THE HISTORY OF
ANAESTHESIA SOCIETY
PROCEEDINGS

VOLUME 49
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Summer Scientific Meeting at the Hawkwell House Hotel, Iffley

Organiser: Dr Ken MacLeod

The organiser wishes to thank John Pring, Ronald Lo and Bob Palmer, amongst many others, for their assistance.

FUTURE MEETING 2017

Annual Meeting 2017

At the time of going to press, arrangements for the 2017 meeting were well in hand, but not quite confirmed so please look out for further announcements. The details are as follows:

Date: June 15th-17th (Thursday evening to Saturday lunchtime as usual), 2017.

Venue: Cedar Court Hotel, Wakefield (adjacent to Junction 39 of the M1).

Theme: Members will recall that Wakefield was the home of Charles Waterton, he of the *Wanderings in South America*, and at least some part of the programme will focus on the history of neuromuscular block.

Speakers: Professors Jennie Hunter and Rajinder Mirakhur, both known for their expertise in this field have agreed to speak.

Dinner: Waterton’s home is now a hotel in a lovely setting, but they could not make enough bedrooms available for us to meet there. However, it is hoped to arrange to dine there on the Friday.

It is hoped that all will be confirmed at an early date. However, anyone wanting more information now please contact Tony Wildsmith (*jaww@doctors.org.uk*).
The History of Anaesthesia Society Proceedings
Honorary Editor

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HISTORY OF ANAESTHESIA SOCIETY

Council and Officers – July 2016

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For more information visit the website: www.histansoc.org.uk
EDITORIAL

This volume records the papers presented at the Society’s last meeting in Iffley, just outside Oxford. It was held at the Hawkwell House Hotel in quiet surroundings near the picturesque banks of the Thames.

The papers varied from anaesthetics given a century ago at the Somme, the Dutch East India Medical Journal project to electroanaesthesia for dentistry and the discovery of the noble gases. The success of the Rhodes scholarships was illustrated by following a number of scholars’ contribution to science and anaesthesia was timely in view of the recent publicity. The effect of Professor Simpson’s pamphlet answering the religious objections to analgesia during childbirth was considered in two papers.

In the Blessed Chloroform Lecture, Dr Henry Connor gave a methodological account of the beginnings of the Society of Anaesthetists and how the specialty should be advanced.

The society always encourages trainees to present suitable papers. The meeting was fortunate to have four papers from trainees, two of which came from the USA.

Again, I must thank John Pring for arranging the printing and all those who have provided help, advice and acted as referees.

Deaths

We are saddened to report the following deaths of members of the Society:

Dr Thomas B. Boulton OBE, Reading
Dr Ruth Owen, Chiswick
Dr Frank Bennett, Leatherhead
Professor Alistair Spence, Renfrewshire
Dr John S. Mather, Ledbury.
Oxford Meeting: Chairmen and Speakers’ Photographs

Dr Ann Ferguson  Dr Marten van Wijhe  Dr Susan Hayward

Dr Alistair McKenzie  Dr Jean Horton  Dr Michael Inman

Dr Maurizio Albala  Prof. David Waisel  Dr David Zuck
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The Dutch East India Medical Journal Project

Making the content of the Dutch East Indies Medical Journal (“Geneeskundig Tijdschrift voor Nederlandsch Indië”) 1852 – 1942 accessible to modern day Indonesian medical practitioners

Dr Marten van Wijhe

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Introduction

For the contemporary Indonesian medical practitioner the Dutch language is something only their grandparents still understand. Bahasa Indonesia replaced it after independence in 1949 and English in higher education. Indonesian students were trained as medical auxiliaries from 1851 onwards in the capital Batavia (now Jakarta). After graduation they received the title “dokter d jawa” (Javanese doctor). Admission requirement was initially elementary school, two years of preliminary scientific schooling being added later. In 1899 the school was upgraded, the course now lasting seven years and renamed “School tot Opleiding van Indische Artsen – STOVIA” (Training School for Indian Physicians). The diploma was equal to a medical degree in the Netherlands. That same year a second medical school was established in Surabaja, although it did not lead to an equivalent diploma.¹ In the nineteenth century there were very few medical practitioners in the vast Indonesian archipelago. The majority were military and company doctors, missionary medical personnel following only towards the end of the century. In 1852 the initiative was taken to have a medical journal for the physicians often working alone in remote stations. This “Geneeskundig Tijdschrift voor Nederlandsch Indie” (GTNI), appeared annually until 1930 when it became biweekly, becoming a weekly from 1937 onwards. The contents of the journal can be regarded as a record of medical practice in the Dutch East Indian colony. The making of this part of Indonesian medical history accessible was facilitated by the digitalisation of the complete contents of the GTNI by the Royal Library at the Hague and J.P.
Verhave’s initiative to gather specialists in their respective fields to write papers reviewing and summarising the contents. The collected works will be bundled in a book to be presented at the anniversary of the Indonesian Society for the History of Medicine in Jakarta in 2018.

My contribution was to find and review the papers relevant to the practice of anaesthesia. The result was somewhat disappointing: some thirty papers, mostly casuistic, only lifting the curtain of history slightly for the curious reader.

**Anaesthesia papers in the GTNI**

Apparently the dangers of chloroform were realised as a medical officer reported in 1860 on the use of electricity for the pulling of teeth. “*Hundreds of cases with the best results*” had been reported from America and Germany so it seemed a good alternative “*to avoid the possible dangers of chloroform*”. After this first report the subject was not raised again, allowing the presumption that local results were less than those boasted abroad. Chloroform was much used in civil hospitals and by the military during the Atjeh wars. It was advised for controlling eclamptic fits, the author adding that an extra advantage of its use was the possibility of charging it to the patient’s account.

A singularity was a paper describing a novel method of incising an abscess or pulling a tooth painlessly by inhaling and exhaling one hundred times a minute, another attempt at avoiding the use of chloroform.

In the 1890 edition there were several reports of deaths during or after a chloroform anaesthetic leading to advice on its proper use. The first was not to use chloroform if it could be at all avoided. The second was to reject any patient with cardiopulmonary pathology on physical examination. The third to always prescribe morphine premedication. The fourth was to avoid repeated chloroform anaesthetics and finally to keep an eye on patients postoperatively.
The search for safer alternatives for chloroform continued, ether not being popular due to it already boiling at the usual ambient temperatures. Freezing of the gauze mask made maintenance of stable anaesthesia difficult for the untrained nurse or other person administering ether. Ethyl bromide and trimethyl-ethylene had short-lived popularity around 1892 with a lone enthusiast, they were discontinued when results were unsatisfactory and others complained at medical society meetings. As in Europe fatalities were either ascribed to improper technique or to impurities in the anaesthetic.

Fundamental change was made possible by the introduction of local anaesthetic techniques, in the German medical tradition especially those of Schleich. Officer of Health Second Class F.S. Stibbe reviewed the use of cocaine infiltration for major operations including limb amputations. Fifty milligrams of cocaine could be dissolved in 500 ml of normal saline allowing extensive areas to be rendered “pain free”. Stibbe suggested that it was safer for the lone practitioner to operate with local anaesthetic than to have to defer administration of chloroform to an incompetent assistant. Avoiding the use of chloroform altogether was considered another advantage.

Spinal anaesthesia was used shortly after its introduction in Europe. Dr N.F. Lim described a fatality in 1906 after he had given 40 spinal anaesthetics using Stovaine (amine of cocaine, popular in France). In 1910 a series of twenty cases using tropocaine spinal anaesthesia was presented. There were serious complications: pneumonia, severe headache and a total spinal, but no fatalities. In 1927 procaine for spinal anaesthesia was advocated and a series of 200 cases presented by Officer of Health First Class P.E. van der Gugten. He considered spinal anaesthesia to be suitable for operations in the upper abdomen and advised to have lobeline (a predecessor of ephedrine) at hand in case of a cardiac arrest. As an added advantage of spinal anaesthesia, an anaesthetist was made superfluous.
In the 1920’s repeated discussions in the journal favoured ether with ethyl chloride induction to chloroform for safety reasons, mainly unexpected sudden death. Dr O. Burgemeestere suggested practical solutions to resolve difficulties with ether anaesthesia.\(^5\) The first was to induce with ethyl chloride, which saved a lot of time and coughing fits. The second was to use two smaller chloroform facemasks alternately, changing as soon as one was frozen over. Lastly he suggested using O’Cornell’s tube when the upper airway became blocked; the first mention of using a device instead of just jaw thrust to clear the airway.

When Avertin (tribromo-ethanol) was presented in 1930 it becomes apparent from the GTNI content that chloroform was no longer in use. After some experimentation, the difficulty in using Avertin that could only be administered rectally, because of its small therapeutic window, was discontinued.

From 1931 onwards there appeared a series of excellent reviews on anaesthesia by T. Reddingius, later to become professor of surgery and orthopaedics at Batavia.\(^6\) In 1931 he wrote an extensive paper on general and local anaesthesia “for the native”. He systematically described 4500 anaesthetics given at the Batavia Central Civil Hospital over a three-year period. Standard technique consisted of morphine premedication, followed by ethyl chloride induction and ether maintenance. Since the anaesthetist had started 10 minutes before commencement of the operation results were much improved. One in ten patients had life-threatening pneumonia after laparotomy, with all postoperative deaths in that group. Overall mortality after ether anaesthesia was 8.9%. It was unclear to Reddingius whether those “in shock” died due to the effects of blood loss or a negative influence of ether. Ethyl chloride alone was used 1420 times for minor procedures. Of the 2027 major operations 560 were done under local infiltration anaesthesia using procaine 0.5% with adrenalin 5µg/ml. The incidence of major pulmonary complications, 5.3%, was the same as after ether anaesthetics.
Spinal anaesthetics with procaine (277 cases) resulted in inadequate analgesia, reason to try Spinocaine (Pitkin’s solution of procaine, alcohol, amylo-prolamine and strychnine) that was hyperbaric to spinal fluid. To assess the effects of spinal anaesthesia, blood pressure was monitored every ten minutes in a group of 15 patients (of 48 in all) which gave mixed results: in nine it was lowered considerably, in three it remained about the same and in three it was raised. Two patients died presumably due to too high a level of anaesthesia.

Better results were obtained with caudal epidural anaesthesia, 30 ml of procaine 1% solution being given without mishap to 40 patients with urological problems.

Attempts at blocking the axillary plexus failed three times out of a series of five attempts.

In a second review of anaesthetic outcome in 1937 Reddingius stressed the importance of psychological support before and after operations. A facemask and ethyl chloride/ether open drop were still the basic general anaesthetic technique.

When Evipan (hexobarbitone) was introduced in 1934 Reddingius was critical of it, as greatly differing individual doses had led to cardio-respiratory arrests, fortunately not permanent. After major operations patients took extremely long to recover some having tachycardia for days. He discouraged single use for longer operations.

Attempts to introduce nitrous oxide were hampered by the high cost of the cylinders that had to be imported from the Netherlands and the need of the expertise of an anaesthetist.

In 1937 Prof. Reddingius made a speech on the occasion of the tenth anniversary of the Batavia Medical School, naming especially the importance of the introduction of anaesthesia and antisepsis into surgical practice. Stating that surgeons sometimes do more harm than good he admonished the audience to build a more scientific base for surgery. Cooperation with physiologists and pathologists would be needed and the treatment of certain
conditions may have to be better left to others. In his last contribution in 1942 Reddingius referred to the principles of shock treatment in war surgery. Details of his further career have yet to be found.

Only in the 1930’s did Indonesian physicians begin to contribute to the journal.

On the 24th February 1942, the last edition of the GTNI appeared and publication ceased with the Japanese occupation of the Dutch East Indies and was not resumed after the war’s end.

Conclusion

From the content of the GTNI in the nineteenth century it is only indirectly possible to learn of the introduction and practice of anaesthesia techniques. The overall impression is that of lone practitioners using simple techniques as in home country rural hospitals. Introduction of new drugs and techniques in the Dutch East Indies followed a few years after those in Europe. In the twentieth century the activities at the Batavia Medical School draw the most attention. The fatalities due to chloroform were known and feared, apparently leading to its discontinuance by 1930. Similar to the situation in the home country until the Second World War there was no tradition of anaesthesia given by physicians. Anaesthetic techniques, both inhalational and spinal, remained simple – open-drop ether after ethyl chloride induction for major cases and the use of local anaesthesia if possible. Outcome was influenced by lack of insight in the physiological effects of anaesthetic drugs, trauma and surgery. Single surgeon-led operations without trained anaesthetists gave outcomes that were reaching a ceiling that would only disappear when anaesthesia specialists entered the arena in the post-war years. The GTNI, initially mainly a journal with news on postings, medical society meeting minutes and medical social matters emphasised clinical medical developments and postgraduate education from 1930 onward, when it became a weekly. Medical historians and Indonesian medical practitioners may gain some insight in the
development of anaesthesia in the archipelago from the contents of the GTNI.

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Paediatrics at Southampton - Views and Visions

Dr Susan Hayward¹ and Dr Roy Kukreja²

¹Specialist Trainee Year 5, ²Consultant Anaesthetist, University Hospital Southampton

Paediatrics in Southampton has changed over the years, across locations, through ever altering and increasing workloads. In the early years the hospital was in the city centre at the Royal South Hampshire Hospital which opened in 1835 and moved to its current location in 1843.

It was at this site that the first anaesthetics were undertaken in February 1847¹ and reported in the *Hampshire Advertiser* and *Hampshire Independent*. Of the four reported, two were children aged 12. The first was for a leg amputation and after ‘breathing the ethereal air for less than two minutes called out “remove my leg now. I am in Heaven. It is a wonderful place with angels around me”’. An anaesthetic to aspire to perhaps? The second had some dead bone removed from his leg following a similar procedure carried out a few months previous “with much suffering”. One of the adults reported had an arm amputation and complained of more pain from walking up the spiral staircase than the procedure. It is assumed that all the patients had to walk or be carried up this staircase to theatre so perhaps filtering the workload?

In 1884 a specialist Children’s Hospital and Dispensary for Women opened in Shirley an area of town then described as ‘a village three miles from Southampton’ with a population of just under 5000. The name started as Shirley Children’s Hospital but changed to Southampton Children’s Hospital as the city grew around it.
Figure 1: Map from 1931 showing the locations of the children’s hospitals and the infirmary.

The hospital started in Church Street which runs from Shirley Baptist Church on the High Street to St James Church. 38 Church Street no longer exists but would have stood in the middle of this road which is now dominated by the huge rise blocks known as Shirley Towers although both churches and some old buildings remain. The hospital was described as a pleasantly situated little white house next to the Wesleyan chapel and was rented at £38-10s-10d per annum and later purchased for £574.0s.0d. Initially it had four beds, which increased to seven. In 1887 they had 25 inpatients. They also saw 217 outpatients and 60 dental cases. Notably, it excluded infectious cases which were sent to the isolation hospital.

Surgical cases were listed as fracture of thigh, dislocation of elbow, cataract, scald, burns, abscess, contracted tendon, lupoid ulcer of the face, hip joint disease, necrosis and rheumatoid arthritis although what the procedures carried out were not noted. The operations were carried out by candlelight despite it being pointed out
the anaesthetic agents were highly flammable. The hospital closed each summer for six weeks while matron took her holiday.

Funding came from donations, local support and sponsorship. Patients required a letter of recommendation to be allowed treatment. For each £1.10s.6d donated the donor was allowed to provide an introductory letter. Gifts were also welcomed. It is wonderful to see this list which included lemon squeezers, eggs, nightdresses and weekly rhubarb.

Figure 2: Flag day, Fundraising drive for the jubilee buildings outside the Winchester road children’s hospital (in the background the junction with Anglesea road).

In 1898 a Dispenser was employed to help reduce the budget. I love when I hear these echoes through time when it feels that something similar could be said about the current ‘new models of care’ and ‘five-year forward view’ looking to extend the role of pharmacists.

With the increasing workload, plans were being made to extend the Church Street property. When offered Anglesea House on Winchester road for purchase at £1000.0s.0d it was decided to move instead to this building on the other side of the park.
Jumping forwards to 1919, electric lights had just been installed and two general practitioners were appointed as honorary anaesthetists. These were Dr Brogden and Dr Simpson. Later joined by Dr Howlett, Dr Maxwell, and, Dr Cann. Dr Oakley White joined the team in 1932 who was later to become a founding member of the Southampton anaesthetic department alongside Dr Bigby and Dr Ball who were also noted as staff for the children’s hospital.

Telephone was installed in 1924. Parents were allowed for one hour per day (not including Wednesdays and Sundays). This was due to concerns about infection but also a different culture at the time. Parents were however left feeling very cut off from their child. One mother tells the story of dropping their child for surgery being told to leave but with nowhere to go she simply passed the driveway listening to the screams of the children from within. One child was an inpatient for seven weeks and with the journey often taking an hour each way the parents had little contact. She became attached to ‘a kind nurse to read her stories’. It was not until 1959 that a parents’ room was included allowing the possibility that parents could stay but stories continue even until the hospital closed of parents travelling long distances daily to see
their children. The kindness of strangers can be wonderful in situations like this, with offers of rooms more locally.

The workload increased and in 1931 there were 979 surgical cases. Six hundred and six of these were tonsillectomies and the stay required dropped from two weeks to two days. These may have been done with or without anaesthetic and the instrument used was much like a small guillotine. Cases of pyloric stenosis were operated on under local anaesthetic with the baby being bandaged to a crucifix and with or without a dummy soaked in syrup of chloral. Tracheotomies were undertaken for asthma and gastroenteritis was described as a dreaded complication. Urine samples were collected in birdfeeders strapped to the child with Elastoplast inside a nappy and surgeons requested a stool sample from the children be displayed in a pie dish at the end of each bed.

