

In search of the Edinburgh origins of Dr Nelson's Inhaler

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Summary

The 25th anniversary of the conference coincides with the 150th year of availability of the breakthrough device, Dr. Nelson's Improved Inhaler. World Wide Web (time-limited literature and general) and genealogical searches; publishing archive, digitized historical book and catalogue material reviews, and personal communication inquiries revealed a list of 11 individuals licensed to practise medicine who could be named inventor. The most likely candidate for the eponymous creator is David Hume Nelson, born and qualified M.D. in Edinburgh. These credentials give lie to a mid-life of adversity and tragedy, but ultimately of professional respect and fulfilment. In his early twenties, in 1834, David Nelson married widow, Lucy Beaumont, 15 years his senior. Living in London, and with four children over the next 6-7 years, Nelson earned his living as a 'Medical'. But, in 1842, Nelson was convicted of stealing £60 from a loan society and sentenced to two years' hard labour. During his incarceration three of his children, all boys, died within a three-day period. By 1849, however, a quite splendid reversal in fortunes had taken place with Nelson qualified in medicine and appointed physician to the Queen's Hospital in Birmingham and academic Professor in Queen's College; rising, in 1865, to Chair of Medicine. Despite glowing testimonials and a BMJ obituary, there was reference neither to his criminal past nor his possible inventorship of the Inhaler: perhaps in the mind of the man and the Establishment, one cancelled the other, but what a fascinating man of our conference city.

Introduction

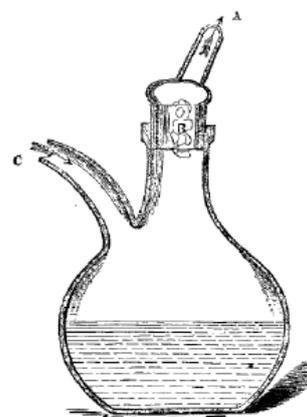
Dr Nelson's Inhaler was first exhibited by its eponymous inventor at the conclusion of the 28 May 1861 meeting of the Royal Medical & Chirurgical Society,¹ "its claims to notice being ... an arrangement of the mouthpiece by which is secured economy in the use of any medicated ingredient that may be required for inhalation". During the period to 1865 it seems that Nelson worked on his invention, culminating in its commercial introduction by the medical instrument manufacturer, S. Maw and Son, as Dr Nelson's Improved [Earthenware] Inhaler. An explanatory description featured in *The Lancet* (Fig. 1)² and the *Medical Times and Gazette* of February 1865,³ together with the endorsement that "no hospital or infirmary ought to be without it". The Nelson Inhaler proved outstandingly popular and its availability may have contributed in 1867 to the inclusion, for the first time, of inhalants in the British Pharmacopoeia.⁴ At that time inhalants were commonly used to treat consumption (tuberculosis), but asthma, or its diagnosis, was far less frequently seen. By 1870, Maw's (then S. Maw, Son & Thompson's) were offering a variety of inhalers.⁵ Today, 150 years later, the Nelson Inhaler is still offered for sale and, although it may have slipped from use by the medical fraternity, some voice coaches continue to recommend its use. The basic design of the inhaler, produced in a variety of sizes and with some versions having beautifully marbled earthenware, has largely persisted throughout its history, with different models carrying the name of the supplying chemist but with most bearing the Nelson name (Fig. 2). Use of Nelson's Inhaler continued in nursing until recent times, before giving way to modern pharmaceutical inhalers. Who was this Dr Nelson who made such a seminal contribution to inhalation therapy,⁶ and why is it of particular interest to this Anniversary DDL Conference? As there appear to be no published references on the merits of the device published by Nelson, the answer has remained elusive until the increasing digitization of medical texts from the Victorian age has enabled a better understanding of the character(s) involved.

Methods and Materials

Extensive searching of the World Wide Web has been conducted during May-July 2014 for materials relating to Dr Nelson's Inhaler, the history of S. Maw and Sons, and any relevant retrievals from co-searching of the words 'nelson' and 'inhaler'. Time-limited literature and patent searches have been carried out using Google Scholar (<http://scholar.google.co.uk/>). The National Center for Biotechnology Information, specifically The BMJ Publishing

DR. NELSON'S IMPROVED EARTHENWARE INHALER.

