster's guilt or innocence of murder, he quotes Sullivan's conclusion that 'the verdict was too severe or not even justified. Elliott (1979) is a little negative, stating, 'Not greatly distinguished as a researcher or as a teacher of chemistry, but nonetheless did some worthwhile work, which was subsequently overshadowed by murder conviction.' Elliott also praises Webster's *Manual of chemistry*.

Other opinions of Webster

Dr Clifford Frondel, a Harvard mineralogist who was among the first people on earth to view rocks brought back from the moon[10] considered Webster's analyses of a meteor which fell in Maine and of the water in Boston Harbour to be 'creditable', adding that 'the composition given for the meteorite, with 18.3 % sulfur, looks absurd but only because he [Webster] chanced to include a fragment of the iron sulphide, troilite' (Greene & Burke, 1978).

According to Rosen (1982) Webster was a bad teacher and his 'volcano' experiment was dangerous because students jumped out of the laboratory windows. The bad teacher view is supported by a former student, George F. Hoar who claimed that Webster's lectures were 'tedious'; Hoar also mentioned that Webster was known to the students by the nick-name of 'Sky-rocket Jack' for his efforts at a firework display (Hoar, 1905).

Struik (1991) considers that Webster was a famous lecturer of his day and quotes one of Webster's students, Edward Everett Hale, reminiscing about his [Webster's] 'brilliant power of experiment'. Webster had a chemical laboratory and a fairly sizable lecture room in Mason Street Building but there was little or no opportunity for laboratory practice for students (Struik, 1991).

Benjamin Silliman (1842) mentioned Webster's achievements in geology several times and stated that '... as, for instance, the excellent account of the Azores or Western Islands, by Prof. J. W. Webster of Harvard University, who was one of our early and active geological explorers.'

Cohen (1967) claims that Webster was 'an important teacher, and his exemplary textbook was the vehicle for introducing American students to Faraday's discovery of the liquefaction and solidification of CO_2'.

Jackson et al. (1895) Hill, Lowell, Storer and Eliot (1895) give further details of the volcano experiment:

"Once fairly in College, he [Cooke] distinguished himself in mathematics, but found little instruction in his favourite science. Professor Webster, then near the end of his service, gave the class two or three chemical lectures, which were brought to a sudden end by his show experiment called the volcano, a large heap of sugar and potassic chlorate piled on a slab of soapstone. After he had lighted it with a drop of sulphuric acid, he saved himself by dodging out of the room, and in a very few seconds all the members of the class found themselves obliged to jump out of the windows."

Again Jackson et al. (1895) give more detail of Cooke's career, indicating that when Cooke started he had to provide his own materials and that the college 'possessed no apparatus worth mentioning.' Jackson et al. (1850) also state that the 'two courses of lectures given in 1850 by Cooke were illustrated by material brought from the small private laboratory which he had fitted up at home when a boy'. This indicates that by the time Cooke took over the running of Webster's former laboratory it contained little equipment and that at that time Harvard put no resources into providing equipment or consumables. In 1845, Webster claimed to have 'personally gone $5000 in debt to furnish his medical school laboratory' (Rossiter, 1975).

Webster involved himself in academic politics in that he strongly favoured Eben Horsford to take over the Rumford chair on the retirement of his friend, Daniel Treadwell, rather than his enemy Henry Rogers, who had tried to have 'Webster ousted on charges of incompetence' two years earlier and to take his place (Rossiter, 1975). Eben Horsford did become the Rumford Professor, but Webster's problems continued. The next quotation is quite extraordinary:

On the 24th of November [1849] following, "Mr. Tutor Cooke was appointed (by the Corporation) to teach Chemistry to the Freshman Class next term. For this service, and for the apparatus and materials he may use, Mr. Cooke shall be paid $225." Such was the vote of the Corporation. The edge of the wedge was very thin; but it made a sufficient entrance. At the same meeting the Corporation voted, 'As instruction in Chemistry for

the undergraduates is no longer to be required of the Erving Professor (J. W. Webster), Voted, That for the rest of his services his salary be $1,000.' Professor Webster's salary from the College (he was Professor also in the Medical School) had previously been $1,200. The Corporation had therefore taken $200 from his salary and given it to Mr. Cooke. It was an extraordinary coincidence that on the day before this ominous vote was passed Dr. Webster had killed Dr. Parkman; and on the 30th of November he was arrested for the crime. During the ensuing term Mr. Cooke gave lectures to the Freshman Class, and held recitations; and then and there I, [Charles William Eliot] for one, first learned what Chemistry was about, and was the scientific method in observing and reasoning (Jackson et al, 1850).