Mr Tee, the caretaker and porter, took the children to the theatre as well as maintaining the garden and caring for the chickens. Some of the children commented on the rubber bathing hats and white petticoats they were dressed in, of hearing other children scream and seeing large pans carried into the theatre thinking they were pans of vegetables. Some saw the tables of fearsome instruments and remembered the foul-smelling anaesthetic gas.

New theatres were built in 1935 and further refurbished in 1950. Adjoining properties were acquired in Vinery gardens. The anaesthetic room had a mural with balloons painted by a local artist. It was described by surgeons as the best theatre in the city. These theatres were still upstairs but now had a lift.

Around this time there were 165 children’s beds, with 65 beds at the children’s hospital, others at the General, Eye Hospital, Royal South Hants and the Chest Hospital. The nationalisation of the service in 1948 allowed employment of six full-time anaesthetic consultants which was the start of the anaesthetic department. Based out of the general hospital the team covered multiple sites.

The General/Infirmary hospital just across the valley had been built in 1900. In 1974 a rebuild started. The east wing was the first
to be built and it included the children’s wards allowing the children’s hospital to be closed. It was described by staff as a sad day. A green van with a teddy on the front came to move the equipment and with the organisation of the matron the few inpatients were transferred without a hitch. The hospital was demolished in the 80’s being replaced with flats.

The centre block of the General Hospital was opened in 1977 and housed the anaesthetic department. Anaesthetic consultants ran a first and second on call rota, the first covering general anaesthesia and their own specialist skill in neurology or paediatrics, a second would be available to support cases in the other fields. Maternity services also moved from the infirmary to the new hospital until the opening of the Princess Anne hospital in 1981. The West wing opened in 1984 and, after this, the grand old infirmary building was demolished. A car park now stands on in its part of the large site.

Surgeons, Mr Atwell and Mr Freeman, had been employed in 1969 and were keen to encourage day cases. A five-bed day case ward had been opened in the old children’s hospital. In the new building this was based on E level of the east wing near the theatre then later to centre block. The head of the anaesthetic department, Dr Shackleton gets a mention as supporting this innovative work but it was no doubt a team effort.

The John Atwell Day ward opened in 1991 in it centre block location and continues to be in this location with a bright and cheerful paint job. For a time they had toy golf buggies to drive the children down to theatre although this has now stopped. Much of the work is now as day cases, depending on specialty 50-97%.
Several changes have aimed to optimise the set up and experience for children within the hospital with refurbishments and new children’s theatres. Having started with a theatre in the east wing on level E, it was moved to theatre 10 in the main theatre-complex which opened with 14 theatres in the centre block in 1977. With the development of the north wing opened in 2005, two theatres were designated on F level and set up for children’s work with large welcoming and well-resourced play areas for pre-operative waiting, involving play therapists. As the workload continued to outgrow this space, the paediatric theatres moved back to E level taking over theatres 4-8. Some children’s work was still undertaken at RSH until around 1992 when the trusts merged and the work was centralised.
Figure 5: The current (2016) entrance to the children’s hospital within the University Hospital Southampton.

The anaesthetic consultants now have a separate paediatric rota, one of four consultant rotas. The hospital undertakes nearly 5000 cases per year and has far outgrown the original space, spreading around the site. The paediatric intensive care unit opened in 1998 with seven beds in part of the General Intensive Care footprint. Eighteen months later it moved into the space next door where it is now located with 14 beds. Children’s services also include NICU, Cancer services, nephrology, cardiology and neurology.

In 2012 permission was granted for a new children’s hospital on the site to centralise again the children’s work. With Southampton Hospital providing all paediatric services apart from transplantation the old estate would benefit from being updated.
Figure 6: The artist impression of the new children hospital.

Figure 7: The current view from the children wards of the new hospital which currently lies empty.
The trust has a vision to build a dedicated children's hospital on the site. Parents and children have been involved in the planning and requirements for this. Work is progressing on phase 1. The paediatric emergency department must fundraise £2 million to match a grant from the Treasury in 2016. The longer-term vision remains to have a stand alone, state of the art children's hospital built above this. Sited near the previous location of original main gates this will change not only the vision but the view of the hospital too. I love that from the children’s ward you can just see St James’ church in the distance, a constant in all of its incarnations.

Figure 8: Previous view up Dale road to the main entrance of the infirmary which is now a view of the building works of the new children’s hospital.

Much of this work is based on a wonderful book by Dr David Williamson, Honorary Consultant Paediatrician, looking at the areas associated with anaesthetics. The full text and pictures are available in ref. 2.
I should like to thank and acknowledge the help of the Southampton Archives, Staff at University Hospital Southampton who have been willing to share pictures and stories.

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   http://www.uhs.nhs.uk/Media/suhtsch/PatientsAndFamilies/HealthInformation/HealthInformationLeaflets/HistoryofSouthamptonchildrenshospital.pdf
Rhodes Scholars in the Service of Anaesthesia
Dr Alistair G. McKenzie
Consultant Anaesthetist, Royal Infirmary of Edinburgh

Cecil John Rhodes was born in Bishop’s Stortford in 1853. At the age of 17 he became ill and was sent to the warmer climate of Natal in South Africa, where he worked on a cotton farm, granted to his brother, who had already departed for the diamond rush in Kimberley. At the end of 1871 Cecil abandoned the farm and went to join his brother in the ‘Diamond City’. There, early in 1872 he formed a partnership with Rudd, but unfortunately suffered a heart attack in July. To recuperate he went with his brother on an eight-month journey by ox wagon, travelling as far north as what is now Pretoria in the Transvaal. In March 1873 Cecil returned to Kimberley and (with Rudd) acquired numerous claims of diamond-rich ‘blue ground’ which other diggers sold up, (wrongly) believing it worthless.¹

Paradoxically Cecil Rhodes had a yearning to study at Oxford, and on 30 July 1873 he boarded a ship for England. He was duly admitted to Oriel College, but in November he caught a chill and was referred to Dr Morrell Mackenzie, who found his “heart and lungs affected” and insisted that he return to the better climate of Kimberley. There, Cecil cemented his success as a great entrepreneur: in March 1876 he secured the De Beers contract. He returned to Oxford and attended all terms from 1876 to 1878 (returning to Kimberley only during the long vacations). But he remained in South Africa through 1879-80: a busy time when he formed the De Beers Mining Co. Ltd and was elected to the Cape Parliament. In 1880 he returned to Oxford and graduated with the degree of B.A. in 1881.²

Rhodes then established his political career in South Africa. In 1885 he persuaded the British Government to form a Protectorate in Bechuanaland, in 1889 he founded the British South Africa
Company and in 1890 he formed Rhodesia, expanding the British Empire from the Cape of Good Hope to northern Rhodesia (now Zambia) – a distance of 3000 kilometres. From 1890-96 he was Prime Minister of the Cape Colony. In 1899 he again visited Oxford University to receive the degree of D.C.L.²

Rhodes died in 1902 at the young age of 48 years. In his will he directed the establishment of scholarships for students tenable at any college in the University of Oxford for three consecutive academic years.¹ Since its inception to the class of 2015, there have been 7688 Rhodes Scholars.³ Perusal of the Register of Rhodes Scholars⁴ has revealed four whose work in physiology or medicine has been of great benefit to the science and practice of anaesthesia and intensive care. In addition there are three who became anaesthesiologists, two of whom are still practising.

The following synopsis of these seven doctors is in chronological order.

1. John Carew Eccles (1903-1997)

John Carew Eccles was born in Melbourne, Australia and graduated in medicine in 1925, in which year he was awarded a Rhodes scholarship.⁵ He studied under Charles S. Sherrington at Magdalen College and in 1929 he graduated DPhil in neuroscience (Evans, 1996, 47).⁶ From 1937 he worked at the University of Sydney with Bernard Katz. After the Second World War he was appointed Professor at the University of Otago, New Zealand.⁵ In 1941 he showed that curare acted at the acetylcholine receptor site, blocking its action.⁶ From 1952 he was Professor at the John Curtin School of Medical Research (of the Australian National University). With Bernard Katz he studied synapses in the peripheral nervous system. In 1963 he was awarded the Nobel Prize for Physiology (with A.L. Hodgkin and A.F. Huxley) for work on sodium and potassium channels in the neuronal membrane.⁵
Knowledge of the ionic basis of nerve impulse conduction, elucidated by Eccles and colleagues, is of course essential to understanding the pharmacology of local anaesthetics.


Horace Willard Davenport was born in Philadelphia and graduated BS at the California Institute of Technology (Caltech) in 1935, in which year he was awarded a Rhodes scholarship. He entered Balliol College and graduated BA in 1937 and BSc in 1938. He then returned to Caltech to defend his PhD in 1939. He was appointed to the Chair of Physiology at the University of Utah in 1945 and in 1947 he produced a remarkable book ABC of Acid-Base Chemistry, which would go through six editions. In 1956 he was appointed Professor and Chairman of Physiology at the University of Michigan, and he was President of the American Physiological Society for 1961-2.

3. Robert West Fynn (1918-2006)

Robert West Fynn was born in Rhodesia and attended Prince Edward School in Salisbury, followed by Plumtree School. He then went to Rhodes University College (Grahamstown, South Africa) where he obtained a BSc degree and moved to the University of Cape Town, winning a Rhodes scholarship in 1939. He was admitted to Christ Church College where he studied medicine.

He was one of the four sons of Sir Percival Fynn, a civil servant who was leader of the Rhodesian Party from 1933 and Acting Prime Minister on several occasions. Three of the four brothers became Rhodes Scholars within a time scale of 16 years.

In 1943 he graduated BM BCh and proceeded to medical practice in London. Next he served with the RAMC in India 1945-46, after which he practised medicine in Salisbury, Rhodesia until 1970. At the end of that time he contracted Guillain Barré syndrome, then called Landry’s paralysis, and after a slow recovery his medical practice was confined to anaesthetics (personal communication from his daughter, Sally Jennings). Through 1972-80 he was a Consultant Anaesthetist at the Royal Devon and Exeter
In 1974 he published a paper describing 59 administrations of ketamine over 11 months to a child for a programme of bone marrow biopsies, intrathecal therapies and radiotherapy.\(^9\)

In 1981 he returned to Harare, Zimbabwe and practised as an anaesthetist until the age of 80 years! (Personal communication, Sally Jennings). In 1993 he published a novel *The Lost Bone.*\(^4\) Rob Fynn (Fig. 1) is the only one of these seven Rhodes Scholars that the author personally met.

![Figure 1: Robert West Fynn (1918 – 2006). Photograph courtesy of Mrs Sally Jennings and David Fynn Esq.](image)
4. Michael Antony Denborough (1929-2014)

Michael Antony Denborough was born in Salisbury, Rhodesia and also attended Prince Edward School, proceeding to the University of Cape Town, where he graduated MB ChB in 1952. He was awarded a Rhodes scholarship in 1953, entering Exeter College where he defended a DPhil in clinical medicine in 1956. He worked at the National Heart Hospital, London through 1957-58 and in 1959 passed the MRCP examinations.\(^4\(\text{(p190)}\)

In 1960 Denborough was appointed to the Royal Melbourne Hospital, where he soon encountered malignant hyperthermia (MH) developing 10 minutes after the start of halothane anaesthesia in a patient with 10 close relatives who had died following anaesthesia: this patient recovered after application of ice packs.\(^10\) The following year the same man presented for surgery and was given an uneventful spinal anaesthetic. Through the 1960s further cases of MH were recorded, and the rise of serum creatine kinase in these patients was noted. In 1973 Denborough and J O King described myopathy associated with MH in children: this became known as ‘King-Denborough syndrome’. W Bowman (University of Strathclyde) in 1976 suggested to Denborough that a drug which reduced myoplasmic calcium should be an effective treatment for MH; so dantrolene was trialled in pigs and its efficacy proven. Dantrolene was then found to be life-saving in human MH.\(^11\)

In 1984 Denborough founded the Nuclear Disarmament Party. He became a Professor at the John Curtin School of Medical Research (Australian National University) in 1992 and was awarded an honorary fellowship of the Australia & New Zealand College of Anaesthetists the following year. In 1999 came his final accolade: Member of the Order of Australia.\(^11\) In 2003 he protested against the invasion of Iraq.\(^12\)

5. Richard Morales (1954 -  )

Richard Morales was born in Huntington, New York and attended Half Hollows High School. Through 1972-76 he studied in the
United States Military Academy at West Point, New York where he obtained a BS degree. In 1976 he was awarded a Rhodes scholarship and was admitted to Christ Church College, where he gained in 1978, the Oxford Bachelor of Arts in Philosophy, Politics and Economics (PPE), which has been done by many well-known politicians.\textsuperscript{4(p368)}

Morales served in the US Army during 1978-79 and proceeded to Yale Medical School, graduating MD in 1983. The following year he was appointed to a resident anaesthetist post in San Francisco, where he advanced to Staff Anaesthetist through 1987-91. Since 1991 he has been Staff Anaesthetist at the Presbyterian Hospital (Norvant Health) in Charlotte, North Carolina.\textsuperscript{9}


Kanwaljeet S. Anand was born in Ludhiana, India and attended Daly College, Indore. Through 1974-81 he studied medicine at the University of Indore, graduating MB BS. In 1982 he was awarded a Rhodes scholarship and was admitted to Jesus College, where he defended a DPhil in clinical medicine in 1986 (Evans, 1996, 404).\textsuperscript{4} Supported by his Rhodes scholarship and the John Radcliffe Hospital, Anand began some of the first research on pain in neonates. He demonstrated that in patent ductus arteriosus repair, neonates in a minimal anaesthesia group (nitrous oxide and muscle relaxant combined with artificial ventilation: ‘Liverpool technique’) had increased stress response and increased morbidity compared with those in a ‘fentanyl-added’ group.\textsuperscript{14} For this work he was awarded the Michael Baclow Memorial Prize at the annual meeting of the British Paediatric Association (RCPCH) in 1986. However there were repercussions: some press reports purported shock that infants had undergone surgery with minimal anaesthesia, and portrayed the researchers in a bad light. Some MPs formed an All Party Parliamentary Pro Life Group and demanded an inquiry,\textsuperscript{15} but then in 1988 the head, Sir Bernard Braine apologised for the accusations.\textsuperscript{16}
In 1988 Anand completed his fellowship in anaesthesiology at Harvard Medical School; in 1993 he was appointed Assistant Professor at Emory University, Atlanta Ga and worked at the Egleston Children’s Hospital. He was the inaugural holder of the St Jude Chair of Pediatric Critical Care Medicine at the University of Tennessee (2009-14) and in 2015 was appointed Chief of the Division of Pediatric Critical Care at Stanford University School of Medicine. Of his numerous publications the following are perhaps most noteworthy: 1993 *Pain in Neonates*; 1994 *Handbook of Pediatric Intensive Care*; 2002 *Pain in Neonates and Infants*, which has run to three editions.

7. Atul Atmaram Gawande (1965 - )

Atul Atmaram Gawande was born in Brooklyn, New York and attended Athens High School. He entered Stanford University in 1983, graduating BAS in 1987 in which year he was awarded a Rhodes scholarship. He was duly admitted to Balliol College where he took the PPE course, graduating in 1989.

Through 1990-95 he studied medicine at Harvard Medical School, graduating MD. While at Harvard he was appointed Health and Social Welfare Adviser to the Clinton-Gore Presidential Campaign. He proceeded to do general and endocrine surgery at Brigham & Women’s Hospital in Boston and earned a Master of Public Health in 1999.

In 2007 Gawande became Director of the WHO’s effort to reduce surgical deaths. In 2008 came the WHO’s second Global Patient Safety Challenge ‘Safe Surgery Saves Lives’, introducing a Surgical Safety Checklist. This has been adopted widely and of course involves anaesthetists.

Gawande was also a founder of “Lifebox” in 2011: cooperation between the WFSA, AAGBI, the Brigham & Women’s Hospital and the Harvard School of Public Health led to the manufacture of a robust pulse oximeter, thousands of which the charity Lifebox Foundation has already distributed to 90 low-resourced countries worldwide.
Of Gawande’s numerous publications, the following are presented for further reading: 2002 Complications: a surgeon’s notes on an imperfect science; 2007; Better: a surgeon’s notes on performance; 2009; The Checklist Manifesto; 2014; Being Mortal: medicine and what matters in the end. Also in 2014 he presented the BBC’s Reith lectures: a series of four, under the heading “The Future of Medicine”.

In conclusion, this review has considered seven Rhodes Scholars whose achievements benefited the art and science of anaesthesia. Photographs of each (except Robert Fynn) are in the public domain and may be seen by perusing the references listed. Arguably the award of a Rhodes scholarship set each one up in his career, which was good for anaesthesiology.

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The Battle of the Somme 1916
Anaesthetics at the Battle of the Somme [abstract]

Dr Jean Horton

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On 1st July 2016 it will be 100 years since the start of the Battle of the Somme on 1st July 1916. The Battle lasted for 140 days from 1st July until 18th November and was a succession of fierce battles on both the British and French fonts in the area of the river Somme and the river Ancre in Picardy in northern France.

It is important to remember that 1st July was the 132nd day of the Battle for Verdun where the German army had tried to bleed the French army dry, which was one of the reasons for the Battle of the Somme.

The appalling tragedy of 1st July 1916 was one of the blackest days in British military history. At 7.30 am 14 British divisions along an 18 mile front, each soldier carrying up to 60 lbs. of equipment, climbed out of their trenches in response to a signal from their officers, and went over the top and walked slowly towards the enemy defences that they expected to find annihilated by the week long bombardment by 4350 guns. Instead they were massacred by enemy gunfire and machine guns. Thirty thousand were killed or wounded in the first hour, from 7.00 am to 8.30 am, 50,000 by noon. At the end of the first day, 21,000 were dead and 35,000 were wounded.