THE utility of topical medication of the air-passages by the inhalation of the vapour of water impregnated with various substances is extensively recognised by the profession. The absence of any simple and efficient apparatus for the purpose is often the only reason why the great relief which such applications are capable of affording is withheld from the patient. Medical men will find in the little inhaler of Dr. Nelson, made by S. Maw and Son, a very handy, cheap, simple, and effective apparatus. It answers very well all the purposes for which it is intended, and no hospital or infirmary ought to be without it. Its construction will be seen from the annexed woodcut. The



Directions for its use are as follows:—“Remove the corked stopper, and fill the vessel half full of hot water; then pour the remedy to be employed upon the sponge contained in the

hollow tube at s; and, having replaced the latter, inhale the vapour through the mouth-piece at A, the exhaled breath passing freely through the tube at c. For the inhalation of the vapour of hot water only, or the infusion of stramonium, hops, or other medicinal plants, the sponge in the tube need not be displaced.” We recommend it for general adoption.

Figure 1 – Dr Nelson's Inhaler debut⁽¹⁾

Group archives (<http://www.ncbi.nlm.nih.gov/pmc/journals/>), the Internet Archive (<https://archive.org>) and Google Books (<http://books.google.co.uk/>) have been utilised to view full text versions of scientific articles and digitized historical book and catalogue material. Genealogical research has been conducted using the Births, Marriages and Deaths database, FreeBMD (<http://www.freebmd.org.uk/>) which contains index information (incomplete) for the period 1837-1983. Census and UK Medical Register (1859-1959) data were obtained via the subscription service Ancestry (<http://www.ancestry.co.uk/>). Personal communications (with interested persons named Nelson; with the Royal College of Surgeons of England (RCSEng), Archives; Royal College of Surgeons of Edinburgh (RCSEdin), Library; and Queen's College University (QCU) of Birmingham, Archivist) have been pursued. Author MS is an authority on the history of inhalation and the founder of Inhalatorium (www.inhalatorium.com), an online museum of medical inhalation technologies.

Results

The identification of the Dr Nelson of the inhaler that bears his name has not been straightforward, owing in no small measure to a quite remarkable lack of self-publicity. This is puzzling, given that, at the time, a surgeon or physician's income was driven by professional seniority and standing, and recommendation. The possibility of pseudonymity is rejected, however: an inhaler is clearly attributable to a Dr Nelson in 1861.¹



Figure 2 – Dr. Nelson's Inhalers

The Medical Register, first published in 1859, included the names, addresses and qualifications of everyone licensed to practise medicine in the UK. The Registers for 1859, 1863, 1875 and 1891 revealed 11 individuals with the surname 'Nelson' whose year of qualification (q.) preceded 1860. The birth, marriage, death and census details for these individuals reduced the persons of interest to four; the following being viewed as unlikely candidates: Duckworth John Nelson (1816-1870, q. 1840, surgeon), William Dun Nelson (c.1789-1857, q. 1850), Samuel Nelson (c.1810-1874, q.1834) and his son William John Nelson (1838-1916, q. 1859), in charge of an asylum in 1861, Thomas Nelson (c.1818-1883, q. 1839, a Royal Naval surgeon), Samuel Christian Nelson (1817-1883, q. 1845, a life-long Isle of Man resident), and Philip Nelson (1812-1894, q. 1834, a life-long resident of Annan, County of Dumfries). The regional location of the remaining four doctors during the late 1850s - early 1860s was inconclusive: David Hume Nelson (c. 1812-1897, q. 1848, in Birmingham), George Dawson Nelson (1821-1901, q. 1845, in Doncaster), Horatio Follitt Nelson (1818-1888, q. 1850, in Paris then London) and Thomas Andrew Nelson (c.1812-1894, q. 1834, in London).

