



Anaesthetic or "Antiaesthetic" or "Antaesthetic"? Correspondence From Andrew Buchanan, MD, to James Simpson, MD, Concerning a Name for the Agents Producing Insensibility[☆]

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ABSTRACT

In November 1847, James Young Simpson, MD, of Edinburgh, Scotland, applied the word *anaesthesia* to the state of narcotism and insensibility produced by the inhaled vapors of sulfuric ether and chloroform, along with the word *anaesthetic* as an adjective to denote that state and as a generic term for agents capable of inducing the state of insensibility. In March 1848, Andrew Buchanan, MD, of Glasgow, Scotland, penned a letter to Simpson to suggest a more semantically precise word, the spelling of which is not clear in Buchanan's letter. We do not know whether Simpson replied to Buchanan. Simpson continued using the words *anaesthesia* and *anaesthetic* in his publications.

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Introduction

The word *anaesthesia* denoting a pathological loss of sensation in a particular region of the body has a long history of use by physicians. The adoption of the word *anaesthesia* for the temporary state of generalized insensibility induced by inhalational agents is usually attributed to the Boston physician, poet, and author Oliver Wendell Holmes, MD (1809–1894), who recommended the word to WTG Morton (1819–1868) in November 1846.^{1–4} It is not widely acknowledged that the words *anaesthesia* and *anaesthetic* came into regular use almost a year later when James Young Simpson, Professor of Midwifery at the University of Edinburgh, began writing about sulphuric ether (ether or sulfuric^{*} ether) and chloroform as *anaesthetic* agents.⁴

With the introduction of chloroform to achieve the same outcome as the inhalation of ether, the widely accepted word *etherization* was clearly not applicable as a broad descriptive term for the narcotic (soporific, sleep-inducing) effects of ether and chloroform. Although

the word *chloroformization*⁵ appeared soon thereafter in the literature, there was, at that time, an imperative for a new generally applicable word to reflect the state of insensibility produced by such agents. Interestingly, Simpson's new application of the word *anaesthesia* does not appear to have elicited any objections or alternative suggestions in the medical press; in fact, the word was willingly adopted by both physicians and the public. Nonetheless, words such as *etherization* and *chloroformization* would appear sporadically in English-language publications for at least a half century after the introduction of ether and chloroform as *anaesthetic* agents (US: anesthetic, as of the late 19th century).

In 2017, the lead author (RPH) identified a previously unpublished letter penned by Dr. Andrew Buchanan of Glasgow to Simpson in Edinburgh. Buchanan's letter (Figures 1 and 2) is archived in the James Young Simpson Collection at the Royal College of Surgeons of Edinburgh (Item: JYS 1/2/8). We present a transcript of Buchanan's letter to Simpson followed by a review of Buchanan's contributions to medicine and a discussion regarding the word Buchanan might have had in mind when he wrote to Simpson.

Buchanan's letter, dated March 16, 1848, was penned 4 months after Simpson had introduced chloroform as an anesthetic agent. According to Buchanan, the names of the new practice (*anaesthesia*) and the agents employed (*anaesthetic agents*) were inappropriate. We do not know whether Simpson penned a reply to Buchanan. Simpson,

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[†] The word *sulfur* was accepted in US scientific English since the early 20th century and in international scientific English since the 1990s. See [Editorial] So long sulphur. *Nature Chemistry* 2009;1:333. At <https://www.nature.com/articles/nchem.301>

Glasgow 13 Moore Place
16th March 1848

My dear Sir,

I read a paper on the 14th inst on Chloroform to our Med. Chi. Society in which I took the liberty to add a t to the very appropriate term by which you have designated the class of substance to which chloroform belongs. As I intend publishing this paper I think it due to you to mention the circumstance & it would be very gratifying to me if I could get your approbation of the change. My objection is that the term anaesthetic never means "causing insensibility or the anaesthetic state" which is the idea meant
Dr. Simpson

Fig. 1. Page 1 of Andrew Buchanan's letter dated 16 March 1848 to James Simpson. Item JYS 1/2/8, James Young Simpson Collection, Royal College of Surgeons of Edinburgh, Edinburgh, UK. Image reproduced with the permission of the College.

a prolific author of journal articles and printed pamphlets, continued to use the words *anaesthesia* and *anaesthetic* in his publications.