The wounded were evacuated firstly by the stretcher bearers, from where they lay in the open or in shell holes often for up to four days, then to regimental aid posts, then dressing stations and by ambulance convoys to one of the 14 Casualty Clearing Stations (CCS) that was the first medical unit a wounded man could reach where surgery and nursing could be provided, before evacuation to base hospitals on the north-west coast of France or by hospital ship to the United Kingdom (UK).
The anaesthetists and surgeons were then faced with men covered in mud, with severe injuries and suffering from exposure. They were fit as most were category A, but many had irritable chests due to smoking.

The general anaesthetics used for surgical operations were ether and chloroform by the open method using a Schimmelbusch mask or with Shipway’s warm ether apparatus, ethyl chloride and nitrous oxide and oxygen. Spinal anaesthesia used Stovaine in a 5% solution, and local infiltration was achieved using Novocaine.

The battle ended on 18th November 1916 because the incessant rain which turned the chalk fields of the 1st July into a quagmire and the furthest line of advance was only seven miles. The number of British killed was 419,000.

**Key References, Bibliography and Further Reading**


There will be an exhibition about the Battle of the Somme in the Heritage and Museum Centre of The Association of Anaesthetists of Great Britain and Ireland (AAGBI) in September 2016.

This paper was presented in Paris. It was also presented at a satellite meeting at the 12th WCA in Montreal with the History of Anaesthesia Society and the American History Association. An updated version is published in Anaesthesia News July 2016, entitled *The Price of a Mile, anaesthetics at the Battle of the Somme*. 
Safe and reliable anaesthetic techniques in the early twentieth century provided the necessary framework for developments in the field of surgery. Yet, by today’s standards, morbidity and mortality remained high, in part due to poor resuscitation techniques, lack of physiological monitors, lack of techniques to control the airway, and the absence of drugs that blocked the neuromuscular junction. Regional anaesthetic techniques offered advantages due to their relative lack of cardio-respiratory side effects.

The German surgeon August Karl Gustav Bier (1861-1949) in 1897 administered the first subarachnoid anaesthetic and, three years later, the Swiss obstetrician Oskar Kreis (1872-1958) conducted the first vaginal delivery under spinal analgesia. The concept of epidural anaesthesia developed slowly, initially only as a by-product of failed subarachnoid anaesthesia. In 1901, French physicians Fernand Cathelin (1873-1945) and Jean Athanase Sicard (1872-1929) independently introduced the caudal epidural injection technique to block the sacral, and possibly the lower lumbar, spinal nerve roots. When large volumes of local anaesthetic agents were injected the level of analgesia could spread up to and above the umbilicus. However, spread of analgesia was unpredictable and large doses of anaesthetic agents injected increased the risk of local anaesthetic toxicity.

Other attempts were made to identify the epidural space in the lumbar region. The inter-laminar approach, a logical evolution, was difficult. A common approach was to advance a large blunt needle by feel until the “rubber wall” resistance offered by the ligamentum flavum was lost. Another technique required deliberately advancing
the needle into the subarachnoid space and then withdrawing it back into the epidural space. It appeared that epidural anaesthesia was a by-product of failed subarachnoid anaesthesia, and there was no uniform approach to administering epidural analgesia.

An exception was the Spanish military surgeon Fidel Pagés Miravé (1886-1923) who extensively performed epidural injections using clinical landmarks and tactile feedback. A busy surgeon, he would often perform an epidural injection on a patient, then operate on a previously anaesthetised patient while the epidural analgesia was taking effect and then do the case at hand (after performing an epidural on another “next” patient . . . ). Unfortunately, he did not train other providers and his article was published in 1921 in a journal with limited circulation. Furthermore, he was a victim of a fatal accident shortly thereafter and only received recognition for his work decades later.

Another pioneering concept was advanced first by the German physician Ernst Janzen in 1926, the “subatmospheric” pressure created as the needle was advanced into the epidural space, was followed up in 1933 by the Argentinian surgeon Alberto Gutiérrez (1892-1945) who developed the so-called “hanging drop” technique. Unfortunately, this technique also proved to be somewhat unreliable.

**Achille Mario Dogliotti (1897-1966)**

He came from a rural north eastern Italy wealthy family which afforded him a good education and social life. He also showed an understanding and respect for the value of hard work, venerable institutions such as hospitals (Fig. 1), and allegiance to his Country. Dogliotti was a medical student when World War I broke out, and he volunteered to serve as a paramedic in the ambulance corps.
Figure 1: One of the main hospitals, Turin, Italy.

This experience gave him a first-hand appreciation of the extensive injuries that resulted from modern weapons, and also how medical care allowed victims to survive with lifelong scars on the face, extremities and in the abdomen. He completed medical studies when the war ended after which he embarked on an academic career in surgery, establishing clinics and returning to Turin University as Director of the Surgical Clinic.

A man of many careers

Dogliotti’s work encompassed several independent and overlapping medical fields – general surgeon, researcher, anaesthetist, and also cardiac surgeon. His innovative mind compelled him to seek better alternatives in pain control, surgical equipment, and multidisciplinary team building. In particular, he would take on difficult surgical cases considered inoperable by others.
Father of Italian Anaesthesia

As a young surgeon, Dogliotti noticed that anaesthetic care was sometimes unsafe and not uniform. At larger hospitals the task of administering anaesthesia was delegated to the most junior surgical residents. This option was not available at peripheral hospitals, so the surgeon would start the anaesthetic and have a nun or a student to conduct it while the surgeon proceeded with the operation. Dogliotti realized that improving the quality of anaesthetic care was critically important and he devoted several years of his early career to this effort. His work included anatomic studies, clinical observations, organizing published physiological and pharmacological data, and testing new techniques. One example was the modification of the Ombredanne inhaler to allow the administration of several gases.

His contributions on the academic front were equally impressive. He established the Italian Society of Anaesthesia in 1934, and later that year published a seminal Italian textbook of anaesthesia that saw editions published until 1956. He founded the Italian Journal of Anaesthesia in 1935 and established the first professorship in anaesthesia in 1962. After the Second World War, he created the first residency programme in anaesthesia. His primary aim was to confer professionalism and academic rigour to the newly established specialty of anaesthesia, and to place it alongside surgery by having its own training programmes, research efforts, academic departments, a professional society and a medical journal.

Surgeon

Dogliotti conducted anatomic studies of the renal vasculature, and attempted to induce tumour necrosis by arterial injection of toxic substances. In the pre-antibiotic era, he completed a series of consecutive laryngectomies without infection or mortality. He conducted pioneering work by introducing intra-hepatic choledocho-jejunostomy. He led the way in non-invasive radiology by visualizing the portal vasculature with trans-cutaneous spleno-
portography, a technique that was used until recently. He was also a prolific writer and authored a multivolume surgical treatise. Dogliotti worked on several neurosurgical techniques aimed at controlling severe pain and these include continuous epidural analgesia; injection of alcohol into the Gasserian ganglion to relieve trigeminal neuralgia (a 1928 article reported over 360 injections in 296 patients); and in 1930, he developed a technique of neurolysis by injecting alcohol against the posterior nerve root.

He performed a few operations using an unusual occipital supratentorial approach for retrogasserian rhizotomy, and in 1932 he published a few case reports of stellate ganglion “chemolysis.” He also published reports on trans-orbital frontal lobotomy, trans-orbital ventricular puncture, permanent CSF shunt, interruption of the mesencephalic spinal thalamic pain pathway and “pons lemniscotomy.”

Heart Surgeon

In 1931, Dogliotti was the first to place a patient on partial cardiopulmonary bypass (Fig. 2) in an attempt to support impaired circulation. This effort was made possible by his audacity, cooperation with physiologists, and technical collaboration with engineers from Fiat’s technical school. It was remarked, “If you wanted a heart lung machine in the early 1950s, it was necessary to build it yourself.”
He created a new prosthesis for the aortic valve, and manufactured a nylon sheath to be inserted under the mitral valve leaflets to minimize regurgitation. He used a special blade and ring device which were placed on the tip of his finger to cut open stenotic mitral valves (Fig. 3).
He operated on children with cyanotic heart disease, without charge, at a time when there was no public health system in Italy. He devised a three-branched angiostat clamp for use during vascular anastomoses.

**Innovator**

His accomplishments, prominence, and academic role allowed him to introduce several programmes and complicated medical equipment. He was a great supporter of the concept of an artificial kidney. He assembled a team of nephrologists and technicians and created the first artificial kidney in Italy. He developed the cardiopulmonary bypass machine that could also be used to induce hypothermia. He improved upon techniques to obtain blood from donors with minimal waste. He designed a mobile operating room for use by the Italian military.

He also experimented with aerosolized antibiotic sprays to minimize bacterial count in the operating room air.
Epidural Credit

One of Dogliotti’s most lasting contributions to modern medicine is an ingeniously creative technique; one that was safe, reliable, and simple and one that is still employed to locate the epidural space. Dogliotti conducted studies on cadavers where he injecting coloured gelatin solution, froze the cadavers, and then studied tissue sections to determine the extent of spread.  

Figure 4: Epidurography.

He noted that there was little resistance when the first 20 to 25 ml of solution was injected, but resistance increased steadily and peaked at 40 to 45 ml, indicating that the epidural space had been filled up. However, there were leakage from inter-vertebral foramina (Fig. 4), but this was considered acceptable because at that time the site of action of epidural analgesia was believed to be the dorsal root ganglion.
He also observed that injections at the L3 level could result in spread of the fluid as high as the T4-T5 level and as low as the S5 level, thus confirming his belief that larger volumes of local anaesthetic solutions could be injected to obtain extensive analgesia. He repeated these studies at various spinal levels, with different fluids, and also with radiopaque dyes to confirm the extent of spread, and obtained similar results (Fig. 5).

Figure 5: Variability of the epidural spread with level of insertion of the needle.

Finally, he started examining the pressure in the epidural space. One of his assistants measured the pressure within the epidural space by connecting the hub of the needle to a U-shaped glass tube filled with saline. He would advance the needle until saline would be sucked into the epidural space. Much later, he attributed this to the fact that the blunt needle tented the dura thereby creating negative pressure. Others interpreted the negative pressure as due to the flexed position and its “sucking effect”. Yet another interpretation suggested that the negative pressure was a result of a rebounding of the ligamentum flavum. Dogliotti’s studies (Fig. 6) also showed that pressure was relatively high when the tip of the needle was in the inter-spinous ligament, but the pressure decreased when the bevel entered the epidural space.
The pressure became even more negative when the spine was flexed. However, if the needle was advanced further into the subarachnoid space, the pressure would become positive.

Using his intuition, Dogliotti postulated that these changes would be amplified if moderate pressure was applied to an epidural needle by pushing the plunger of an attached syringe filled with saline. This was demonstrated to be clinically effective with successful achievement of epidural blocks in large series of patients. To confirm that his injections were not being made into the subarachnoid space, he would deliberately mix methylene blue in his injectate and sample the cerebrospinal fluid subsequently to confirm that it was clear. Finding great satisfaction with his successful technique, he termed his anaesthesia “Metamerical”.

Despite Dogliotti’s efforts, acceptance of epidural analgesia was slow and remained controversial. Some believed in the existence of intra-spinal septa that would block the diffusion of the drug; others feared that most of the drug would be lost through the inter-vertebral foramina; while Sicard and Forestier postulated that the thoraco-lumbar epidural space would not readily allow diffusion of fluid or drugs. This was their reason for approaching the epidural space via the caudal approach. Although Van Erps had reported the possibility of lumbar epidural anaesthesia in 1928, some considered it a rather unusual method of achieving anaesthesia. In a 1939 textbook of spinal anaesthesia, only half a
page is devoted to epidural anaesthesia. However, progressively the benefit of the technique became known. Dogliotti reported his results in Europe and the United States by publishing articles in French, Italian, English and American medical journals. Ruiz and Gutiérrez circulating a survey that showed that in 1933 some anaesthetists were using epidural techniques in 80% of their patients. Dogliotti often performed abdominal operations, and an occasional thoracoplasty, under epidural analgesia.

Conclusions

Achille Mario Dogliotti is known for creating solutions in desperate situations, introducing new techniques and approaches as warranted by existing conditions. In an era before the existence of Institutional Research Boards, he considered what was best for his patients and forged ahead using his own ethical compass. His reports were structured as narratives, and the first impression one might have is that he may not be approaching the topic in a scientific manner, . . . but this would be our error. On the contrary, Dogliotti conducted many studies and experiments that were not always described in detail in his reports. For the clinician he would provide a recipe on how to provide “fully satisfactory and perfectly safe anaesthesia.” Finally, he integrated the possibilities offered in the environment where he lived, and the political support his public persona enjoyed permitted him to advance medicine scientifically and socially.

By any standards Dogliotti’s achievements are exceptional. His meticulous techniques have not just stood the test of time, but allowed millions of patients to benefit from this approach. In the US, over three million women receive epidural analgesia each year and more than a million of patients suffering from chronic pain syndromes receive safe trans-laminar injections. These patients and practitioners owe a great debt of gratitude to Dogliotti.

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Dr T. Edward Costain: Homeopath, Anaesthetist, “Martyr” [abstract]

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Dr T. Edward Costain was a leader in homeopathy and anaesthesia. The Journal of the American Institute of Homeopathy published a six-page tribute to T. Edward Costain in the 22nd July 1922 issue, calling him “. . . one of the world’s great men and physicians.” Dr Roy Upham, president of the American Institute of Homeopathy, declared that Costain had “given too much of himself to the national cause of homeopathy” and that “His life is another sacrifice so that homeopathy may endure” (italicised in original). The unattributed introduction to this tribute suggested that “largely to him [Costain] belongs the credit of the medical profession coming to consider the need of specialists in anaesthesia.”

In the August 1922 issue of Anesthesia and Analgesia, Editor Dr Francis H. McMechan titled his tribute to Costain “Noted Anesthetist Dies a Martyr to His Skill.” Costain reportedly anaesthetised more than 300,000 people before dying of uraemia which was attributed to ether-induced nephritis. McMechan declared that Costain wanted to keep the cause of death silent “lest the medical profession might suffer a blow, when it became known that the administration of anesthetics had cost” Costain his life.

Thomas Edward Costain, known as T. Edward (formally) or Edward (informally) was born on 9th August 1862, on the Isle of Man to Thomas (1828-1893) and Eleanor A (1831-1928) Costain. T. Edward had at least two younger siblings, Thomas Edward Costain (1868-?), and Annie Costain (1874-?). T. Edward immigrated to America in 1879, and he married Mae Wellington (1869-1941) in Montgomery, Indiana on 26th June 1894. T. Edward Costain died on 31st May 1922 at the age of 59.
In 1892, Costain graduated from the Chicago Homeopathic Medical College and received his medical licence. He began teaching anaesthesia at the Chicago Homeopathic College in 1896 and he eventually rose to the position of Professor of Anesthesia and Surgery at the Hahnemann Medical College and Hospital of Chicago. He wrote several articles, including “Surgical Anesthesia” (Journal of Orificial Surgery), “Accidents during anesthesia and their management” (Transactions of the Seventh Session of the Surgical and Gynecology Society of the American Institute of Homeopathy, 1906 as part of several articles about anaesthesia, “Clinical Experiments with blood pressure in anesthesia” (Journal of Surgery, Gynecology and Obstetrics 1909), and “Anesthesia and diabetes” (Journal of the American Institute of Homeopathy), and he was managing editor of the Journal of the American Institute of Homeopathy. In 1922, shortly before his death, Costain was elected president of the Chicago Society of Anesthetists.

Costain’s career furthers our understanding of professional anaesthetists in America during the early twentieth century.

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2. McMechan FH. Noted anesthetist dies a martyr to his skill. Anesthesia and Analgesia 1922; 1(1): 18
Joseph Snape 1811-1885 - Pioneer of Electro-dental Anaesthesia

Dr David Zuck

Past President, History of Anaesthesia Society.

At the meeting of this Society at Epsom on 3rd February 1990, the organizer, Maria Rollin, read a paper about a death in the dental chair in Epsom in 1858 during the administration of chloroform. Although an inquest was held into every death under anaesthesia, deaths in hospital were deaths behind closed doors, and did not attract the same attention as deaths in the dental chair. Fit people were not to be found in hospital beds, and dental patients expected to walk home from the surgery; so a death in the chair was a death in the community. This particular patient was described as a fine young woman of 22, a member of the household of a local physician, and the cherished companion of his wife and children. In fact the doctor's wife had accompanied her to the surgery. So after the inquest this particularly tragic death in Epsom on 27th August 1858 became the subject of public attention, and resulted in correspondence even in *The Times*. Most of the letters were concerned with the safety of chloroform, the best mode of administration, and the qualifications of the administrator, but one, from a Joseph Snape, dentist to the Chester General Infirmary, published on 2nd September, and reproduced in the local Chester newspaper, introduced a new idea. Snape suggested that there was a safe alternative to chloroform, a method of preventing the pain of dental extractions which did not carry any of its risks. He wrote,

'Having seen in the papers an account of a death from chloroform, administered by Mr Keeling, of Epsom, formerly a pupil of mine, I wish . . . to call the attention of dentists to the discovery that the application of the electrical current will produce local anaesthesia. Some few days since, I was informed
of this discovery and immediately put it into operation, with results which have amply realised my anticipations. In the course of the week I have extracted upwards of 150 teeth from persons of all ranks, of both sexes, and of every age, and the testimony of each has been most satisfactory. Some persons said they experienced pain, but not so much as usual; others, that they felt no pain whatever. Some patients have said that they were conscious of the pull, but the customary pain was absent.'