It would seem that the University by 1849 no longer valued the services of John White Webster and were getting the work of two staff members for the price of one. Whitman provides a good overall picture of the state of science (chemistry) laboratory in the 1840s and states:

In no way is this movement more striking than in the effect upon scientific teaching in the colleges. For many years this had been nearly at a standstill. The methods seem to have been everywhere much the same. Instruction was by text-book and lecture. The lectures were illustrated, the illustrations of the spectacular sort (Whitman, 1898).

Webster's teaching style would have been an improvement on that of his predecessor, but his methods were still the textbook, recitation and lecture with the occasional spectacular demonstration, but there would have been no individual practical work, particularly as it would have to have been financed from the lecturer's own pocket. Apart from this, he would have seen his main task as teaching medical students, though medical students tended to consider chemistry as outside their main sphere of interest and many did not even attend his lectures. To Webster's credit, `Miles (1967) points out that several of his former students became teachers of chemistry or practising chemists, such as Josiah Parsons Cooke, John Bacon, Charles D. Page and Charles Thomas Jackson, but this defence may be overstated as Josiah Parsons Cooke was not impressed by Webster's teaching. Miles & Gould (1994) also mention W. P. Prescott (1820-1890) and Martin Gay (1803-1850) as being students of Webster who took up careers in chemistry. Webster sponsored a chemistry club for students at Harvard called 'The Davy Club' where he was prepared to provide club members with bits of old apparatus and was always available for advice or information (Hale, 1964). On one occasion, two college waiters had slept in a room where charcoal had been burning in a pan and were overcome with fumes. Dr Webster and Dr Wyman with the help of members of the Davy Club provided pure oxygen in rubber bags for them to

breathe for the whole day (Cohen, 1967). On the matter of equipment available in the Harvard chemistry, it is difficult to assess how valid complaints of lack of equipment were. Statements that there was no apparatus can be discounted, as Cohen, 1967, provides lists of equipment from 1821 as Appendix IV of his book *Some early tools of American science*, with indications that some apparatus was incomplete or damaged. Long (1901) summed up Webster's usefulness to Harvard as follows: ... and [Webster was] a man of promise who increased the reputation of the university, and especially of the medical school by his original scientific contributions and by editing several well-known foreign works. His text-book on chemistry on the plan of the work of Brandes has considerable merit (Long, 1901).

The balance of evidence indicates that Webster was an above average teacher with good practical skills, initially extremely enthusiastic and up to date, valuable to Harvard early in his career but near the end of his career in the late 1840s Webster but may have become less committed to his professional duties as his financial worries multiplied. By 1849, his debt had increased to $4,500, and his creditors included the rapacious George Parkman (Chaney, 2004).

The Parkman murder

This part of Webster's story is where public attention is usually focussed. The facts are that Webster was in debt to the wealthy Dr Parkman for the sum of $483 (Oesper, 1975). He had been in debt to him for a considerable time and had used his valuable mineral cabinet as security. Dr Parkman harassed Webster by attending his lectures and staring at him from the front row (Morison, 1937). Dr Parkman then found out that Webster had also used the mineral cabinet as security for a loan of $1200 from Mr Robert Gould Shaw (Morison, 1937) and he was naturally enraged. Webster met Parkman twice on Friday, 23rd November, 1849, which was the day of his disappearance. On the first occasion, he called at Dr Parkman's house and arranged to meet him in the afternoon at the Medical school (Morison, 1937). Parts of a body (said to be Parkman's) was found in a private office accessible only to Webster and perhaps the janitor, Ephraim Littlefield (Borowitz, 1980). Littlefield had noticed that Webster's laboratory door was locked on the day that Parkman disappeared, whilst it was usually unlocked (Johnson, 2010), so he became suspicious. Because of Webster's unusual secrecy, Littlefield chiselled through a brick wall and sighted parts of a body; he then informed the police. It was alleged that Webster had murdered Parkman and crudely dissected the body (Maddocks, 1971), chemically destroying some of the body, burning other parts in his chemical furnace and hiding the remainder in the privy. The police