Transcript of Buchanan's Letter to Simpson

[page 1]

Glasgow 13 Moore Place
16th March 1848
My Dear Sir,

I read a paper on the 14th inst[†] on Chloroform to our Med. Chi. Society in which I took the liberty to add a t [the letter t, underlined] to the very appropriate term by which you have designated the class of substance to which chloroform belongs. As I intend publishing this paper I think it due to you to mention the circumstance & it would be very gratifying to me if I could get your approbation of the change. My objection is that the term anaesthetic never means "causing insensibility or the anaesthetic state" which is the idea meant

Dr. Simpson

[page 2]

to be conveyed. It seems to me that without doing violence to the Greek tongue we cannot speak of an "anaesthetic agent" any more than we can do of an "insensible agent" if we wish to denote an agent causing insensibility. By inserting a single letter we make the word mean "anti-sensible" which is exactly what is intended.

[†] "inst.": abbreviation for *instante mense*, meaning a date of the current month.

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Be kind enough to let me know at your convenience what you think of this small matter; & be at all events assured that nothing was further from my mind than to show the slightest discourtesy to the discoverer of the antisthaetic [sic: "antiaesthetic" or "antaesthetic"?] virtues of chloroform.

Believe me
My dear Sir
Yours very truly
A Buchanan

Fig. 2. Page 2 of Andrew Buchanan's letter dated 16 March 1848 to James Simpson. Item JYS 1/2/8, James Young Simpson Collection, Royal College of Surgeons of Edinburgh, Edinburgh, UK. Image reproduced with the permission of the College.

Be kind enough to let me know at your convenience what you think of this small matter; & be at all events assured that nothing was further from my mind than to show the slightest discourtesy to the discoverer of the antisthaetic [sic: "antiaesthetic" or "antaesthetic"?] virtues of chloroform.

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Andrew Buchanan, MD

Andrew Buchanan, MD (1798–1882), (Figure 3) was born in Glasgow, Scotland, the second son of a merchant. He was educated at the Grammar School of Glasgow and enrolled at the University of Glasgow in 1812. The University was founded by Pope Nicholas V in 1451,⁶ and its roll of graduates contains the entry "BUCHANAN, ANDREW, M.D. 1822, LL.D. 1881. Professor of (1) Materia Medica in Anderson's College, Glasgow, 1828–39, (2) Physiology in Glasgow University, 1839 to 1876; born 10th December, 1798; died 9th July, 1882."⁷ After graduation in 1822, Buchanan studied further in Europe, for the most part in Paris, France, before returning to work in Glasgow.

Anderson's Institution ("Anderson University," Anderson College) was founded in 1796 as a bequest in the will of John Anderson (1726–1796), who was initially Professor of Oriental Languages and later Professor of Natural Philosophy at the University of Glasgow. Anderson's medical school was established in 1800. The Chairs of Midwifery, the Practice of Medicine, and Materia Medica were created in 1828. Other chairs typically supporting schools of medicine followed over the ensuing decades. In 1947, the Anderson College of Medicine was absorbed into the University of Glasgow. Anderson's