Then he goes into details about individual responses, concluding:

'From these results, I think we may venture to say we have obtained an agent that in dentistry at least, will supersede the use of chloroform; for, however useful this chymical may be in the more important operations of surgery, I have never felt reconciled to the use of it in the ordinary operations on the teeth. In the electric current we have an agent without danger or any disagreeable accompaniments, most easily applied, and occupying scarcely more time than an operation under ordinary circumstances.'

Joseph Snape, in 1881, after his retirement, published his very entertaining Reminiscences, and said that in writing them he was 'actuated by the desire to diminish the terror which the word Dentist is apt to conjure up.' So they contain advice about the psychological management of nervous patients, especially children, and anecdotal accounts of the cure of intractable conditions in remote parts of the body by attention to diseased teeth; such conditions as spasm of the fingers and toes, catalepsy, epilepsy, shoulder pain, and the intermittent paralysis of an arm. But Snape tells us hardly anything about his own development, or his daily life; there are no dates, names, or places. We would never know, for example, that he had a wife and four children - or any sort of domestic life at all - except that he mentions summers spent by his family at a small resort on the Wirral, from where he walked ten miles every day to his work in Chester; so it has been necessary to rely entirely on such information as can be found in public records.
Quite astonishingly, just sitting at home at my computer, and with help from Henry Connor, and from Rachel Bairsto of the British Dental Association, it has been possible, from census returns, probate records, newspaper reports, and clues in Snape's other writings, to discover the principal landmarks of his life. He was born in 1811 in Newcastle-under-Lyme, in the West Midlands. His wife, Helen, was born in the same town two years later. His name was not uncommon; there are several Joseph Snapes listed in the Midlands, one of whom was his father, who died 'in the prime of life' in 1822. It is a problem for the researcher that in this family the first-born son was always named Joseph; once I understood this, unravelling the family tree became easier.

Snape's name does not appear in the 1841 Census, which was incomplete, but in 1843 he was living in Great Boughton, Cheshire, a small village about five miles south west of Chester. In 1840 he had published a small innovative book aimed at the lay reader, describing the care and preservation of the teeth. Very cleverly, he started by appealing to the reader's vanity, by stressing the importance of the teeth for the facial appearance, and for speech. This book met with such success, bringing correspondence from as far as India, that a thoroughly revised and enlarged edition was published eleven years later, in 1851 (Fig. 1). Similar books were published from 1850 on, but Snape's is the earliest that I have found.
Figure 1: Snape’s Physiology of the Teeth.
The 1840s saw the rise of the movement for adult education for the working classes, and the establishment of Mechanics Institutions, places with a library, a lecture room, and often a museum. In 1848 Joseph Snape delivered lectures on mechanics at the Chester Mechanics Institution, and was thanked for not charging a fee. He delivered two lectures in 1849 also, which were reported to have been 'numerously attended.' Like his contemporary, Morton, he realised that hiding one's light under a bushel was not conducive to success; in fact there is considerable similarity between Snape's and Morton's careers. Both understood the importance of publicity, and the power of the Press.

The 1851 Census shows that Snape had moved to No. 6 Lower Bridge Street, Chester, a prestigious address, and that he and his wife had four children, two boys and two girls; in the household there were also six servants. Some time in the 1850s Joseph was appointed dentist to the Chester General Infirmary, and in 1858 he became a member of the reformist-orientated Odontological Society of London.

He was one of the first to take the exam. for the new Licentiate of Dental Surgery diploma, which was established by the Royal College of Surgeons in early 1860. On page 4 of the local newspaper, the Chester Observer and General Advertiser, of 21st June 1860, it was announced that

'Mr. Joseph Snape of this city, having undergone the necessary examinations, received his diploma as dental surgeon, at the meeting of the board of examiners of the Royal College of Surgeons, on 11th inst.'

So he was a man who took his profession seriously and was keen for its advancement in public esteem, with the same interest in reform as John Tomes of the Middlesex Hospital, Charles James Fox who founded the British Journal of Dental Science, and James Robinson. In the 1861 Census he was still living at 6 Lower Bridge Street, Chester, and probably towards the end of that year he was appointed dentist to the Liverpool Royal Infirmary, because in
1862, in a list of the members of the Liverpool Literary and Philosophical Society, he is described as Lecturer on Dental Surgery in the Royal Infirmary School of Medicine. His introductory lecture to a course on dental surgery and mechanics was published in *The British Journal of Dental Science*, and sets out a programme which would educate its students on a par with their medical colleagues.⁷ The scope of this lecture is very impressive, and led me to assume that Joseph Snape must have been the founder of the Liverpool Dental School, but to my surprise the origin of this establishment, according to Wikipedia, was quite different. It is attributed to a Liverpool dental dispensatory founded by a Captain Newman, and Snape and the Royal Infirmary Medical School are not mentioned.

By the 1871 Census, and probably years earlier, Joseph had moved to 40 Huskisson Street, in central Liverpool. During the late 1860s he allowed his name to be used in newspaper adverts to promote a locally-manufactured toothpaste.

In 1861 both of Snape's sons, Joseph Jnr and George, were medical students at King's College, London, qualifying successively in 1864 and 1866. When I received a copy of this entry in the Medical Directory I was intrigued by Joseph's details. He was more highly qualified than his younger brother, and more adventurous, having worked in New Zealand, and been surgeon to the Abyssinian campaign of 1868, which is now completely forgotten. I found a number of articles about it on the Web, one of which claims that it was the most effective and successful campaign ever waged by the British Army. It was mounted in 1868 to rescue a number of British hostages who had been taken prisoner by the Emperor of Abyssinia.

After returning home Joseph junior opened a practice in Southport, in a property that belonged to his father.⁸
Electro-anaesthesia

The application of electricity to medicine became all the vogue very quickly after Faraday's groundbreaking discovery in 1821, on which the whole of our modern way of life is based, that rotating a coil of wire in the field of a fixed magnet would induce an electric current in the coil. This sort of apparatus was called a magneto, and the current produced was alternating.

The observation that electricity could stimulate muscle contraction suggested its use for paralysis and spastic conditions. John Snow's friend and fellow stalwart of the Westminster Medical Society, Golding Bird, was appointed to direct the newly founded department of medical electricity at Guys in 1836.

Snape called his technique 'electro-dentistry'. The term dates from the 1840s, and included such things as the electrically powered dental drill, and the electric cautery; but Snape was writing about one very specific application, the use of electric current to produce local anaesthesia during dental extractions.

He wrote, in the first edition of his monograph, published in 1858 and now extremely rare, that he had first become aware of the possibility from a friend in America, who had written: 'They are drawing teeth on this side of the water without pain, by means of Electricity.' Since electricity was less dangerous that chloroform he thought the idea was worthy of pursuing, and having handy a magneto-electric machine, which he had bought as a 'philosophical' or scientific toy, rather than for any practical purpose, he tried it on a patient. He connected one pole to the back of the patient's neck by a copper wire and a moistened sponge, and the other to the gum in the vicinity of the tooth by similar means, but it didn't work. After much trial and error he concluded that the current must run to the tooth through very fine points at the beaks of the extracting forceps, the remainder of the forceps being insulated by six coats of a non-conducting lacquer or varnish, the circuit being completed by the patient grasping an earthed metal plate at the end.
of each arm rest. It was essential that electricity could not leak from poorly insulated forceps to the gums or lips, so very careful maintenance of the apparatus was necessary for success.

In the magneto-electric machine current was generated by turning a handle which caused a coil to spin inside a fixed magnet, so an assistant was necessary all the time to keep the current flowing. Later Snape changed his electrical apparatus several times. One that he tested was far too powerful. He sent information about his final apparatus to the dental instrument maker, Claudius Ash, and it was illustrated in Ash's catalogue of 1878.

He also changed his approach to the patients. He had started his research by asking them whether they had felt anything, and of course they all replied that they had; so he concluded that his experiments were a failure. But after reading about the successful use of electricity in the American Dental Journal he realised that he was asking the wrong question. Electricity did not abolish all sensation, only pain. So he started asking only whether the patients felt any pain, and because they hadn't, and said so, his success rate shot up. To avoid disturbing the patients he placed the magneto and the assistant who was powering it in a small lobby outside the surgery, and he found that the extra length of the connecting wire was beneficial in attenuating the strength of the current. The wire itself is of some interest. In the late 1850s one couldn't walk into a shop and buy a spool of rubber- or plastic-insulated wire, but there was a form of insulated wire, closely bound by cotton thread, which he mentions; in fact he advises that when the wires are laid under a carpet they should not be allowed to cross, because pressure of feet will cause the cotton to wear away. This cotton bound wire had been manufactured during many years for an entirely different purpose - millinery wire, used by milliners for the stiffening of ladies hats.
Figure 2: The 1878 Claudius Ash Catalogue - Snape's apparatus.
Snape wasn't shy about publicising his technique. He sent letters to the local newspapers, and, as we have seen, to *The Times*, and in 1869 he read a paper on "Electricity as an anaesthetic in dental extraction" to the Odontological Society. Some of his later writings do not quite match up to the impression given in his *Times* letter, that everything was plain sailing from the word go. In fact, in a letter to the *British Journal of Dental Science* he described his first results as having been obtained "in a crude manner, and with very imperfect appliances."

How successful was Snape's technique in his own hands? He published a number of glowing thank-you letters from satisfied patients, and he was obviously running a very lucrative practice, because he was able to amass a portfolio of properties in some of the best streets in Liverpool and Southport. In the hands of dentists much less prepared to pay attention to detail, electro-anaesthesia was unsuccessful, and attracted a lot of critical correspondence in the medical and dental journals.

In November 1874 he was invited to give a demonstration of his methods in London, at the Dental Hospital in Soho Square, and he reports that he performed some thirty successful operations and was congratulated by members of the audience; and in January 1875 he similarly operated on sixteen patients at the National Dental Hospital. He comments that the error that many practitioners fell into when experimenting with electricity was that they expected it to produce complete insensibility.

Joseph Snape made his final will on 17th January 1885. He mentions that he had been pre-deceased by both his sons. I couldn't find any information about the older son, Joseph's death, but the younger, George Henry, died on 13th December 1884. His personal estate was valued at a little over £9000, equivalent to about £900,000 today.

Joseph senior doesn't mention George Henry in his will, probably thinking that his widow and family were sufficiently provided for. He lists seven properties that he owned, and appears to have made
provision for all his dependents. He died on 9th April 1885, at the age of 74, and his estate was valued at £14,500, equivalent today to about one and a half million pounds.

From Snape's writings one gets the impression of a humane, thoughtful, and enterprising family man, with a very active and imaginative sense of humour. I think his importance is not specifically in relation to the use of electricity, but more generally because he pioneered an alternative to general anaesthesia. The factors that contributed to his success, the psychological approach to the patient, and the very careful attention to detail, were as applicable to the later use of chemical agents to produce nerve block as they were to electricity. If I were a dental historian I would probably be more interested in Joseph Snape as an active provincial member of the Odontological Society, committed to the advancement of dentistry as a specialty.

Finally, what happened to electro-anaesthesia after Snape's death? As advertisements in the American newspapers show, it continued to be practiced in the US, and also in the UK, until at least the end of the century.

In recent years there have been experimental series published in the States, which can be found online. The results were generally slightly worse than those produced by local anaesthetic nerve block. What is lacking in these studies is consideration of matching the character of the anaesthetising current to the physiology of nerve depolarization.

Acknowledgements:

I am grateful to Dr Henry Connor for information about the qualifications of Snape's sons, and advice about the relative value of money in Victorian times and today; and to Rachel Bairsto, Head of Museum Services, British Dental Association, for much invaluable help with photocopies, and other archival research.
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Note: on-request reprints of Snape's three books are available from Amazon.
I first became interested in Dr Pleasance more than 20 years ago when I was President of the Sheffield and East Midlands Society of Anaesthetists (SEMSA). For the SEMSA Newsletter I wrote a short history of the Society. I was helped by Dr John Connell who was an early member of what was originally called ‘The Sheffield Society of Anaesthetists’. He was able to supply me with a carbon copy of the letter that Dr Pleasance had sent out in late 1945 to all specialist anaesthetists in Sheffield and nearby, suggesting that a Society should be formed. A meeting duly was convened and the Society formed in 1946. At the time I did not know much about Reggie but I got a copy of his DA certificate dated July 1937. This together with other SEMSA items including Dr Connell’s own original Sheffield Society membership card are now in the Sheffield Hospital Archives at the Northern General Hospital. Research for my paper Anaesthesia in Sheffield (2014 see below) turned up a mention of Mr RE Pleasance that added more information, so that when I discovered that Reggie was early on the list of Foundation Fellows (no. 5) I determined to collect the information needed to complete his Royal College of Anaesthetists ‘Lives of Fellows’ form.

Members of the Society will be aware of the Royal College of Anaesthetists’ project to collect details of all Fellows, past and present. The College Heritage committee wishes to have ‘Lives’ of as many as possible of the Foundation Fellows on the College website in time for the Jubilee next year (2017). So the primary task of the Heritage committee is to complete the Lives of
Foundation Fellows forms. It was hoped to have these done by the College Silver Jubilee in 2017 but that now seems unlikely.

The Heritage committee wants to encourage members of the History of Anaesthesia Society to provide details of their own lives and perhaps of deceased colleagues but if possible to take on and provide the lives of the, as yet uncompleted, Foundation Fellows. The names may be accessed from the College website and some will be listed below but the appropriate forms should be obtained from the College Archivist, Mrs Rose Sayce (rsayce@rcoa.ac.uk). It is important to contact her first because she will know if anyone else has embarked upon the Fellow you are be interested in and also perhaps she will be able to supply some basic details and documents (i.e. the death certificate). Dr Dickie Fairer may be able to supply obituary notices as it is not always easy to find them in the BMJ or The Lancet.

Figure 1: Dr ‘Reggie’ Pleasance. Photo: Royal College of Anaesthetists.
By going through the form for Dr Pleasance I hope to encourage Society members to complete the details of other Foundation Fellows as yet unwritten. When I received the College form by email, which usually has date of birth and death, it starts with ‘Personal Details’. I was able to put in his full name and nickname (Reggie). My next move was to contact the alumni office of Sheffield University and they were able to send me more details such as his home address at the time of entry to the Medical School in October 1914. Together with nationality and title this completed the first page. There was also the date of his death, hand written: 4.3.70. This is entered at the end of the form. The College was able to supply me with a death certificate that stated he was found dead on Eighth March 1970. This helped with my next move; to find his obituaries; there were three: in the BMJ and The Lancet dated 4th April 1970 and in Anaesthesia in July 1970.

The second page of the form is headed ‘Education and Qualifications’.

It was now that things got more interesting. When researching my paper on Anaesthesia in Sheffield 1900-1919; I’d found in the Royal Hospital Weekly Reports that Mr R.E. Pleasance had been appointed Honorary Anaesthetist in September 1918 and he had been paid £10/3/3 (about £10.20 which can be multiplied by 100 for the modern equivalent), indicating he was already in post. In my paper I suggested that as he didn’t pass the MB ChB Sheffield until June 1919 he must have qualified by the Conjoint or LMSSA. However, according to his obituaries; ‘prior to qualification he broke off his studies to become a Surgeon Probationer in the Royal Navy’. [Parenthetically, I’d heard about Surgeon Probationers because Frankis Evans (who was senior anaesthetist at Barts when I was an SHO) had been one.] This was in April 1918 because in two of the obituaries it said he ‘served with distinction on one of the destroyers in the epic of Zeebrugge’, that was on St George’s day: 23rd April. So, extraordinarily, it seems that he was paid when a student to administer anaesthetics and in December 1918 he got the usual half-yearly honorarium of 12 guineas.

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Also needed: ‘General Education and Primary Medical qualification’: supplied by the Alumni office. ‘Date of Initial Fellowship’: supplied by the College. ‘Other qualifications’: Information from the alumni office gave the date of his MD (1924) and I already knew he’d got the DA in 1937.

The next heading is ‘Professional Life and Career’, and includes ‘activities and interests’.

A little time was spent looking at his entries in the annual Medical Directories where there are dates for various posts and published papers but much not strictly relevant for ‘Lives’ and self-written. Further reading of his obituaries shows that after graduation and house officer posts, he became a demonstrator in pathology when he wrote his MD thesis in 1924. Soon after he went into general practice and he became Honorary Anaesthetist to the Jessop Hospital in 1925 and later to the Royal Hospital, both in Sheffield. He involved himself very much in anaesthetics nationally, joining the Association of Anaesthetists of Great Britain and Ireland in 1934 and the Section of Anaesthetics, Royal Society of Medicine, in 1935.

He passed the DA in 1937 and became a Fellow of the International Anaesthesia Research Society in 1938. In 1936 he was the first lecturer in anaesthetics appointed by Sheffield University. During the Second World War, he was the Adviser in Anaesthetics to the Southern India Command with the rank of Lt Col. After the war he got one of the newly created specialist posts in anaesthetics in the Sheffield Teaching hospitals which became a consultant post in the NHS. He became a Foundation Fellow of the Faculty in 1948 and a member of the board of the British Journal of Anaesthesia.

‘Other biographical information’

Details culled from obituaries include the fact that he rose to high rank in the Freemasons. He was Assistant Provincial Grand Master of the West Riding of Yorkshire (before Sheffield became part of South Yorkshire). I’m told that one needs to be very dedicated and
tireless to get that far and the fact that he never married perhaps helped. He was a keen tennis player and a strong underwater swimmer, and very generous both to his colleagues and to the Royal College of Surgeons. He endowed the Pleasance Prize in Child Health (a colleague had beaten him in providing the Anaesthetics Prize).