Literature research (1840-1870) combining either the first or middle name of these four physicians with 'Nelson' and the word inhaler, produced an extremely interesting co-occurrence of events. Immediately following the short description of the presentation of the inhaler to the Society¹, a letter of 4 June 1861 from a David Nelson (with the professional certification: M.D. Edin., late Physician to the Queen's Hospital, and Professor of Clinical Medicine, Birmingham.) was published responding to a series of separate articles by Nelson and Henry Lee, FRCS⁷⁻¹⁰; Henry Lee also being the presenting surgeon at the Society meeting of 28 May¹. This same Dr David Nelson had, in 1851, published a detailed account of lung diseases¹¹ and was an early adopter of the spirometer described by Hutchinson in 1847. This suggests David Nelson was used to presenting his ideas in public and to trying out new technologies. These are, however, circumstantial evidences rather than proofs.

David Nelson (David Hume Nelson) was born in Scotland. Census and BMD data suggest a birth year of 1809-1812. On 5 November 1834, in the parish Church of Elgin, he married Mrs Lucy Beaumont, nee Smith and born in India, a widow 15 years his senior. By 1841, David, Lucy, daughter Lucy Ann (6 years), and sons Brudenell Bruce (4) and James Alexander Dashwood Nelson (1) were living in Hornsey Road, Islington. David's listed profession was a 'Medical'. Lucy Ann is listed as born in England, suggesting the move south had been soon after the marriage, with research¹² indicating the move was January 1835. Lucy Nelson had four children from her previous marriage¹² but they are not listed in the 1841 census.

David Nelson's medical aspirations were interrupted when he and his wife were arrested in 1842 for stealing up to £60 (£16-£20 in notes and £40 in coin) from John Abel Smith and other directors of the Friendly Loan Society in Leicester Square¹²⁻¹³. On 12 December, at the Central Criminal Court, he was sentenced to two years' hard labour for 'Larceny by Servant', and Lucy was found not guilty of 'Receiving Stolen Goods'. Presumably while still in prison, an appalling tragedy took the lives of his then three sons; David Watson Nelson having been born in 1841-2. Brudenell had come home from school following an episode of scarlet fever and measles. Within 10 days the two younger boys contracted scarlet fever and sore throats, and, shortly thereafter, on successive days, James, then David, and finally Brudenell died. All three were buried in the same grave on 16 June 1844. The local community in Enfield raised funds to help, Lucy and family seemingly having moved during David's incarceration.

Possibly the expense of four-to-eight children drove the Nelsons to thievery (£60 being the present-day equivalent of approximately £5,000) and the consequent shame and/or penury to the domestic move.

Following release from prison, David qualified MD in 1848; the Register giving a Colmore Row, Birmingham domicile, and was elected physician of Queen's Hospital, Birmingham in 1849¹⁴. The 1851 census confirms David, Lucy, Lucy Ann (at school) and Lucy's grandson Walter Beaumont (aged 8); the son of a naval officer and born in Calcutta, plus a cook and housemaid, were resident in 9 Colmore Row. David's profession is listed as 'M.D.Edin. Physician to Queen's Hosp. & Professor in Queen's College'. The former opened in 1841 and was the first provincial hospital specifically for teaching; the latter was established in 1843 following the granting of a Royal Charter and incorporated the Birmingham Royal School of Medicine and Surgery (and which gave senior academic staff the right to be called Professor)¹⁵. It would seem a quite splendid reversal in fortunes, and possibly also an indication that Lucy Beaumont's children had remained in India.

Little more is known of the next years other than an 1853 extract: "*Before the Judge of the County Court of Warwickshire, holden at Warwick, on Monday the 20th day of June, 1853, at Ten o'Clock in the Forenoon. David Nelson, late of Colmore-row, Birmingham, Warwickshire, Physician, previously of No. 21, Montague-street, and formerly of No. 19, St James-street, both in Edinburgh aforesaid, and prior thereto of Alyburton, Gloucestershire, carrying on the business of a General Medical Practitioner.*" This adds credence to his Edinburgh origins and qualifications, and indicates a peripatetic life in the years since leaving Scotland. It could also suggest a return to Edinburgh for qualification. What the Court appearance related to has not been discovered. Let us hope that Nelson was providing evidence to a Coroner's Court or similar. In 1855, 1858 and 1861 David Nelson was listed at 13 Colmore Row¹⁶: a larger domestic residence and/or medical practice possibly, and the location of the invention of the inhaler ?