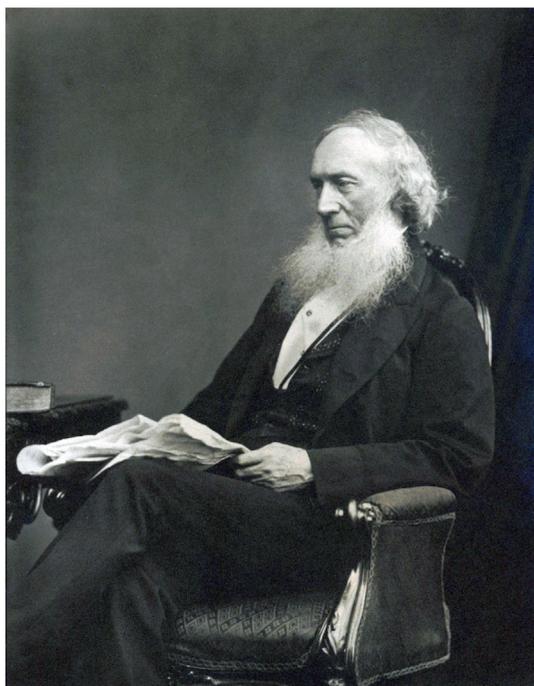


Fig. 3. Andrew Buchanan, MD (1798-1882). Image reproduced with the permission of the Royal College of Physicians and Surgeons of Glasgow, Glasgow, UK.

Institution, after several amalgamations and name changes, became the University of Strathclyde in 1964 and thereby Glasgow's second university.

Buchanan was appointed in 1828 to the inaugural Chair of Materia Medica (at "Anderson University" as it was then known), from where he carried out researches on cholera and became a surgeon at the Glasgow Royal Infirmary, the principal teaching hospital of the University of Glasgow until the opening of the Western Infirmary in 1874. He was one of the founders of the *Glasgow Medical Journal*; the *Journal* was first published in 1828, albeit with "much difficulty."⁸ Buchanan was a coeditor of the journal for 1 year in the early 1830s.⁹ He was described as "a vigorous but not too discreet editor...[and this]...probably led to his retirement from the editorial chair."⁹ The journal folded in 1833, to be restarted in 1853. In 1835, Buchanan was appointed as one of the surgeons of the Glasgow Royal Infirmary; he remained a surgeon at the hospital until his retirement in 1862.

In 1839, Buchanan was appointed by the Crown (Queen Victoria) as the inaugural Chair of Theory of Physic, also known as the Chair of Institutes of Medicine, in the University of Glasgow, a position that he held until 1876, when, at the age of 78, he resigned under pressure from the University Court. Buchanan had, by that time, as recorded by one of his former pupils, "failed to keep abreast of the rapid development of contemporary medical research."¹⁰ Furthermore, Buchanan had allowed the department to run down in both equipment and personnel.⁹ In 1893, the title of the chair was changed to the Chair of Physiology. In 1965, the University of Glasgow created the Buchanan Chair of Physiology. Buchanan was President of the Faculty (now Royal College) of Physicians and Surgeons of Glasgow from 1877 to 1880.

Buchanan died on July 9, 1882. His obituary in the *Glasgow Medical Journal* gives an account of his life as a respected and gentle-mannered academic scholar.¹¹ The obituary noted his achievements in surgery, particularly on his approach to lithotomy. His most notable research involved the coagulation of blood; Buchanan established that blood contains a substance (now known as thrombin) that was responsible for the conversion of "soluble fibrin" (fibrinogen) into fibrin.¹² In 1869-1870, Buchanan published a series of four articles

in *The Glasgow Medical Journal* on "The Forces Which Carry on the Circulation of the Blood"; the articles were published individually as pamphlets and 4 years later as a monograph.¹³ There is no mention in Buchanan's obituary of his contributions to anesthesia—and this is not surprising because he was not an anesthetist, even by the broad categorization of the day, but a surgeon. He was, by one account, the surgeon of the first patient to have the use of ether at the Glasgow Royal Infirmary in January 1847.¹⁴

Buchanan's rather transitory contribution to the science of anesthesia might well have passed unnoticed but for the acknowledgment he received from John Snow, MD, who was then London's leading etherist. Buchanan had lectured on the "Physiological effects of the inhalation of ether" at a meeting of the Philosophical Society of Glasgow on February 22, 1847. His presentation was published in the *Proceedings of the Society*¹⁵ and was reprinted in three articles in the *London Medical Gazette*¹⁶⁻¹⁸ and as a pamphlet.¹⁹ Buchanan had calculated the amount of ether absorbed in producing anesthesia and had designed from principles an "inhaling apparatus" for its administration. This had come to John Snow's attention, with Snow conceding that "Dr Buchanan, by considering the quantity of ether expended in inhalation, and making allowance for what is expired, without being absorbed, considered the quantity in the blood of the adult in complete etherization to be not more than half a fluid ounce; and this is, I believe, a pretty correct estimate."^{20,21}