Some of the earliest Foundation Fellows, whose forms need completing (July 2016) are as follows:

RE Apperly (Middx); WJ Bennett-Jones (L’pool); HP Crampton (Middx); AS Daly (The London); CHM Hughes (KCH); AG Levy (Guy’s); Z Mennell (St Thos’); RJ Minnitt (L’pool); CW Morris (UCH); GR Phillips (St Mary’s); AF Potter (St Thos’); HA Richards (KCH); EA Scott (Guy’s); Sir Francis Shipway (Guy’s); HS Sington (GOSH); GFR Smith (L’pool); HN Webber (UCH); RJ Probyn-Williams (The London); HB Alcock (Moorfields); PA Ayre (Newcastle); RA Beaver (St Thos’); J Boyd (Belfast); RJB Broad (Westminster); FF Cartwright (KCH); LT Clarke (B’ham); RJ Clausen (Charing Cross); RW Cope (UCH); H Woodfield Davies (Hammersmith); IMC Dewar (Glasgow); HW Featherstone (B’ham).

Names will be found by logging on to the RCoA website (www.rcoa.ac.uk) and selecting, on the top line:

‘About the College’.

Then eighth down the list: ‘College Heritage’.

Then fifth down: ‘Lives of Fellows Project’. Here are lists of Fellows by the year of their appointment.

Sixth down is ‘Biographies of Fellows’ which as historians we should all find interesting and illustrative.

I am completing my own Life of Fellow form and I encourage others to do so. After the death of a Fellow no one else will be able provide all the details known by the subject and BMJ obituaries are much abbreviated.
References

1. Obituary. Dr RE Pleasance. *British Medical Journal* 1970; **2**: 55 (*by WJP who was WJ Patterson, a fellow consultant*)

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Popular Literature and History of Anaesthesia History

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The origins of modern anaesthesia can be traced back to a narrow span in the mid-nineteenth century. Despite clear documentation of events, there remains much controversy about which individual deserves credit for this major medical advance. History enthusiasts who wish to familiarise themselves with these facts or otherwise experience history of anaesthesia have the option of visiting many sites associated with the lives and work of individuals claiming credit for this discovery, watch movies and video-clips about it, read scholarly articles, or read books in popular literature.

The aim of this investigation is to examine eleven books that describe major events related to history of anaesthesia. These books fall under the domain of introductory works, comprehensive summaries, scholarly works, and biographies. The eleven books explored here are not exhaustive, and inclusion was not subjected to any rigorous criteria. However, they include biographical works, description of major events, reviews, and centenary celebratory essays which are suitable for new or established history enthusiasts and scholars. We review their strengths and weaknesses and recommend which kind of readers it is most suitable for. In doing so, we explore the different sources for information about history of anaesthesia and how information can be conveyed to different audiences.

Introductory Books

The following books are deemed introductory. Each approaches a particular aspect of anaesthesia but does not necessarily intend to cover the entire history of anaesthesia.

*Ether Day* was written in 2002 by Julie Fenster, an American author, who has written on nineteenth century history. As the title suggests, this book focuses on one substance: ether. This focus
allows the author to widen the cast of characters to include those involved in the chemical introduction of ether, figures that are not normally included in other books on the history of anaesthesia. At the same time, the focus on one substance does not necessarily preclude other anaesthetic agents, for the author makes sure to acknowledge nitrous oxide and chloroform. In this book, the author describes the state of medicine and surgery in the nineteenth century up until the first successful public demonstration of anaesthesia while contextualizing ether in the social and economic background of the time. Overall, the book is easy to read and divided into short, manageable chapters. This is a terrific first book accessible to laymen, people in medicine, and history enthusiasts who are interested in the history of anaesthesia.

*Triumph over Pain*, written in 1938 by René Fulöp-Miller, remains one of the earliest and best dramatisations of the 1846 ether demonstration that occurred at Massachusetts General Hospital. The author, an Austrian historian who wrote frequently about Soviet Russia, commits to a serious exploration of the philosophy, religion, and attitudes about pain. Beginning from the Middle Ages and leading up to the nineteenth century, the author includes a large number of pain-relieving agents used throughout time: ether, morphine, and cocaine, to name a few. In spite of the inclusion of these anaesthetic agents, it is important to note that the focus of the book is on pain itself rather than the field of anaesthesia. Also notably, the book was adapted into a 1944 Hollywood film “*The Great Movement*” – perhaps the dramatization translated well onto the screen. This book is recommended for those interested in a lively account with a focus on pain.

*Chloroform: The Quest for Oblivion* is a 2003 book by Linda Stratmann. The author is a British writer who has written biographies and about historical crimes. With the focus on chloroform, the author covers its uses in history along with its misuses, which range from adverse medical effects to criminal use in assaults and murders, from the first century onwards. It is important to note that most of the book focuses on British medical history, with two British
physicians playing a large role in chloroform history: Dr James Young Simpson, an obstetrician who championed chloroform use, and Dr John Snow, who administered chloroform during Queen Victoria’s childbirths in 1853 and 1857. And perhaps anticipating a lay-audience, the author includes a helpful appendix with facts about chemistry and a glossary of chemical and medical terms. This book is highly recommended for laymen, and a great entry read for medical professionals.

**Comprehensive Books**

The two books in this category are deemed comprehensive because they cover the nascency of the profession of anaesthesia.

The first, *We Have Conquered Pain*, gives a comprehensive coverage of the history of anaesthesia. Written in 1996 by Dennis B. Fradin, an author who was a Chicago public school teacher and a children’s book author, the book first begins by reviewing ancient modes of surgery and anaesthesia in a variety of cultures. This broad historical background serves to contextualize the discovery of anaesthesia in America. When covering the ‘ether controversy,’ the author delves into the lives of four men – Crawford Long, Horace Wells, William Morton, and Charles Jackson – to argue that each deserves partial credit for the discovery. In doing so, this book stands out in giving equal weight to the four men, tracking each from a budding career to death. The book is easy to read and well illustrated. This highly informative book is recommended for children, and an easy read for any adult audience.

*Blessed Days of Anaesthesia* was written in 2008 by Stephanie J. Snow, a British historian who is also a distant relative of Dr John Snow. In this book, the author aims to examine the integration of anaesthesia into British medical practice. It covers a variety of anaesthetic substances – such as nitrous oxide, ether, and chloroform – and their uses in surgery, childbirth, battlefield, and the general public. The author also engages in thoughtful historical analysis which makes this an excellent book on history; in one instance, she compares the cultures of American and British
medicine, and how the cultural differences affect practice of medicine and anaesthesia in both countries. Thus, this book is recommended for both laymen and medical professionals.

**Scholarly Books**

Scholarly books are those that are geared towards a professional audience. By employing a more factual language, these books resemble textbooks and are chock-full of information.

*From Craft to Specialty* was published in 2009 by David Shephard, a retired American anesthesiologist. The author proposes that anaesthesia was first a craft, then developed into a discipline in the twentieth century, and presently exists as a specialty. To support the claim, the book comprehensively traces the history and development of anaesthesia from the 1800s to the present day. This book resembles a textbook or an edited book, less so about storytelling and more so about conveying information about historical developments in anaesthesia. This well-organized work is brimming with illustration, helpful charts on medical facts, and thorough biographies. As such, this scholarly book is recommended for medical professionals and anaesthetists.

Another scholarly work reviewed is *Anaesthesia and the Practice of Medicine* by Sir Keith Sykes with contributing editor: John Bunker. Published in 2011, the book features a trans-Atlantic collaboration between two well-known anaesthetists: Sir Keith, who is British, and John Bunker, who is American. After their long tenure as practicing anaesthetists, the two authors witnessed many key developments in the field and provide valuable personal anecdotes. As a thorough look at the field of anaesthesia, the book celebrates the importance of anaesthesia in medicine and highlights the indelible contribution it has made. In doing so, things like the ‘Ether Controversy’ are neatly summarized in one chapter, for that aspect of history is not the focus of the book; it is what happened after the ‘Controversy’ that the authors want to discuss. This too reads like an edited volume, neatly subdivided into five parts and
23 chapters. This scholarly work is also recommended for medical professionals and anaesthetists.

**Biographies**

The last category turns its attention to the key figures themselves in the form of biographies. Here, four key American figures are highlighted: Crawford Long, Horace Wells, William Morton, and Charles Jackson.

*Crawford W. Long* was published in 1928 by F.L. Taylor, Long’s daughter. Crawford Long was a Georgia physician who was one of the first to administer an anaesthetic in America. The author originally wrote the book for Long’s grandchildren so that they could learn more about the life and career of their grandfather. And, she admits, she also wished to defend her father about his decision against publishing his work in anaesthetics, a decision which may have diminished his claim as founder of anaesthesia. This being a personal biography, the sources include private journal entries and correspondences. The author frequently includes full excerpts from personal sources to allow the original writers to speak. The book stands out for being one of the only history of anaesthesia books to discuss life in the South in the nineteenth century, including pre- and post-Civil War. This book is recommended for those researching Crawford Long or medicine in the South.

*Horace Wells*, published in 1948 by W.J. Gies and in close association with the American Dental Association, is a compilation of the International Wells Centenary Celebration which took place on 11\(^{th}\) December 1944, and other Wells-specific celebrations around the world. Horace Wells was a Connecticut dentist who was recognized as one of the first to administer an anaesthetic in medical practice. This compilation includes content from meetings, selected addresses, newspaper articles, and a thorough catalogue of Wells memorabilia. Featured writers include notable dentists, physicians, surgeons, and the Surgeon General. This work
Tarnished Idol was written in 2001 by Richard J. Wolfe, a historian, former curator, and librarian. It is an exhaustively researched and thorough examination into the entire life and legacy of William Morton from his birth to death in 1819 to 1868. Morton was an American dentist who was the first to publicly demonstrate anaesthesia at the Massachusetts General Hospital. The book establishes Morton as having introduced anaesthesia, but defends Charles Jackson and Horace Wells’ contributions. In the process, the author disputes notable writers and books on history of anaesthesia, arguing against their glorification of Morton. The book is dense and very detail-heavy; readers who are already familiar with the ether controversy would find this book valuable. Those seeking a source-driven historical analysis would also like this book as well.

Charles Thomas Jackson was written in 2007 by Richard J. Wolfe and Richard Patterson. Wolfe collaborates with Patterson, a former professor of anaesthesia, to write a defensive biography of Charles Thomas Jackson. This book establishes Jackson as a rightful founder of surgical anaesthesia and depicts Morton as an undeserving man. It offers full, informed stories that are well supported with evidence. The book focuses on aspects of Jackson’s life outside of medicine, especially as his career in geology. Thus, this book is recommended for those who are interested in Jackson’s complicated and accomplished life, but may not be completely relevant to those interested specifically in anaesthesia.

Of the eleven books, many are accessible to laymen, and all are of great educational value to medical professionals. While four books focus on specific claimants for credit of the discovery of anaesthesia, all the books together describe the complex history of anaesthesia. At the conclusion of this investigation, nine of the eleven books are recommended for those wishing to understand
history of anaesthesia. They are listed below according to audience type.

**Story-Driven**

For Children

- We Have Conquered Pain, Dennis B. Fradin, 1996.

For Laymen / General Interest

- Triumph Over Pain, René Fulöp-Miller, 1938.

**Analytical**

For Anaesthetists & Medical Professionals

- From Craft to Specialty, David Shephard, 2009.
- Anaesthesia and the Practice of Medicine, Sir Keith Sykes and John Bunker, 2011.

For Historians


An understanding of history of anaesthesia helps understand how we came to know what we know, which is why it is important to study history. Each book adds to and offers a slightly different perspective to the history of anaesthesia. Therefore, reliance on one book is inappropriate because history is subject to interpretation. These books are excellent means of learning and teaching history of anaesthesia; academic departments should consider acquiring them for their libraries. The body of literature related to history of anaesthesia is now sufficiently robust and
diverse to offer something suitable to the novice, the enthusiast, as well as the scholar.

Sources:


Another Look at Religious Objections to Obstetric Anaesthesia [abstract]

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Starting with the earliest biographies of J.Y. Simpson, the topic of religious opposition to obstetric anaesthesia in 1847 was gradually embellished in historical articles. In the absence of objective data, it has been suggested that this is a myth of recent medical history.

Taking another look, this author examined a contemporaneous case-book of the maternity hospital in Edinburgh. Focussing on Simpson’s pamphlet Answer to the Religious Objections of December 1847, the provision of anaesthesia in the 11 months before publication was compared with that in the 11 months after. This revealed a marked increase (p < 0.01) in anaesthesia for childbirth after the publication of the pamphlet.

The analysis supports the existence of opposition to obstetric anaesthesia and the success of Simpson’s pamphlet in overcoming it, but the introduction of chloroform about six weeks earlier, may also have contributed.

Abstract only: the full paper is published in International Journal of Obstetric Anesthesia 2016; 27: 62-65
The Perpetuation of the Myth of Religious Opposition to Anaesthesia

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Most historians of anaesthesia will be familiar with the story of religious opposition to the introduction of ether and chloroform. They will tell you that the Church objected to its use on moral grounds, particularly in the alleviation of labour pains. The reason, they will suggest, is that it subverted the Biblical ‘primeval curse’ on Eve, that “in sorrow thou shalt bring forth children”.¹ This is often presented as the ‘traditional’ view of Christianity and that it was through the arguments of physicians advocating for its employment that reason won out in the end over fundamentalism. The literalists were defeated quickly and definitively when Queen Victoria accepted chloroform in 1853 for the delivery of her son Leopold. Some accounts go further and add that the clergy condemned anaesthesia as ‘demonic’ or ‘satanic’, perhaps even sending around a circular to exhort their congregations to abstain from this device of the devil. This is the basic account which reappears in hundreds of articles, books, journals, and websites in varying versions and in greater or lesser detail.

However this story has long challenged historians as well. For those who have made the attempt, there is the basic problem of a lack of primary sources to indicate that such opposition even existed apart from being held by a few individuals. Additionally it becomes clear that there is no significant source from any clergy, theologian, church council, religious or theological journal or publication that promotes such an oppositional stance. The Scottish historian A.D. Farr²[p177] in a 1980 article entitled, “Early opposition to obstetric anaesthesia”, declared it to be “no more than an artefact of historiography”. If the story of religious opposition is a false
one, then how and why has it been told for over a century and a half and is still able to hold sway in so many modern scholarly articles, manuscripts, textbooks, and even a recent New York Times article.\(^3\)\(^{(p \ A16)}\)

This myth represents more than just a poor reading of primary sources, but has also been used to serve various ideological and rhetorical ends since its inception. The two most prominent examples of this are also the two accounts, which have permanently altered the way in which the myth is retold. This essay is an examination into the growth of the myth, how it changed, and how it was used to further ulterior motives. It will examine the origins of the myth along with its transmission and transmutation.

Farr and others have attributed the beginning of the myth to the pamphlet published by James Y. Simpson in 1847, “*Answer to the Religious Objections Advanced Against the Employment of Anaesthetic Agents in Midwifery and Surgery.*”\(^4\) James Y. Simpson was a Scottish obstetrician, who is credited with being the first to use ether for obstetric cases in the United Kingdom, as well as discovering the anaesthetic uses of chloroform as a superior agent in labour and delivery. He favoured the newer drug because it was easier to administer, had a pleasanter odour and had fewer adverse effects for parturient women. Simpson experienced some resistance to the idea of using anaesthesia in obstetrics. There were many medical as well as moral concerns, which spanned the spectrum from issues of safety to concerns about the propriety of women under intoxication. These are surveyed by Martin Pernick.\(^5\) To help address these various concerns and to promote his new discovery, Simpson wrote a series of pamphlets meant to respond to the various medical questions and critiques by careful analysis of the evidence and collecting case reports. The anomaly among these pamphlets is the aforementioned one dealing with so-called religious objections. It is unusual in a number of ways, primarily dealing with his rather laborious attempt to counter these objections using theological arguments and interpretations of scripture. There is very little medical or scientific argumentation in
evidence. This pamphlet is the work of an amateur theologian rather than written in his capacity as a physician. This striking feature of the text makes it difficult to interpret within his wider corpus, since he never writes in this vein again.

It was this pamphlet that remains the centre of this controversy. Simpson is not responding to written arguments, but by self-admission, only to ‘patients’ and ‘medical men’.

Noticeable is his lack of reference to clergy or explicitly religious or theological sources. In fact his only quote from a theologian is dismissive of religious opposition. In seeking help for writing this pamphlet, Simpson consulted with the Rev. Thomas Chalmers, who at that time was the head of the Free Church of Scotland, an evangelical schism from the state-sponsored Presbyterian Church. This schism, referred to as the Great Disruption, had been affecting the Church and religious landscape of Scotland since 1843. Simpson himself was sympathetic to the Free Church, under the influence of his wife, and became increasingly involved later in his life.

As recounted in the pamphlet, when Simpson approached Chalmers to write a theological response to the objections to anaesthesia, Chalmers remarked that those who objected to anaesthesia on religious or moral grounds were “small theologians”. The Rev. Chalmers was perhaps the most notable Scottish theologian of the nineteenth century and it is significant that not only did he think these objections were wrong, but he did not even see the introduction of anaesthesia as a theological issue. This challenges the likelihood that there was any widespread opposition or even a significant prior tradition of interpreting the Genesis passage as prescribing pain as punishment for all women. While Chalmers opinion may not be representative of popular sentiment, it still seems remarkable that he would remain unaware of any noteworthy oppositional arguments among the clergy. Farr interprets this pamphlet as written in anticipation of an opposition that never materialized. According to one of Simpson’s friends and biographers John Duns, the pamphlet gave the definitive interpretation of the scripture and put an end to the controversy. Since the size and distribution of any opposition
remains difficult to gage, it is likewise difficult to judge what effect this pamphlet actually had in quieting any moral reservations.