arrested Webster but they did not tell him he was arrested and let him believe he was a witness before putting him in jail.[8)] His trial started on Tuesday, 19 March, 1850 (Stone, 1850; Bemis, 1850). The proceedings were certainly biased against Webster. He had two inexperienced lawyers defending him, whilst the prosecutor was an experienced criminal lawyer, George Bemis, paid for by the Parkman family (Dershowitz, 1990). Three jurors were excused for expressing opinions against capital punishment as stated by Spooner (1850). 'The jury was packed by excluding from the panel three persons, on account of their opposition to capital punishment' (Spooner, 1850). Other jurors were related to Parkman. Four of the five supreme court judges formed the quorum at Webster's trial and Chief Justice Lemuel Shaw, who had a reputation for tough sentences, presided (Sullivan, 1971). The defence lawyers failed to put forward the possibility that it was the janitor, Ephraim Littlefield, rather than Webster who was the murderer and this possibility would have given the jury a cause for reasonable doubt. The defence also tried to use character witnesses to defend Webster and found twenty three witnesses who testified to Webster's good character, but this was not effective in undermining the prosecution's case (Stone, 1850). Chief Justice Lemuel Shaw's summary of the evidence and charge to the jury was one-sided. He gave instructions to the jury to allow circumstantial evidence, instead of concrete evidence, to be used to produce a verdict of guilty beyond reasonable doubt (Dershowitz, 2005). He then changed the official record to indicate his summary had been more even-handed (Dershowitz, 1990). In the end the jury found Webster guilty of the murder of Dr Parkman and Justice Shaw sentenced him to be hanged.

One interesting development that perhaps started the idea of forensic evidence was the fact that parts of a dental plate were discovered burnt near the furnace (Sullivan, 1971). A dentist, Dr Keep, swore that he could recognise the fragments of a denture as that which he had made for Dr Parkman.

I recognized them as the teeth I had made for Dr. Parkman, in 1846. Dr. Parkman's mouth was a very peculiar mouth, in many respects; differing in the relation that existed between the upper and lower jaw so peculiarly, that the impression left upon my mind was very distinct. I remember the peculiarity of the lower jaw, with great exactness (Stone, 1850).

This evidence was challenged by another dentist, but Dr Keep was so sure of his facts that this became the strongest evidence that the body was really the body of Dr Parkman. The Webster murder trial was one of the first trials (Christen & Christen, 2003) in which medical professionals were asked to provide expert testimony and thus forensic evidence became involved in legal proceedings (Johnson, 2010).

At one stage, Webster attempted suicide in his cell but the strychnine that he took only made him ill.[9)] He also wrote a full confession in which he admitted killing Parkman, though he claimed that this was with a single blow in self-defence as he pleaded for leniency to the Governor. However the Governor had recently refused to pardon another murderer and pardoning one of Boston's Brahmins would not have improved his election chances. On the 10th of July, 1850, Professor Webster's resignation [from Harvard] was accepted (Jackson et al., 1850).

John White Webster was hanged on August 30, 1850 and he was buried in Boston's Copps' Hill Burying Ground. His wife and daughters left the USA and settled in the Azores.

This murder case raised enormous controversy at the time and continues to be raised as being important in American legal and social history. Samuel Longfellow wrote of the distress within the Webster family and he explained the effect on the community of which both the Longfellows and the Websters were a part: 'The outcome of the trial caused the Brahmin community to turn inward and share their opinions and reactions only within the group' (Abdo, 2007). There are those who believe Webster was innocent or a variation of this opinion is that he would not have been convicted of murder in the legal system of today. This appears to be a strange view since in today's criminal courts proof of Webster's guilt or innocence would be provided by scientific evidence (fingerprinting, DNA, blood grouping and other forensic evidence) which ironically the Webster case progressed. Some believe Webster's confession represented what really happened; if it was accepted as true the verdict would have been manslaughter not murder. Others believe the confession was false. Perhaps the simplest and fairest comment of the trial's verdict is 'The Parkman Murder case stands as a classic example of how a jury can reach a sound verdict despite an unfair trial' (Morris, 1967).

Webster's texts and articles

The final section of this paper will evaluate Webster's textbooks and his articles mainly using contemporary reviews.

A description of the island of St. Michael... (1821)

This was Webster's first book written with considerable skill and with a good knowledge of the islands of the Azores; the book received positive reviews with some minor criticisms. For example *The North American Review's* conclusion was 'We leave it, with many thanks to the writer for the entertainment and instruction it has afforded us' (Anon, 1822). Webster's book about the island of St. Michael was cited by Charles

Daubeny in an article (Daubeny, 1828) complementing Webster on his 'very interesting account' and his 'drawings and a very interesting description of this remarkable occurrence ...'