Another of Buchanan's papers, "On Darlingism, misnamed Electro-Biology", is of some interest to anesthesiologists. In 1850, Buchanan was introduced to "Darlingism...a new Mesmeric system" by Henry G. Darling, MD, a former Professor of Physiology, Chemistry, and Botany at the New England Botanic-Medical College, Worcester, MA. Like Mesmerism, "Darlingism" allowed susceptible individuals to be manipulated as to sensorimotor functions, including suppression of the perception of pain, and thus may have been useful to those (susceptible) patients requiring surgery. Buchanan, who was a subject in one of Darling's demonstrations in Glasgow and was nonsusceptible, denounced Mesmerism in a paper read to the Medico-Chirurgical Society of Glasgow on October 14, 1851. The paper was deemed sufficiently important that it was published shortly thereafter at the expense of the Society.²² Buchanan recorded that his paper was met with the concordance of the assembly of the Glasgow medical fraternity and "not a single voice was raised on behalf of the delusions of Mesmerism, while each successive speaker denounced the Immorality which it fosters."²²

James Simpson's contributions to anesthesia, on the other hand, are far more substantial and are well known. In the following section, we present a brief biography of Simpson and a summary of his contributions to anesthesia. (One of Simpson's conspicuous failings was his steadfast defense of the safety of chloroform.)

Sir James Young Simpson, MD

James Simpson, MD (1811-1870) (Figure 4), was born and raised in Bathgate, Linlithgowshire, Scotland.^{23,24} The youngest of seven sons, Simpson excelled at school and enrolled at the age of 14 at the University of Edinburgh. He was the only child in his family to study at university. Simpson studied for an arts degree before commencing his medical studies in 1827. He received an MD from University of Edinburgh in 1832; the title of his thesis was *De Causa Mortis in Quibusdam Inflammationibus Proxima* ("Concerning the Cause of Death in Certain Acute Inflammations"[‡]).

Eight years later, at the age of 29, Simpson was appointed Professor of Midwifery at the University of Edinburgh. Appointments were decided by a vote of the town council of Edinburgh. Simpson's age

[‡] The title of Simpson's MD thesis was translated by Dr. Richard Bailey, Sydney, Australia.



Fig. 4. Sir James Young Simpson, MD (1811–1870). Lithograph of a drawing by J Archer, 1848. Image courtesy of the Wellcome Library, London, UK (Wellcome Library no. 8770i).

and bachelorhood were expected to count against him. He married Janet (Jessie) Grindlay (1818–1870) on December 26, 1839. Furthermore, in his campaign to secure the appointment, Simpson published at a cost of several hundred pounds²³ a 134-page pamphlet of testimonials²⁵ together with a 64-page catalog of his “Obstetric Museum.”²⁶ He was elected to the Professorship in February 1840.

Simpson published extensively on obstetrics and corresponded widely with the leading physicians in Europe and the United States. In 1847, he was appointed one of Her Majesty’s physicians for Scotland. Afterwards, Simpson wrote to one of his brothers, “Flattery from the Queen is perhaps not common flattery; but I am far less interested in it than in having delivered a woman this week *without* any pain while inhaling sulphuric ether. I can think of naught else.”²³

Simpson first observed etherization in London in December 1846,²⁴ and immediately embraced the new practice of producing insensibility by the administration of sulfuric ether by inhalation. He became the first physician to document its administration during childbirth. Simpson administered ether to a woman in labor on January 19, 1847; reported the case a day later at a meeting of the Obstetric Society of Edinburgh²⁷; and published a report in the March 1847 issue of *The Monthly Journal of Medical Science*.²⁸ Within months, he became one of the leading advocates for obstetric analgesia. In the latter months of 1847, he performed a multicenter audit of amputations performed under etherization.²⁹