Regardless of how effective the pamphlet was at the time, there seems to be little interest in or repetition of these arguments until the historian Andrew Dickson White picked it up. White was a historian, politician and young ambitious scholar. At only age 31 he was elected to the New York State Senate in 1863. He later cofounded Cornell University in 1865 and served as its initial president. He subsequently also became the first president of the American Historical Association from 1884-1886, and continued to be engaged in national and international politics, running for various offices and serving the role as an ambassador to Russia and Germany.

When he founded Cornell, he was explicit that it would primarily be a haven for science free from religious influence and therefore a secular institution. Darwin’s *The Origin of Species* had been published in 1859 and there was growing tension between the role of scientific enquiry and religious education. White conceived of a scientific centre that could be free from religious bias or affiliation. He refused to use a test of faith for his faculty and restricted the influence of religious belief in obscuring scientific objectivity in Cornell’s classrooms.

His vision for Cornell as a scientific haven witnessed considerable backlash including potential donors backing out and receiving threatening letters. These experiences further alienated White from any religious sympathies and over the successive decades he deliberately and carefully developed what has become known as the “conflict thesis” between science and religion. He first dropped his thesis publicly like a bombshell at his lecture, “The Battle-Fields of Science” at Cooper Union in New York City.

> “interference with science in the supposed interest of religion—no matter how conscientious such interference may have been—has resulted in the direst evils both to Religion and Science and invariably”.

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This lecture was later expanded and published under the title *The Warfare of Science* in 1876. Occasionally he would publish additional chapters in “*Popular Science Monthly*” and in 1896 he published his mature version of his thesis under the title, *A History of the Warfare of Science with Theology in Christendom*.

His initial “Battle-Fields” lecture caused quite a controversy and provoked a number of critical responses. This first lecture contains no reference to the anaesthesia myth, but it already promoted a number of other myths or misinterpretations that have since been countered throughout the years, including Galileo’s torture and imprisonment, and the condemnation of the dissection of cadavers by the medieval Church. A recent volume has been published to dismantle the conflict thesis called *Galileo Goes to Jail*, largely countering myths that originate or gained prominence in A.D. White. It was in *The Warfare of Science* that we encounter the first occasion of the anaesthesia for a particular rhetorical end. His inclusion of the account of Simpson’s pamphlet amidst other episodes of conflict between science and religion serves to exaggerate the severity of any supposed religious opposition as well as cement the interpretation of Simpson as the voice of science and reason against fundamentalist religious voices. His treatment here is rather simple and fairly straightforward. Like early commentators it sticks closely to Simpson’s text, but clearly assumes a larger controversy.

“From pulpit after pulpit such as use of chloroform was denounced as impious. It was declared contrary to Holy Writ, and texts were cited abundantly.”

His only sources are Simpson’s original pamphlet and the biography by John Duns. He plays up Simpson’s intelligence and medical interests, while downplaying his own religious convictions. Likewise he mentions Thomas Chalmers as a ‘*new champion*’ who intervened ‘*with a few pungent arguments*’ and ‘*scattered the enemy forever*,’ neglecting to note that in fact Chalmers was the leader of a literalist and evangelical Church movement in Scotland, and not some ‘*champion*’ of science.
White continued to publish intermittently, advancing his conflict thesis, but it achieved its mature development in his much expanded two volume *A History of the Warfare of Science with Theology in Christendom*. This edition sees an expanded anaesthesia myth with two important developments. The first and most interesting is the inclusion of the story of Eufame MacCalyane and her midwife Agnes Sampson, who were condemned and killed as witches in the sixteenth century under King James I. This episode, White argues, is proof that the opposition to relief from pain in labour pre-existed modern anaesthesia, and was traditional in Scotland. This marks the first appearance of this witchcraft trial in conjunction with religious opposition to anaesthesia, but it is much cited in anaesthesia literature afterwards up to our present day. There are many problems with this interpretation of events. While it is true that the trial transcripts and reports include the charge of offering charms for the relief of labour pains, this was only one of the twenty-eight charges against MacCalyane, and of fifty-three against Sampson. Not least of these were accusations of participating in a conspiracy to kill the King! Additionally the contemporary reports are incredibly ambiguous on this particular charge. The primary sources are not clear whether they are being charged with trying to relieve labour pains, or whether it is because they used magic to do so. Indeed the reports claim that the charms transferred the pain into the house pets, which ran away whining without ever being heard from again. The relief of labour pains is given no theological interpretation and certainly is neither the only nor the most significant charge against them. White’s inclusion of this witch trial is deluding and meant to deliberately further his conflict thesis, rather than an attempt at objective history.

The second change may seem minor and is left to a footnote. He writes “For the contest of Simpson with Scotch ecclesiastical authorities,” with a reference to see Duns’ biography. the clergy were already implicated in the body of his text, but that could have been interpreted as the independent views of individual clergy. This footnote is the first time that the clergy as a whole are explicitly implicated with the full weight of their ecclesiastical
authority. This implies that these objections were endorsed by the church, that Simpson experienced personal confrontations with religious authorities, all of which is completely unfounded. He only cites Simpson and Duns, neither of which can be said to directly implicate the clergy.

Nearly every source that repeats the myth seems to be either explicitly or implicitly influenced by White and his basic narrative found its way into most major histories of the early years of anaesthesia. His account would not be the only version of events to make a profound change in the subsequent reiterations of the myth. René Fülöp-Miller further developed the myth in his work, *Triumph Over Pain*, in the 1930’s. His account represents not just poor history, or even a biased misreading of sources, but includes blatant falsifications and outright lies. His work *Triumph Over Pain*, became a popular bestseller and is still seen as somewhat of a classic. It is perhaps one of the most readable and accessible stories of the history and development of anaesthesia. Indeed its popularity is due in large part to his imaginative and colourful storytelling. Rather than a dry historical narrative, his book reads more like an episodic novel. Given his style of presentation he also takes many liberties with the actual facts of history. He admits as much in his preface, stating

“The nature of the content has determined the method of presentation. Something more was needed than a consecutive catalogue of dry and manifest facts, for when marshalled without artistry what are termed facts are but half-truths…In virtue of his creative privilege, he breathes into the dead past until it regains a living soul.”

This creative privilege allows him the ability to embellish stories with little regard for fact or accuracy. He creates entire strings of dialogue that cannot be accounted for in any source, such as:

“What a Satanic invention! What a disaster! What a shame upon Edinburgh!” screamed the Scottish Calvinists who were devotees
of a God who deliberately visited affliction upon His creations.”12

While his book is presented as history, it does not make use of footnotes or endnotes, so it becomes incredibly difficult to sort out truth from fiction.

The story of James Y. Simpson takes on quite an elaborate setting in Fülop-Miller, taking up nearly twenty pages compared to the single paragraph allotted to him in White. Even just the account of the religious objections is expanded to seven pages, full of anonymous quotations and exaggerated situations. Fülop-Miller is perhaps more responsible than anyone else for having created the false assumption of primary sources from clergy and the churches. Several times he creates dialogue from the perspective of angry priests or furious lay people. Additionally he invents a circular, which he claims the clergy sent around throughout the villages in order to dissuade their congregations from accepting anaesthesia. This juxtaposition misleads the reader into imagining these quotations can be found in this circular. One of the most extreme claims he makes is that the clergy threatened not to baptise any children delivered under anaesthesia. None of these quotations or the circular have been discovered by modern historians or found referenced anywhere else before Fülop-Miller. Contemporary reviews of his book already acknowledge the great liberties he takes with the arrangement of facts, and one reviewer even saying he “assays somewhere between 25 and 50 percent humbug.”13

Another interesting feature of his book is the inclusion of the Eufame MacCalyane witch trial. By itself this inclusion in unremarkable since it became a standard part of the myth being included by dozens of authors (See Defalque, “In the Name of God.” He includes a list of books and articles that include the reference to the witch trials. Triumph Over Pain12 is referenced but White’s A History of the Warfare of Science with Theology in Christendom10 is not). Rather it is interesting for the parallel omission of A.D. White from his fairly extensive bibliography. The witch trial demonstrates clear indebtedness to White’s version of events, as well as the
general characterisation of the conflict between angry clergy and a rational scientist. We have yet to determine whether this indicates an oversight on the part of Fülop-Miller or whether he encountered it through an intermediary source between himself and White. Either way the influence of White, whether directly or indirectly is evident.

Together these two texts have exercised the greatest influence on promulgating this myth throughout anaesthesia literature. Each interpreted setting around Simpson’s pamphlet in such a way as to further his own ideological or rhetorical interests. *Triumph Over Pain* is a fascinating blend of fact and fiction that makes for engaging reading but poor history. The interests of Fülop-Miller in crafting an engaging and best-selling narrative overruled his faithfulness to the facts. Indeed the blatant falsifications which pepper his account should have raised historians’ suspicions long ago. Unfortunately too many have read his work as a trustworthy history and its colourful quotations still sometimes appear occasionally throughout the anaesthesia literature.

While many historians avoid the extremes of Fülop-Miller’s clear dramatization, most still seem willing to read the account of Simpson’s pamphlet through the lens of A.D. White, with the *de facto* assumption of the existence of ‘religious opposition’ as synonymous with opposition from the Church and clergy. However, White’s ideological axe to grind led him to grossly misinterpret the significance of the facts and to present the account unfairly. Neither of these secondary accounts can be trusted to enlighten us as to the real context in which Simpson wrote, and are revealing more about their authors than the nature of any ‘religious objections’ to anaesthesia.

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Society Ladies - a prosopographic study. Part 1

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Introduction

The Society of Anaesthetists was founded in 1893 and became the Section of Anaesthetics of the Royal Society of Medicine (RSM) in 1908. During those 16 years it had 15 lady members. One was an American but the rest were all connected with the London School of Medicine for Women (LSMW) and its associated hospitals. Of these, two were later appointed Dames, two Commanders and one an Officer of the British Empire (D.B.E., C.B.E., O.B.E. respectively), so this was a group of high achievers. In this first paper I examine the careers of those who are, perhaps, less well known.

Mary Priestly Rupert d. 1939 MD (Philadelphia)

Mary Rupert qualified from the Women’s Medical College of Philadelphia in 1904. She was Anesthetist to the Women’s Hospital of Philadelphia from 1905-13 and joined the Society of Anaesthetists in 1907, at which time she was a postgraduate student of anaesthesia at the University of Edinburgh. In 1915 she was a postgraduate student in anaesthesia at the Roosevelt Hospital in New York. She later studied laboratory medicine at the John Hopkins Hospital and in New York, and was subsequently appointed Director of the Clinical Pathology Laboratory at the Philadelphia Women’s Medical College, of which she was also a member of the Executive Board. She died suddenly of a cerebral haemorrhage.

Ada Margaret Browne d. 1952 LSA 1897

Ada Browne joined the Society in 1897 at which time she was assistant anaesthetist at the New Hospital for Women which was renamed the Elizabeth Garrett Anderson Hospital in 1918. She
was subsequently appointed as its Senior Anaesthetist, as Anaesthetist to the Chelsea Hospital for Women and Anaesthetist to the Queen Mary Maternity Hospital in Hampstead. She was therefore a specialist anaesthetist but probably also had a wider medical practice because she became a member of both the Anaesthetic and Obstetric Sections of the RSM and had rooms at 35 Weymouth Street while living in Belsize Park. She is of particular interest to our own Society because in 1910 she organised the anaesthetic exhibition at the annual meeting of the British Medical Association (BMA). This included

“a series of quaint documents on which is founded the claim of Dr Crawford Long, of Georgia, U.S.A. to be regarded as the originator of surgical anaesthesia.”

She was involved in forming the Royal Free Hospital Medical Corps (part of the Volunteer Training Corps for Officers), and arranged riding classes for members at the Albany Street Barracks where six lessons cost 18 shillings. In 1913 she organised training in the pitching of tents and the collection of wounded on stretchers at the Welsh Harp at Hendon.

She died in Wells in Somerset in 1952 at which time she had been living in Wokingham.

Eveline Cargill LRCP&S (Ed) LFPS (Glasg) 1889 MD (Brux) 1891 d. c. 1939

Eveline Cargill qualified in 1889 with the triple Scottish qualification which was taken by many lady doctors at that time. Two years later she passed the MD examination of the University of Brussels, as did also three other members of the Society of Anaesthetists (Mary Cruikshank, Elizabeth Courtauld and Mary (May) Thorne. This degree was not registerable with the General Medical Council after June 1886 but, as the three examinations were conducted *viva voce* in English, it attracted British practitioners who, for one reason or another, had not been able to take a university degree in the United Kingdom and especially so if they were desirous of obtaining a medical doctorate which entitled
them to be called Doctor instead of Mr, Mrs or Miss. It was discontinued for non-Belgian graduates in 1921.⁹

From 1892 Dr Cargill was living at the same addresses in London as Dr Beatrice Harrison who qualified from the LSMW in 1891. In 1894 Dr Cargill was working at the Portobello Provident Dispensary for Women and Children. She joined the Society of Anaesthetists in 1895 while assistant anaesthetist at the New Hospital for Women but by 1898 was working for the Society of Waifs and Strays and later as a medical practitioner in partnership with her old friend Beatrice Harrison in Cheltenham where she was also Medical Inspector to Cheltenham Ladies College. Both she and Dr Harrison had retired by 1919 but still lived in Cheltenham.⁵ In 1921 Dr Cargill was one of three former members of the Society of Anaesthetists (with Elizabeth Bolton and Mary Scharlieb) who signed a letter as members of the National Council for Combating Venereal Diseases which criticised attempted self-disinfection with chemicals like permanganate as being ineffective.¹⁰ Her entries in the Medical Directory and Medical Register cease after 1939. Dr. Harrison died in 1944.

Elizabeth Courtauld 1867-1947 LSA 1901 MD (Brux) 1903

Elizabeth Courtauld was one of the unsung greats of her generation, having received no British honours and no obituaries in the medical journals or The Times. However her life and work has now been well described by Eileen Crofton in The Women of Royaumont.¹¹ As a member of the Courtauld textile family of Huguenot descent, Elizabeth was born into a world of wealth and privilege but also one in which there was a strong tradition of social responsibility. A life of socialising changed abruptly when she was 21 and her father suddenly announced that he was to re-marry. Unsettled by this news Elizabeth did not attend the wedding but retreated to Germany and, after a period of reflection, determined to become a nurse, initially at Kaiserworth in the steps of Florence Nightingale. After working for four years as a nurse in Cheltenham she entered the LSMW in 1895.¹¹ After qualifying she
worked at the New Hospital for Women, as a clinical assistant at the Evelina Hospital and as assistant anaesthetist at the Royal Free Hospital, joining the Society of Anaesthetists in 1903. By 1907 she was working at the Wesleyan Mission Hospitals at Ikkadu and Tiruvellur in the Chingleput district of Madras. By 1914 she had moved to the Church of England Zenana Mission Hospital in Bangalore where, apart from her war service, she remained until her retirement in 1920. At the Scottish Women’s Hospital at Royaumont she was the oldest of the doctors but, despite her frail appearance, demonstrated greater stamina than many of her younger colleagues when faced with a large convoy of badly wounded soldiers:

“... she was always at work and took practically no time off - she did not object to other medical officers taking time off but was merely mildly surprised that they should want to do so.”

“Her Senegalese patients called her their ‘First Mammy’, and although she liked to pretend that she did not like them, she was in fact devoted and during one of the ward parties ‘was fussing all over them all evening like a beneficent hen.’”

After the war she spent several months working with homeless villagers and refugees near Cambrai. She later instituted an Emergency Loan Fund which assisted 11 old Royaumonites to re-establish themselves in civilian life and which provided comfort for three sick and dying former colleagues from Royaumont.

In retirement in her native Essex she was a churchwarden, a generous supporter of the local hospital which had been founded by her father, and of the Marie Curie Hospital. She funded the library in a women’s hostel in a college associated with London University and gave a large donation to the nurses’ home at the Royal Free Hospital.

Elizabeth Courtauld was among those members of the medical staff of Royaumont to be awarded the Croix de Guerre and the Legion d’honneur, but she was never honoured by her own country for her life of service and personal sacrifice.
Caroline Keith d. 1925 LKQCP 1886 LRCP&S LFPS 1888

Most of my information on Caroline Keith comes from a delightful obituary written by her old friend and colleague Mary Scharlieb, from which I quote:

“Caroline Keith was a curious mixture of French and English characteristics. She came from an Alsatian family and was French to the backbone in all that concerned her country and its fortunes, but she married Surgeon Captain Keith when she was very young and as yet knew no English. In after years she used to dwell... on the strange courtship between the reticent Scottish man who knew no French and the impulsive French maiden who knew no variety of English.”

When her husband, Joseph Forbes Keith (1840-1920), was posted “for service up-country in India” he urged her to qualify at the LSMW “to secure both her happiness and her independence in case of need.” Up-country referred to Afghanistan where he was involved in the Second Anglo-Afghan War including the siege of Kandahar, the sortie of Dihkoja (Deh Khoja) and the battle of Kandahar (1880). From 1886-88 he served in Burma in the aftermath of the Third Anglo-Burmese War.

After qualifying, Caroline built a very successful London practice as an anaesthetist and an obstetrician. She was appointed anaesthetist to the New Hospital for Women in 1891 and joined the Society of Anaesthetists in 1894. For many years she was anaesthetist to the Chelsea Hospital for Women and was also a lecturer in midwifery at the Clapham Maternity Hospital.