Nelson was appointed Chair of Medicine at Queen's College, Birmingham in September 1865¹⁴ alongside fulsome praise of his authorship "*which evince[s] great thought and originality, marked by elegance of diction, clearness of expression, and other qualities so pre-eminently necessary for a teacher of the principles and practice of medicine*", but without mention of the inhaler. On a lighter, domestic note, and quite charmingly, the 1861 and 1871 census data show that the age difference between David and Lucy had shrunk to 11 years. Unsurprisingly, Lucy does not feature in the 1881 and 1891 data, and David is listed as widower, living at Newhall Street, Birmingham.

David died in Wales in 1897, aged 87, and his obituary, printed on 21 August 1897 in the British Medical Journal¹⁷ states: "*Dr. David Hume Nelson, for many years a familiar figure in Birmingham medical circles, died on August 10th at Llandudno, where he has resided since his retirement from professional life. Dr. Nelson who was in his 88th year, graduated at Edinburgh in 1848. Early in his career he came to Birmingham, and in the early Sixties he was Professor of Medicine at Queen's College. He published numerous papers, including an address on the Practical Study of Physic, with a view to Correctness in Medical Inquiry.*" It is strange indeed that development of the incredibly popular earthenware inhaler was not mentioned.

Discussion and Conclusions

There is no definitive evidence linking any of the Medical Register Dr Nelsons to the invention of the earthenware inhaler, but there is circumstantial evidence that points to David Hume Nelson, a resilient, 'ex-pat' Edinburgh lad, with a strong determination to practise medicine, as the most likely candidate. His letter in the British Medical Journal puts him in close proximity to the first presentation of the Nelson Inhaler, he had a detailed understanding of respiratory disease; lecturing on the subject and its treatment, and readily adopted new technologies like the spirometer, using it in innovative ways.¹¹ This successful Nelson, located in Birmingham, was close to The Potteries and could have easily arranged the fabrication of the earthenware vessel. In the 150th year of availability of the Nelson Inhaler and with DDL celebrating its 25th anniversary meeting in Edinburgh, it is tempting to think that one of the pioneers of inhalation treatment may have coincidentally walked the same streets as today's aerosol scientists. Notwithstanding this conclusion, David Hume Nelson is clearly an interesting, intriguing, loyal family man who navigated an eventful life, qualifying MD from Edinburgh in 1848 despite already calling himself a 'Medical' in London in 1841. By 1851 he had survived prison and personal tragedy, and was in Birmingham as 'Physician to Queen's Hospital and Professor in Queen's College': a meteoric rise indeed. Perhaps he qualified much earlier but his criminal conviction (apparently not held against him in Birmingham) meant that he had to re-certify. It is to be hoped that with the increasing digitization of old medical texts we will eventually be able to establish with certainty the identity of Dr Nelson, whose name has appeared on millions of inhalers over a period of 150 years.

Footnotes

- i. Reprinted from The Lancet, 85, New Inventions, New Inventions in aid of the Practice of Medicine and Surgery: Dr Nelson's Improved Earthenware Inhaler, 152., Copyright (1865), with permission from Elsevier.
- ii. Guild of One-Name Studies (Nelson. <http://www.one-name.org/profiles/nelson.html>, accessed 5 June 2014): brief details of David Hume Nelson but also credits Henry Horace Nelson (1821-1863), a Canadian

anaesthetic pioneer, as the inventor of the Nelson's Inhaler. This is agreed not to be correct (Personal Communication).

- iii. A family tree-making site (<http://familytreemaker.genealogy.com/users/l/o/b/Janet-D-Lobdell-OH/WEBSITE-0001/UHP-0400.html> accessed 6 June 2014): David Hume Nelson, born Edinburgh, wife Mary Murphy, son James Hume Nelson. Further research has revealed that the latter's parents were James T Nelson and Julia Murphy.
- iv. Personal Communications with Colleges (14-15 July 2014): RCSEng (David Hume Nelson not a member); RCSEdin (unable to process inquiries owing to extensive refurbishment); and QCU (Press Cuttings scrapbook 1868 includes letters which Dr Nelson and others wrote concerning the resignation of professors and the amalgamation of colleges, firmly placing Nelson at Queen's College at that time).

Acknowledgments

The genealogy work of Nicola L. Bull is gratefully acknowledged.

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17. Obituary: Dr. David Hume Nelson. Br Med J 21 August 1897;2:501.