In November 1847, Simpson introduced chloroform as an anesthetic agent.^{30–33} On the evening of November 4, 1847, Simpson, together with Drs. George Keith (1819–1910) and James Duncan (1826–1890), inhaled chloroform to the point of insensibility. Clinical trials of chloroform as an anesthetic agent for surgery, dentistry, and childbirth were performed from November 8 onwards. Simpson’s first account of the anesthetic effects of chloroform was made to the Medico-Chirurgical Society of Edinburgh on November 10, 1847.³⁰ Two or 3 days later, Simpson received the first proof of his pamphlet on chloroform. His revised and slightly expanded pamphlet, *Account of a New Anaesthetic Agent, as a Substitute for Sulphuric Ether in Surgery*

and Midwifery, was dated, and probably first published, on November 15, 1847.³¹ On the same day, the *Caledonian Mercury*, Edinburgh, carried a report titled “New Anaesthetic Agent—Ether Superseded.”³² In under two weeks, Simpson had conducted his first experiments with chloroform, completed the first clinical applications in a range of procedures, presented the first public report of the discovery, published his first pamphlet on chloroform, and applied the name *anaesthesia* to the narcotic effects of ether and chloroform. The last of these is Simpson’s least recognized contribution to the practice of anesthesia.

The Word *Anaesthesia*

The word *anaesthesia* was proposed by Holmes in a letter penned on November 21, 1846.⁴ A transcript of Holmes’ letter was published in 1847 in the *Letheon* pamphlets of Edward Warren,^{1–3} who was at that time employed by Morton as an agent to sell licenses for etherization. We are not aware of any instance in 1846 or 1847 when Morton or any of the leading physicians of Boston used the word *anaesthesia* to describe the state of insensibility produced by the inhalation of sulfuric ether.

Simpson had studied Greek and Latin at Edinburgh University before commencing his medical studies. Although it is possible that Simpson may have adopted the words *anaesthesia* and *anaesthetic* independently of Holmes’ suggestion, we have evidence that Simpson had read one of Edward Warren’s *Letheon* pamphlets sometime in August or early September 1847. Simpson cited Warren’s *Letheon* pamphlet in an article in the September 1847 issue of the *Monthly Journal of Medical Science*.³³ In a footnote in the article, Simpson states that he had read Edward Warren’s *Letheon* pamphlet within “the last few days.” Simpson ends the footnote by citing page 87 of Warren’s pamphlet (Holmes’ letter appears on pages 84–85 of Warren’s pamphlet^{2,3}). The word *anaesthetic* appears just once (p 155) in Simpson’s 22-page article—without explanation—and is easily overlooked in a somewhat long article.³³ This may be Simpson’s first tentative use of the word *anaesthetic* in a published article.

From November 1847, Simpson used the words *anaesthesia* and *anaesthetic* extensively in his articles and pamphlets on chloroform. The word was readily accepted by physicians and the public. Medical articles and newspaper reports were published without any evident need to explain the new application of a medical word that had originated more than two millennia earlier in the Classical Greek period.

In a posthumously published collection of the works of Simpson, we find the following statement in a section titled “Ancient History of Anesthesia”: “That author [the Greek poet Theocritus (*fl.* ca. 270 B.C.E.)] calls the insensibility to pain *nodynia* (*νοδυνία*), which is a better word than *anæsthesia*; and I have often regretted not adopting it, rather than the latter.”³⁴

Buchanan’s Opinion of the Word *Anaesthesia*

Transcription of Buchanan’s letter presented many challenges, and we are not certain of the spelling of the word proposed by Buchanan on page 2 of his letter to Simpson. We offer two words that Buchanan might have had in mind: *antaesthetic* and *antiaesthetic*.

On the first page of his correspondence, Buchanan writes about adding the letter *t* to the word *anaesthetic*—his proposed neologism would be *antaesthetic*, a word derived from the variant spelling of the prefix *anti-* and the word *aesthetic*. However, on page 2 of the correspondence, Buchanan appears to have penned the letters *ti*—which would yield the word *antiaesthetic*. Unfortunately, Buchanan’s writing is indistinct, and his proposed word appears (to us) to have been misspelled as *antisthætic*. Moreover, Buchanan uses his proposed word only once in his letter (on page 2); accordingly, we cannot compare multiple versions of the word in Buchanan’s handwriting to ascertain the word he was proposing.