In 1894 she had joined the Association of Registered Medical Women. This was succeeded in 1917 by the Medical Women’s Federation (MWF) which acted more strongly as a pressure group to influence public policy in favour of medical women. Several members of the Society of Anaesthetists were members of the MWF.

Brigade-Surgeon Keith retired from the army in 1894 and does not appear to have practised thereafter. Caroline Keith continued in
practice until “she had saved enough to bear her share of the housekeeping expenses” and when, although still in the prime of her life, “she felt she deserved freedom and leisure.” They moved to Southsea in 1912. After her husband died in 1920 she spent much time with her son and his wife in India but died in 1925 following an operation in a nursing home in Southsea where she lived when in England.

**Mary Helen Cruikshank** 1867-1952 LRCP & S (Ed) LFPS (Glasg) 1895, MD (Brux) 1896 LM (Rotunda) 1896

Mary Helen Cruikshank came from a family of landed Scottish gentry. After qualifying she worked as assistant medical officer at the Camberwell Infirmary and as a clinical assistant at the Royal Free Hospital. By 1900, the year in which she joined the Society of Anaesthetists, she had joined a practice in Reading where her two partners, Martha Florence Armitage and Eleanor Gladys Kensington, were fellow graduates of the LSMW. Both her partners had published papers in the *British Medical Journal* so this was an academically orientated practice. Mary Cruikshank was also physician to the Lady Warwick Hostel which was a ladies’ horticultural and agricultural college which was later absorbed by the University College in Reading. Other local posts included medical examiner to the Board of Education, medical examiner to Reading High School and honorary physician to the Reading Female Aid Society. By 1905 she was one of the physicians to the Reading Dispensary and by 1908 had been appointed as Surgeon in charge of the Department for Women’s Diseases at that institution. In 1909 she became the second wife of the Reverend Canon Robert Walter Carew Hunt, at that time vicar of St. Giles Church in Reading. One wonders how his parishioners at that time viewed a vicar’s wife who pursued her own career rather than accepting the role of vicar’s wife as a full-time occupation in itself.

After her husband was appointed to the living of Albury near Tiddington in Oxfordshire she became the first woman general practitioner in Oxford, initially in Holywell Street and later in Woodstock Road, where she took a particular interest in infant
welfare clinics and was active in the Women’s Medical Federation. She retired in 1935, initially to Wheatley and then to Church Hanborough where two of her brothers lived and where she created a beautiful garden.  

She had no children of her own but was adored by her step-daughter Dorothea A. Carew Hunt who followed her into medicine and practised as honorary anaesthetist to the Brighton and Lewes Hospitals.

**Bertha Margaret Webb c.1873-1946 MB BS Lond 1897**

In 1891 Bertha Webb was awarded the St Dunstan Scholarship at the LSMW. This was worth what was then the not inconsiderable sum of £100 p.a. for three years. After qualifying her first entry in the *Medical Directory* is in 1898 when she was assistant medical officer at the Union Hospital in Gateshead where she was later the resident medical officer. However she had already worked in London because subsequent entries described previous posts as assistant anaesthetist to the New Hospital for Women and Clinical Assistant at the Royal Free Hospital. She remained in the North East, mainly in Sunderland, for the next 15 years and while there she joined the Society of Anaesthetists in 1903. She gave regular lectures on health-related topics to the Young Women’s Christian Association (YMCA) and to the Women’s Cooperative Guild, and in 1910 she was elected to the Board of Poor Law Guardians.

The 1911 Census showed that she employed a resident cook and housemaid. In 1912 she was still a member of the Section of Anaesthetics of the RSM and had added medical officer to the Sunderland Day Training College to her list of occupations.

Her entries in the *Medical Directory* for 1913-14 give her address as the House of Mercy at Horbury near Wakefield but do not mention any new appointments. The House of Mercy had opened in 1858 and was the first religious community to be founded in the north of England since the Reformation. Its objective was to rescue ‘fallen women’. It grew to include a convent, chapel, hospital and retreat for the clergy. One can only assume that
Bertha had moved there to become a doctor in the hospital. However she stayed only two years and for the next 20 years the *Medical Directory* gives addresses in London but without any appointments. From 1937 until her death on 21st October 1946 she was living at Old Bishton, Tidenham, near Chepstow. Although she appears not to have been in paid employment for the last thirty years, she left £8379.8s.3d.22

**Lucy Beatrice Clapham** d. 1936 MB BS Lond 1899

After qualification Lucy Clapham was appointed house physician at the New Hospital for Women, where she was later obstetric physician and assistant anaesthetist, as well as assistant anaesthetist to the Royal Free Hospital. She joined the Society of Anaesthetists in 1905. Her appointments now included inspector to the Central Midwives Board, Lecturer on Hygiene to the North London Collegiate School and lecturer to the London County Council, junior demonstrator in anatomy at the LSMW, Arnott Scholar at Bedford College, and secretary and librarian to the Association of Registered Medical Women.5 In 1906 she married Mr Atheney Harry at Diburgarh in Bengal.23 From 1907-08 she disappears from view to re-appear in 1909 working at hospitals in Berhampore and Hazribagh in India until 1916. In 1918 she was living in New Malden and in 1919 in Barnet with appointments as anaesthetist to the South London Hospital for Women and assistant medical officer to the London County Council. By 1921 she had shed the anaesthetic post but was now Medical Officer for the Princess Club for Mothers in Bermondsey and Medical Inspector to Putney High School.5 Her husband died in 1935 and at the time of her death in Welwyn Garden City Cottage Hospital in 193623 she was Medical Inspector to St Paul’s Girls’ School and Medical Officer to Bermondsey Ante-natal Clinic.5

**Jane Holland Turnbull** 1871-1958 CBE MB BS Lond 1899 MD Lond 1904

Both Jane Turnbull’s parents died while she was very young and she was brought up by family friends in Edinburgh and Reading.24
After graduating from the LSMW with first class honours in surgery, her posts included demonstrator in anatomy and obstetrician at the LSMW, New Hospital for Women and Royal Free Hospital and assistant surgeon to the Canning Town Medical Mission Hospital. After entering private practice she worked as anaesthetist and lecturer in anaesthetics at the Royal Free Hospital, as an assistant surgeon to the South London Hospital for Women and as an examiner to the Central Midwives Board. She joined the Society of Anaesthetists in 1907 and was later a member of both the Anaesthetic and Obstetric Sections and a Fellow of the RSM and a member of the Medical Women’s Federation.

During the First World War she was appointed Controller of Medical Services, Queen Mary’s Army Auxiliary Corps and was later appointed CBE for this work. She joined the newly created Ministry of Health in 1919 remaining there until she retired in 1936 at which time she was in charge of the Maternity and Child Welfare Division.

In an addendum to her obituary in the BMJ, EB (probably Elizabeth Bolton, another LSMW graduate and member of the Society of Anaesthetists) described her affectionately as “a very gentle, courteous lady” who “found it very hard, even in times of emergency, to relax the courtesies of life.”

Conclusions

A pattern is emerging from these biographies. All the British members were connected with the LSMW and its associated hospitals. An interest in anaesthesia and membership of the Society often followed an appointment as assistant anaesthetist at the New Hospital for Women. At a time when opportunities for women doctors were limited they sought employment where they could find it, often in London where there were several hospitals for women and sometimes in less-prestigious Poor Law hospitals. Other than anaesthesia, much of their work was in obstetrics and midwifery, in child health and in school and college medicine. Two of them spent time in mission hospitals in India and another two
in mission work in England. One was involved in medical practice at or near the front line of battle. Several were active in the MWF or devoted time and energy to other institutions such as the YWCA and the Women’s Cooperative Guild which aimed to improve the position of women. There is also other evidence of a strong social conscience. At least two, and perhaps more, were of independent means and did not need to work.

These patterns will become more apparent when the lives of the other members are described in a subsequent paper.

Acknowledgements

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References


2. Obituary. Mary Priestly Rupert. The Medical Woman’s Journal 1940; 47: 32


4. All dates when members joined the Society are taken from the Transactions of the Society of Anaesthetists


12. According to Crofton (reference 10), she retired in 1927 but all entries in the *Medical Directory* (reference 4) from 1920 onwards show her as ‘late Medical Officer’ to the mission hospital in Bangalore.

13. Reports in *The Times* 1920-33


22. Gloucester Citizen 31 Jan 1947
23. Information from ancestry.co.uk accessed 25 April 2016

Landmarks in the Identification, Use and Manufacture of Nitrous Oxide

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When Humphry Davy (1778-1829), a Cornish chemist, casually remarked in his 580-page volume published in 1800 that

“as nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place,”

he had no idea that these words would come to represent the first foray into the field of modern anaesthesia. It would take more than 40 years before chemists and physicians would harness the anaesthetic potential of nitrous oxide, but this discovery would prove to be one of the most important advancements in the field of medicine.

In this paper, we re-examine the history of the identification, use, and manufacture of nitrous oxide to appreciate the steps that led to its rise and continued use for the last 150 years and current decline in usage today. Despite more than 200 years since the first isolation of nitrous oxide by Joseph Priestley (1733-1804) in 1772, very little has changed concerning the synthesis. The elegance and relative affordability of the synthetic procedure and its pharmacological properties allowed nitrous oxide to become one of most commonly used anaesthetics in the twentieth century.

Nitrous oxide, also known as laughing gas, is a colourless, non-flammable gas that as recently as April 2015 was featured on the World Health Organization (WHO) Model List of Essential Medicines. Despite its widespread use and important role in the history of anaesthesia, the popularity of nitrous oxide in anaesthesia has diminished in the US and abroad as better
alternatives such as desflurane and sevoflurane have emerged in recent years.

**History**

The first possible synthesis of nitrous oxide occurred as early as 1767 by Scottish physician and chemist Joseph Black (1728-1799). However, due to the limited notes available on his experiments, it is not entirely certain that Black generated the compound. The first indisputable synthesis of nitrous oxide occurred in 1772 by Joseph Priestley when he exposed ‘nitrous air’ (nitric oxide) to “a mixture of iron filings and brimstone.” Priestley dubbed the mysterious gas ‘dephlogistized nitrous air’ in line with the dominant chemical theory of the time, the phlogiston theory. This theory, first proposed by Johann Becher (1635-1682) in 1667 and later formalized by Georg Ernst Stahl (1659-1734) in 1703, was centred on the belief that all combustible substances contained a chemical called phlogiston, derived from the Greek word φλογιστόν meaning burnt up or inflammable. Phlogiston theory attempted to explain the loss of mass during combustion as the release of phlogiston from substances into the air. The theory dominated scientific thought until the 1780s when Antoine-Laurent de Lavoisier (1743-1794) presented a competing theory that identified oxygen as the key component in combustion. Despite Priestley’s distinction as the first to synthesize oxygen, he would refuse to accept Lavoisier’s oxygen theory and remained a devout follower of phlogiston theory. The naming of nitrous oxide as dephlogisticated nitrous air reflects Priestley’s erroneous assumption that the synthesized gas was nitrous air (nitric oxide) that had lost its phlogiston.

Nitrous oxide remained mostly an obscure scientific discovery until the early 1800s when the gas entered the public domain via recreational uses. Among the British aristocracy, laughing gas parties became increasingly popular in the form of rowdy gatherings where partygoers would dance and revel under the influence of the gas. It was also during this time that nitrous oxide was revisited by English physician Thomas Beddoes (1760-1808). Beddoes studied under Joseph Black, the physician responsible for
the first synthesis of carbon dioxide and perhaps nitrous oxide, at Edinburgh University. After working a period of time as professor of chemistry at Oxford University, Beddoes moved to Bristol where he ran a medical clinic from 1793 to 1799. Motivated by the prevalence of tuberculosis in Bristol at the time and the many charlatans masquerading as doctors peddling pseudoscientific remedies for tuberculosis, Beddoes decided to establish the Pneumatic Institution. Beddoes staunchly advocated for pneumatic medicine - a theory of medicine that believed inhaling certain gases had the potential to cure a host of diseases.

To run his Pneumatic Institution, Beddoes appointed Humphry Davy, a 21-year-old budding scientist, as superintendent. While Beddoes’ interests were primarily medical, Davy approached the study of gases through a different lens. He was fascinated by the hallucinations and giddiness produced by inhaling certain gases, specifically nitrous oxide. Davy had previously investigated nitrous oxide in 1797, testing the claim made by the American physician Samuel Latham Mitchell (1764-1831), that nitrous oxide underlay all degenerative diseases and was deadly if inspired. Davy easily disproved this theory by synthesizing the gas and inhaling it in small amounts. In 1799 at the Pneumatic Institution, he soon began self-experimenting with the gas in earnest, recording his observations in a journal. The high of nitrous oxide captivated Davy and his journals were filled with ramblings and proclamations of the magnificence of the drug. Following one such experiment Davy proclaimed, “Nothing exists but thoughts!” These experiments encouraged him to share his experiences with friends and the Pneumatic Institution quickly developed a notorious reputation among the nearby residents. While certainly advancing science’s understanding of nitrous oxide, Davy also inadvertently pushed nitrous oxide further away from the field of science and into the domain of entertainment and public display. Despite his frivolous use of the gas, Davy would leave science with a profound prediction hidden away on one of the last pages of his 580-page chronicle of his experiments with nitrous oxide:
“as nitrous oxide in its extensive operation appears capable of
destroying physical pain, it may probably be used with
advantage during surgical operations in which no great effusion
of blood takes place.”

It would take over four decades before the ramifications of this
offhand remark would be fully appreciated by society.

By the 1820s itinerant performers travelled across England
offering laughing gas exhibitions where audience members could
go on stage and try the gas for themselves. As nitrous oxide use
trickled down from the aristocracy to the middle and lower classes
attending these exhibitions, the public perception of nitrous oxide
shifted from an esoteric drug to an exciting source of
entertainment. Sometime during the early 1800s, information
about nitrous oxide crossed the Atlantic and began appearing in
US medical school textbooks and lecture halls.

**Synthesis**

Davy first synthesized nitrous oxide by reacting zinc with dilute
nitric acid. As the acid was reduced at the expense of the zinc,
nitrous oxide was released:

\[ 4Zn + 10 \text{HNO}_3 \rightarrow 4Zn(\text{NO}_3)_2 + N_2\text{O} + 5\text{H}_2\text{O} \]

Later, he adopted a 1785 method advocated by French chemist
Claude-Louis Berthollet (1748-1822). This reaction in which
ammonium nitrate is heated slowly is as follows:

\[ \text{NH}_4\text{NO}_3 \rightarrow N_2\text{O} + 2\text{H}_2\text{O} \]

Crystals of ammonium nitrate were placed in a distilling glass and
slowly heated to 350°F (177°C). As the crystals melted, nitrous
oxide evolved and the gas was captured in hydraulic bellows,
cooled by water. Davy was aware that maintenance of the
temperature was crucial to synthesizing a pure product.
Temperatures between 240°F (116°C) and 480°F (249°C)
yielded pure N₂O. Above 480°F (249°C), impurities such as
nitrous acid and ammonium nitrate began to appear. Furthermore,
at high temperatures the exothermic nature of the reaction made
the possibility of violent explosions very real. In April of 1799 at the Pneumatic Institution, Davy slowly decomposed compact ammonium nitrate. He and Beddoes filled their lungs with pure nitrous oxide and, for the first time, experienced the euphoria of laughing gas.

The process of heating ammonium nitrate has to be undertaken carefully, avoiding temperatures greater than 480° F (249° C), with the risk of the following explosive reaction and the release of a large amount of energy. Ammonium nitrate is a commonly used fertilizer and also used in explosives.

\[ \text{NH}_4\text{NO}_3 \rightarrow \text{N}_2 + 2\text{H}_2\text{O} + \frac{1}{2}\text{O}_2 \]

The technique of manufacturing nitrous oxide during modern times remains essentially unchanged. The gas released by controlled heating of ammonium nitrate is purified, cooled, and liquefied by cooling. It is then stored as a liquefied compressed gas at 5°F (-15° C).

**Current Status:**

Nitrous oxide was one of the first anaesthetic agents to be used clinically, and remained the most commonly used anaesthetic agent through most of the twentieth century. It was odourless and non-explosive, although capable of supporting combustion. It was relatively insoluble in blood and body tissues, and offered extremely favourable uptake and distribution pharmacokinetics. However, its lack of potency relegated it to a supportive role – as an adjuvant to ether, halothane, and other agents to decrease the concentration of these potent agents required during the operation. It could also be used in high concentrations with opioids and neuromuscular blockers in a light general anaesthetic technique termed ‘nitrous narcotic’ or ‘balanced’ anesthesia.

The high concentrations of nitrous oxide employed resulted in expansion of gas containing organs such as the gastrointestinal tracts, an obstructed middle ear cavity or nasal sinus, or the air introduced during the now obsolete pneumoencephalogram. It has been implicated as resulting in postoperative nausea and vomiting;
and by inhibiting the enzyme methionine synthase of causing bone marrow depression, impaired synthesis of vitamin B12, and megaloblastic anaemia.

The coup de grâce came in the form of new halogenated agents desflurane and sevoflurane, as these drugs also possessed low solubility in blood and tissues, thereby offering the same pharmacokinetic advantages as nitrous oxide. Moreover, these potent anaesthetics allowed the administration of high concentrations of oxygen concurrently, something that was not possible during nitrous oxide anesthesia. As a result of the recognition of these side effects of nitrous oxide and the introduction of short acting potent inhalation agents, the use of nitrous oxide has decreased in western nations.