The Boston journal of philosophy and the arts

John White Webster was joint editor of the *Boston journal of philosophy and the arts* with Daniel Treadwell and John Ware. Unfortunately the journal, published every two months at $4 per annum (Anon, 1826c), only lasted for three volumes. In the preface of volume 1, the authors wrote of their intentions.

The principal object of the Editors has been to present in their publication, whatever was useful or interesting among the contents of the European periodical works, either in the language of the authors themselves or in a more condensed or abridged form in their own. But as they have wished to make it as complete a record as possible of the state of science in America as well as in Europe, they have by no means confined themselves to selections from foreign works. The pages of this volume will be found to contain a very considerable number of original articles, relating principally to American science (Webster et al., 1823-1826).

Quite a number of Webster's research articles were published in this journal indicating that his serious research was concentrated into the earliest portion of his career when he was seeking employment or promotion. For example, some of Webster's articles were abridged versions of articles published in European journals, such as, Geology and mineralogy of Ceylon by John Davy, Scientific intelligence reports on matters of interest in Europe, written by Webster as a miscellany and several others. Others were his own research such as, Chemical examination of a fragment of a meteor which fell in Maine, August 1823, and of Green Feldspar from Beverly, Mass. (Webster, 1824a) and Chemical analysis of the sea-water of Boston Harbor (Webster, 1824b). As previously stated, Clifford Frondel considered these analyses to be competently carried out. It is of interest to note that in the 'General intelligence' reports by Webster and included in the miscellany Faraday's experiments on solid carbon dioxide. This information was favourably noted in later reviews of his books, showing that the work he put in on keeping up to date with European science, whilst editing the *Boston journal of philosophy and the arts,* helped him to ensure that his textbooks were up to date. The third and last edition of the journal from October 1825 to December 1826 contained the following message:

The present number completes the third volume of this journal, and with it the editors take their leave of the public. From the commencement of their work, the editors have never expected an extensive subscription. The pursuits of this busy and thriving

community do not lead it to a very lively interest in the subjects to which this publication has been devoted, and although the subscription has been sufficient to defray the expense of printing, the labour of conducting the work has been without reward (Webster et al., 1824). , Ware & Treadwell, 1824)

Webster's part in the production of the *Boston journal of philosophy and the arts* showed his capacity for hard work and his commitment to the communication of science to his local community.

A Manual of Chemistry, on the basis of Professor Brande's (1826)

A review of *A Manual of Chemistry* in *The American journal of science* (Anon, 1826a) is very positive about Webster's adaptation of *Brande's Manual*. The reviewer believed that Webster had improved upon the original by providing many more practical experiments than Brande's version, though the hope is expressed that a second volume of Webster's text will be published containing the tables which he excised from Brande's version. A second anonymous review (Anon, 1826b) in the 'Critical notices' section of *The United States Literary Gazette* gives a similar positive opinion of the book. *The Medical Recorder* gives the following view of the text:

The work, the title of which is announced above, is a compilation from various sources, and is highly creditable to the industry of Dr. Webster. It appears to us to contain all that is really valuable to students; to whom we strongly recommend it. For greater convenience it is furnished with both a general and marginal index (Anon, 1826d).

Webster's Elements of Chemistry (Fyfe) 1827

The following reviews show that this text too was favourably received:

In addition to those works which have already been mentioned, the following may lie noticed as useful:—Fyfe's Elements of Chemistry, prepared by Dr. Webster, a small volume of about 400 pages, (cost, $1,25,) is well suited to beginners, as it was originally intended for the use of pupils of Mechanics' Institutions. It is written in a clear, simple style. In the Appendix is a list of the most important subjects in chemistry-, with references to fifty works upon chemistry and natural philosophy, in which these subjects are treated more at length (Sullivan, & Emerson, 1836); and ...was especially recommended for use in academies by the editor of the *American Journal of Education* (Powers, 1920).

Nietz (1966) described Webster's *Elements of Chemistry* as pointing out the useful extra information which it contained, compared with Fyfe's original. The book was popular and went through two further editions (Miles, 1967).