Buchanan states in his letter that he had read a paper on chloroform to the Medico-Chirurgical Society (Glasgow) on March 14, 1848. He thought the name *anaesthetic* was imprecise. Buchanan goes on to declare that he discussed his preferred name at the meeting of the Society, as well as his intention to publish his paper on chloroform.

Confirmation of this meeting of Medico-Chirurgical Society was obtained from minutes of the Society archived in the Royal College of Physicians and Surgeons of Glasgow. The meeting of the Society was held in the evening of March 14, 1846, in the Faculty Hall of the Faculty (now Royal College) of Physicians and Surgeons of Glasgow. The Chairman was Dr. A Buchanan. The minutes record that, “Dr Andrew Buchanan read a paper on the anaesthetic properties of chloroform which gave rise to a very interesting discussion” (email communication, Andrew McAinsh, Royal College of Physicians and Surgeons of Glasgow, Glasgow, June 12, 2018). We are not aware of any written or published report of the March 1848 meeting of the Medico-Chirurgical Society in Glasgow at which Buchanan presented his paper on chloroform or of subsequent publication of Buchanan's paper in a medical journal. The *Glasgow Medical Journal* was not published in the 1840s. We were thus not able to identify Buchanan's preferred term.

Returning to Holmes' letter to Morton,^{1–4} we find that Holmes' reflections on the word *anaesthetic* appear to be identical or almost identical (depending on the transcription of Buchanan's letter) to those of Buchanan. In November 1846, Holmes wrote, “The adjective will be ‘Anæsthetic.’ Thus we might say the state of Anæsthesia, or the anæsthetic state. The means employed would be properly called the anti-æsthetic agent. Perhaps it might be allowable to say anæsthetic agent, but this admits of question.”^{1–4} Without additional information, we can only draw attention to the question of whether Buchanan's thoughts on the word might have been influenced by his reading of Holmes's letter. Buchanan, in his brief letter to Simpson, does not mention Holmes.

The Prefix *Anti-*

The prefix *anti-* (opposed to or against something; the opposite of; preventing something) has a variant form *ant-* that has been recommended before words beginning with a vowel or the letter *h*. In *The Concise Oxford Dictionary of Current English* (1912), we find “ant- = ANTI- before vowel.”³⁵

Noah Webster's *An American Dictionary of the English Language* (1828) contains headwords such as *antacid*, *antarthritic*, *anthelminthic*, and *anthypnotic*, although Webster clearly does not approve of the spelling of these words. He describes *anthypnotic* as “*corrupt orthography*. [See *Antihypnotic*.]”, and for *antacid*, he writes, “better written *anti-acid*.”³⁶ Webster's opinion, though, did not reflect the generally accepted spelling—under *antacid* he notes, “Often written *antacid*.”

The recommendation to use *ant-* before a vowel or the letter *h* is not generally applied today. We note medical words such as *antiemetic*, *anti-histamine*, *anti-hypertensive*, *anti-inflammatory*, and *anti-oxidant*—written variously with or without the hyphen.

Conclusion

On March 14, 1848, Andrew Buchanan presented a paper on chloroform and discussed his preferred generic name—either *antaesthetic* or *antiaesthetic* agent—at a meeting of the Medico-Chirurgical Society in Glasgow. We are not aware of other records of Buchanan's proposed word. Two days later, Buchanan wrote to James Simpson in Edinburgh for approval of the new word, the spelling of which is not clear in Buchanan's letter. Simpson did not, in his publications, allude to Buchanan's suggestion, and we do not know whether Simpson

replied to Buchanan. Simpson continued using the words *anaesthesia* and *anaesthetic*—the words were readily adopted by physicians and the public. No alternative generic term to describe ether and chloroform, or their effects, appears to have been proposed or used around this time.

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