Organic chemistry in its applications to agriculture and physiology (*1841) and animal chemistry or organic chemistry in its application to physiology* (*1842)*

Here again, in these two volumes *Organic chemistry/agriculture* (Liebig et al., 1841) and *Animal Chemistry* (Liebig et al., 1842), Webster improves upon the original works by the German chemist Justus von Liebig. Liebig saw the first volume as concerning agricultural chemistry and the second volume as concerning animal chemistry; he wrote a third part to the series, but Webster did not edit a third volume in America. Webster's efforts in editing volume one were much appreciated in the following review.

Dr. Webster has rendered an important service to the agricultural community, by presenting an edition of this now well known and highly esteemed work. Professor Liebig has for some time been known as one of the most eminent chemists of Europe, and the publication of this work in England has excited general and unqualified approbation. Almost all the scientific and literary periodicals have been loud in its praise, and all concur in the opinion, that a new era in agriculture must date from its appearance. The present edition has been greatly increased in value and utility by the additions which it has received from the American editor (Anon, 1841).

On the other hand, a review (Anon, 1842) of the second volume gave it extensive praise but did not comment on additional material provided by Webster. There is one section that Webster included, based on his experience of the Azores, that bears upon the current global warming debate where he stated:

A few years since I had an opportunity of observing a striking instance of the effect of carbonic acid upon vegetation in the volcanic island of St. Michael (Azores). The gas issued from a fissure in the base of a hill of trachyte and tuffa from which a level field of some acres extended. This field, at the time of my visit, was in part covered with Indian corn. The corn at the distance of ten or fifteen yards from the fissure, was nearly full grown, and of the usual height, but the height regularly diminished until within five or six feet of the hill, where it attained but a few inches. This effect was owing to the great specific gravity of the carbonic acid, and its spreading upon the ground, but as the distance increased, and it became more and more mingled with atmospheric air, it had produced less and less effect (Liebig et al, 1842,).

Rossiter (1975) includes the details of the four editions of the first volume of Liebig's texts that Webster edited during the period 1841-1843. At this time, views (including Liebig's) on scientific agriculture were changing rapidly, and were of great interest to the American public. Webster carried out a few experiments himself and recorded some other American results, hoping 'to include the results of more experiments in later editions but never did' (Rossiter (1975).

A quite separate edition of *Animal Chemistry or Organic Chemistry in its application to Physiology* was produced in 1842 by the New York printers, Wiley & Putnam (Anon, 1842).

These were John White Webster's written works including some reviews of them. There is an advertisement that claims that there was *A treatise on mineralogy, on the basis of Thomson's outlines* in press in 1842 written by him, but it is not listed in the World catalogue and therefore probably does not exist.

Conclusion

The purpose of this article was to consider the life of John White Webster, presenting both favourable and unfavourable opinions. In terms of his contributions to science the vast bulk of evidence is that his books on chemistry helped to keep other chemists in America aware of the progress being made in Europe. In geology, natural history and mineralogy, his knowledge of the Azores and his enthusiastic organisation of mineral specimens into a cabinet to show the public the variety of ores, minerals and crystals was admirable; it was the means of scientific communication in the nineteenth century. As a teacher he was generally well-liked, helping and encouraging students, though not brilliant and in his later years his performance probably deteriorated. His relationships with other staff at Harvard and the local community generally were cordial. His weakness was in his control of money, which led him into debt that was so great that he could never have repaid it. The probability is that he murdered George Parkman, though there is room to doubt whether there was sufficient evidence to prove this conclusively. He should be remembered for his genuine scientific achievements rather than as a murderer.

NOTES

1. http://www.worldcat.org/title/elements-of-mechanical-and-chemical-philosophy/oclc/008323460
2. http://familytreemaker.genealogy.com/users/w/e/b/James-Webster-BC/WEBSITE-0001/UHP-0340.html
3. http://www.owingsstone.com/getperson.php?personID=I17158&tree=owingsstone
4. http://www.deakin.edu.au/arts-ed/efi/conferences/math-symposium2011/papers/palmer-power.pdf
5. http://murderpedia.org/male.W/w/webster-john-white.htm
6. http://www.kouroo.info/kouroo/thumbnails/W/ProfessorJohnWhiteWebster.pdf
7. http://oasis.lib.harvard.edu/oasis/deliver/deepLink?_collection=oasis&uniqueId=hua32011
8. http://www.pbs.org/wgbh/amex/murder/peopleevents/p_webster.html

9. http://drvitelli.typepad.com/providentia/2012/03/index.html
10. Santora, M. Clifford Frondel, 95; Mineralogist studied moon rocks and kidney stones. *New York Times*, November 18, 2002.

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