Summary

We have traced the origins of nitrous oxide and followed its life cycle from introduction, popular use, near universal use, and decline. This phenomenon is not unique to nitrous oxide, anaesthesia, or even to medicine – approaches and practices once considered essential get replaced slowly or abruptly with advances in knowledge and technology. Anaesthetists have seen other drugs become obsolete, be they neuromuscular blockers, inhalation agents, or local anaesthetics. The introduction of the laryngeal mask airway (LMA) abruptly changed our approach to airway instrumentation during anaesthesia. In the early and mid-twentieth century, general anaesthesia was considered unsafe and an extremely wide variety of surgical procedures were performed under local and regional anaesthesia. As general anaesthesia became safer, many of these approaches became obsolete. Clinical monitoring during anaesthesia too has undergone tremendous changes over the past half century, with the introduction of modern anaesthesia machines, automated non-invasive blood pressure monitors, pulse oximetry, mass spectroscopy, computer assisted electroencephalographic monitoring, amongst others. While we await the formulation of a unified theory by which anaesthetic agents produce the state we term ‘anaesthesia,’ other
aspects of clinical anaesthesia are constantly changing. Nitrous oxide is just one more example of a drug that may have outlived its useful role as it gets replaced slowly and steadily by other agents.

**Additional Reading**

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Discovery of Noble Gases and the first 50 years of Medical Use

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In the past 100 years, the noble gases have been used for a wide variety of applications in meteorology, geo- and cosmo-chemistry, and, also industry and scientific research: cryogenic refrigerants, filler gases in lamps, providing an inert atmosphere for measurements (gas chromatography, Geiger counter), and, various types of lasers.¹-³

The noble gases also have roles in medicine. Helium was first used for the prevention of decompression illness in deep-sea divers, with additional applications in certain respiratory diseases (upper airway obstruction, croup, and bronchiolitis) and recently for its neuro- and cardio-protective effects.⁴ Argon is used in lasers, dry suit insulation gas for cold-water diving, and possible as a neuroprotective alternative/supplement to xenon.⁵ As for xenon, the main limitations of its use are related to the high cost of producing the gas and the technological complexity of gas delivery, although it is well known that it approaches the criteria for an ideal anaesthetic agent.⁶ Radon radioactivity is a controversial issue. Prolonged exposure to high doses of radon has been associated with cytogenetic damage and increased risk of lung cancer.⁷-⁸ However, small dose radiation therapy is an adjunct in the rehabilitation of various chronic medical conditions.⁹ A recent review in Pharmacology and Therapeutics emphasizes multiple interactions of noble gases on various molecular targets (membrane and nuclear receptors, ion channels, enzymes, pumps (Ca²⁺/ATPase), cytokines, inflammation proteins, signalling proteins in glutamatergic, cholinergic, serotoninergic pathways) with potential future applications.¹⁰ It is most likely that their use in anaesthesia and intensive care will increase in the following decades.
Conversely, our general knowledge regarding the discovery of noble gases is limited. Their complex and fascinating history has intermixed with the growth of a new sub-speciality of physical chemistry. Although there are a considerable number of scientists from a variety of disciplines that have been linked to their identification, two names emerge Sir William Ramsey (1852-1916) and the Lord Rayleigh (1842-1919) (Fig. 1), first British scientists to win the Nobel Prize in 1904 (chemistry and physics respectively). What has motivated their work? How did they manage to succeed where others had failed? Or was it just serendipity? Let’s analyse the discovery of noble gases one by one.

Figure 1: British team work: Prof. W. Ramsay and the Lord Rayleigh.

Discovery of Argon

On 13th August 1894, the 64th Meeting of the British Association for Advancement of Science was held in Oxford. A report concerning the work of two well-known British scientists was heard by a large audience (that day there was a joint meeting of
Section A, Mathematical and Physical Science and Section B, Chemical Science). The Lord Rayleigh, Professor of Natural Philosophy at the Royal London Institute, made a brief announcement upon his work with William Ramsay, Professor of Chemistry at University College London, regarding the recent discovery of a new chemically “inert” gas in the atmosphere.\(^{11}\)

Lord Rayleigh had been already pursuing this project for nearly a decade\(^{12}\) and it was not the first time he was challenging scientific community. Two years previously, he had published a letter in *Nature*,\(^{13}\) describing a detected difference in weight about 1/1000 part between the density nitrogen obtained from atmospheric air and nitrogen obtained from its compounds, and had invited chemists to express too their opinions in this matter.

Unfortunately there are no notes regarding this preliminary communication by Lord Rayleigh in Oxford, described by *The Times* as “the sensation of the meeting”.\(^{14}\) Apparently, the only comment came from Henry George Madan (1838-1901), fellow of Queen’s College and author of several chemistry books.\(^{15}\) He proposed the name argon for the new gas (from Greek Argos, lazy or inactive) due to its apparent lack of interaction with any element.\(^{16}\)

Other members of the press expressed rather different opinions regarding the new gas: in France it gained the nickname of “Oxbridge gas”, while in England it was assumed it was “Mrs Harris” (the imaginary friend of Mrs Gump, an alcoholic).\(^{17}\)

There were also many sceptics among chemists regarding this subject. These scientific conflicts have been an interesting case-study by both historians\(^{18}\) and philosophers of science.\(^{19}\) For hundreds of years the chemists were studying the composition of air and out of a sudden a gentleman physicist is reporting a new element, more than that he insists it is “inert”! To comprehend their resistance, we must return to the actual knowledge of the epoch. Identification of a substance as an element involved determination of atomic mass and recognition of the associated chemical reactions. Therefore, presence of an “inert” element
implied that the chemical definition of an element in use at the
time of the time an element was most probably incomplete or
wrong, and few chemists were ready to accept this. One of the
greatest opponents was James Dewar (1842-1923), at that time
Fullerian Professor of Chemistry at the Royal Institution, sustained
by Henry Edward Armstrong (1848-1937), President of the
Chemical Society of London. Dewar was the one to launch the
hypothesis of a “triatomic nitrogen”, who could evidently explain
everything and thus no need to change any chemical concepts (18,
19). Dmitri Mendeleev (1834-1907), based on the observation that
physical and chemical properties are influenced by their atomic
mass, noted a periodicity and already had produced his table in
1869. One could note some gaps in the rows in the periodic table
of elements (Fig. 2), which accounted according to Mendeleev for
yet undiscovered elements, but certainly no place for an additional
column: there is nothing like “argon”, triatomic nitrogen more
likely.\(^{19}\)

![Mendeleev's initial table of elements](image)

Figure 2: Mendeleev’s initial table of elements. Reproduced with
permission of the Chemical Heritage Foundation.

It is remarkable how the two professors continued their work after
all the excitement and disagreements associated with their Oxford
report. The possibility of an additional residue in air had been
encountered a hundred years previously by the British physicist
Henry Cavendish (1731-1810).\(^{20}\) Lord Rayleigh made an
improvement to these initial experiments, introducing electrical current to produce sparkles in the presence of oxygen and nitrogen. Professor Ramsay believed in the first instance that the difference observed by Lord Rayleigh was due to a possible impurity, so he carefully constructed his own device to isolate atmospheric nitrogen (Fig. 3).

Figure 3: Professor Ramsay’s apparatus for isolating argon. Philosophical Transactions.  

However, on the 4th August 1894, he wrote to Lord Rayleigh, “I have isolated the gas. Its density is 19.075, and it is not absorbed by magnesium”. The letter from Lord Rayleigh on 6th August reported “I believe that I too have isolated the gas, though in miserable small quantities”. They decided to publish a joint paper which was read in January at the British Society Meeting, attended by a record number of 800 people. And despite all speculations that followed, they had a fair play attitude towards each other’s work; an approach that extended towards other colleagues and also their students, who remember them very warmly as “an example for us all”.  

Their collaboration has been analysed from many points of view, including that by Thomas Khun (1922-1996) who introduced the term paradigm shift, confirming that scientific discovery is an extended process and not limited to a certain point in time. My
point of interest was one of the increased importance today in research, concerning not only human factors in team work but how people of diverse specialties and completely different personalities can bond together towards solving something unknown? And what did I find as a “recipe for success”? These two scientists, despite their remarkable intelligence, hard work and dedication had the following: a visionary attitude, always ready to accept their own limits and the actual limits of knowledge in general, admitting challenges and failures; respect towards scientific truth and towards the work of others; capacity of putting the benefit towards the development of science over his or her personal advantages; excellence in communicating and sharing of their ideas.

**Discovery of Helium**

The history of the discovery of helium is nevertheless as remarkable and exciting as that of argon. The name helium (derived from Greek Helios, sun) was assigned by the British astronomer Joseph Norman Lockyer (1836-1920, also founder of *Science* magazine in 1869, as this noble gas was first discovered in the Sun with the assistance of a new science: spectroscopy. The development of spectroscopy extended over nearly two hundred years. It all started with a series of experiments involving the refraction of light through a prism (Fig. 4) by Sir Isaac Newton (1642-1726), that proved to be fundamental for the understanding of the nature of white light: “*light itself is a heterogeneous mixture of differently refrangible rays*.”

\[24\]
He also introduced the term “colour spectrum” and was able to construct the first “reflective” telescope (using mirrors), presented to the Royal Society of London for Improving Natural Knowledge in 1672. In 1802, another British scientist, William Hyde Wollaston (1766-1828), physicist and also a chemist, (who discovered palladium and rhodium) observed light from a few millimetres slit through a glass prism and noted seven dark lines between the multi-colours of solar spectrum, although initially he considered them as an artefact. Independently in 1814 in Germany, Josef von Fraunhoffer (1787-1826), an autodidact scientist, inventor and entrepreneur, had systematically measured and described 574 dark lines. Although he could not explain their origin, he used his findings to measure refraction of different types of glass and thus improve the quality of lenses to be used in the construction of “refractive” telescopes. To date a number of 25,000 “Fraunhoffer lines” have been described, and we are aware that they represent selective absorption of the Sun’s radiation at specific wavelengths by the various elements existing as gases in its atmosphere. However to gain this knowledge, the methodology of spectral analysis had to be established. Isolated experiments had shown that certain substances when heated in a flame displayed a specific colour. In 1854 at Heidelberg University, Robert Bunsen (1811-1899) and Gustav Kirchhoff (1824-1887), combined the
newly-improved Bunsen’s lamp with the technique already well known to physicists of observing the source of light through a prism. They did extensive research including various compounds of sodium, lithium, potassium, strontium, calcium, and, barium. Each element, heated to incandescence, produced a specific pattern of lines, influenced neither by the characteristics of compound nor the type of the flame used. More than that, Kirchhoff rotated his spectroscope towards the sunlight and to his great surprise he found that Fraunhofer dark lines were in fact the reverse of the bright emission lines. It looks like 1859 was quite a thought-provoking year, especially as Charles Darwin also published his book “On the origin of species”. Kirchhoff and Bunsen continued to work together and used this technique to discover two new elements: caesium (1860) and rubidium (1861). Kirchhoff was soon able to establish the three laws of spectroscopy. Although the final explanations will have to wait until the twentieth century’s quantum mechanics, these discoveries had a tremendous role in the development of various branches science.

Spectroscopy started to be used in astronomy, especially towards discovering the external parts of the sun, visible for a short period of time during a solar eclipse. The eclipse of 1868 in India was full
of observers, among whom was the French astronomer Pierre Jules César Janssen (1824-1907). During the short period of the reversal of their eclipse, Janssen had the idea of improving his telescope in order to look at the sun without an eclipse. He wrote a letter from India to the French Academy of Science. His letter arrived the same day as one from Norman Lockyer (1836-1920), who was also developing a technique of studying the sun outside of an eclipse. Their discovery was celebrated by the Academy with a bronze medal. Lockyer started to analyse reports from the eclipse, especially because they were linked to a very bright yellow line – which did not correspond to any element discovered on earth to that day: so he named it helium.

Figure 6: W.F. Hildebrand. Reproduced with permission of the Chemical Heritage Foundation.
Spectroscopy started to be used in other sciences like geology. This is how an American chemist, William Francis Hillenbrand (1853-1925) was able to identify in 1890 a mixture of gases “exiting through uranite, mainly composed of nitrogen.”

And it is with Hillenbrand’s article in mind that a certain Mr Miers, the Keeper of Collection of Minerals at the British Museum, approached Professor Ramsay shortly after the 31st January 1895 Meeting and the Royal Society. He also suggested a related mineral of Norwegian origin, cleveite (Fig. 8). Ramsay started to work on it, of course thinking he will isolate argon. After one month of intense research he believe he had isolated a new gas, naming it krypton. He referred to another British chemist, an enthusiast of spectroscopy, William Crookes (1832-1919), the discoverer of thallium. Crookes identified the new gas as being … helium! On 23rd March 1895 a telegram was sent to Paris to Pierre Eugène Marcellin Berthelot (1827-1907), the secretary of the French Academy of Science: “Gaz obtenu par ma cleveite melange argon – helium. Faites communication academie lundi. Ramsay”.

Figure 7: Fig. 8 Original cleveite in a jar from which and helium was extracted. ©UCL Museum Geology Collection.
**Discovery of Neon, Xenon, Krypton**

After identifying two “inert” elements in six months, Ramsay started to think that there might be others: why should the law of mass conservation and the theory of periodic system be in antagonism and why could not both be true? By perfecting his technique of fractional distillation of liquid air, Professor Ramsay and his assistant Morris Travers identified another three new elements in 1898. Neon (Neos, Greek for new), xenon (Xenos, Greek for strange) and krypton (Kryptos, Greek for hidden). Even nowadays, the commercial preparation of these gases uses his technique.\(^2\) 1898 was a good year too for physics, as polonium and radium were discovered by Marie and Pierre Curie but yet another element was needed to complete a full column of noble gases in the periodic table.

**Discovery of Radon**

Radon was discovered by Friedrich Ernst Dorn (1848-1916) and described as an “emanation” of radium. Subsequently, Lord Rutherford (1871-1937) realized that thorium also produced something similar.\(^2\) Professor Ramsay found it very difficult to accept such terminology, and together with Whytlaw-Gray isolated radon in 1910 and measured its density (initially, he would have liked to call this new gas “niton”).\(^3\)

**Evolution of terminology**

The phrase “noble gas” (Edelgase, German) was used for the first time in 1898 in a textbook of inorganic chemistry by Hugo Wilhelm Erdmann (1862-1910).\(^3\) The book ran to 46 editions, in German and English, between 1898 and 1910. The author probably compared the non-reactivity of these elements with that of noble metals. We acknowledge today that noble gas stability is due to their outer electron shell holding the maximum number of valence electrons, their ionization energy at normal temperature and pressure being higher than of other compounds.\(^3\)

The expression “inert gas” is not strictly correct. The idea was challenged in 1933 by Linus Pauling (1901-1994), a double Noble
Prize Winner for Chemistry and Peace, who predicted the possibility of compounds of xenon and krypton. There were plenty of unsuccessful experiments, until in 1966 Neil Bartlett (1932-2008), British born chemist (Fig. 9), succeeded in obtaining XePtF6 by changing conditions of temperature and pressure to modify the ionization energy of the noble gas.

The label “rare” is not quite true for all noble gases, with helium being the second most abundant element in the universe and argon representing 1% from the earth’s atmosphere (third most abundant gas in air).²

**Discovery of Element 118**

On 30th December 2015 there was a press release from the fourth IUPAC/IUPAP Joint Working Party (International Union of Pure and Applied Chemistry and respectively, Physics). It announced that the criteria for discovery have been satisfied for four new elements, with atomic numbers 113, 115, 117 and 118, and that in consequence the seventh period of the Periodic Table of Elements is now complete.³⁷ Element 118 occupies a place below argon in the column of noble gases and is also the heaviest of all known atoms to the date. Previously assigned by IUPAC with the temporary name ununoctium, the element 118 will have a definitive name by the end of this year. According to the IUPAC rules, the permanent names should be suggested by the team who discovered them, and the choice could be either a name of a mythological creature, or a mineral, or a place, or a scientist. The name proposed in June 2016 is oganesson, after Yuri Oganessian, an 83-year old Russian Armenian nuclear scientist and the leader of a team of 30 researchers who worked together on this project (Russian, from the Joint Institute for Nuclear Research in Dubna and American, from the Lawrence Livermore National Laboratory in California).³⁸ Initially in 1999, a paper from the Berkeley Laboratories claimed the discovery of element 118,³⁹ but it has since been withdrawn in 2002,⁴⁰ with the first author, Victor Ninov, accused of fraud.
Why did no-one talk about any new noble gas since 1910? How did they achieve an element like 118 and what is the purpose of so many studies orientated towards the so-called super-heavy elements?

Until 1940, uranium was the heaviest natural element (atomic number 92); also, the first one identified to be radioactive, with isotopes having a very long half-life (million to billion years). In 1940 the first transuranium (meaning lying beyond uranium in the periodic table) element produced was Neptunium (atomic number 93), in a cyclotron at the University of California at Berkeley, by bombarding uranium with neutrons. The ones responsible for the synthesis were two American physicists, Edwin M. Mcmillan (1907-1991) and Philip H. Abelson (1913-2004). Their work was continued in the same place by the American chemist Glenn T. Seaborg (1912-1999, Noble Prize winner 1951). This time uranium was bombarded with deuterons, resulting in a new element which was named plutonium (1941). During his experiments towards making heavier elements, he predicted a new series in the periodic table, based on a specific electron structure, called actinides (respectively, following actinium) and then discovering actinides. An important issue is the heavier the element, the more unstable it becomes. Based on the nuclear shell model (1949), in which the protons and neutrons are occupying energy shells (similar to electrons), Seaborg postulated the existence of a so called “island of stability”, outside the actual borders of the periodic system, were heavy elements gain such a nuclear configuration that they become stable, and, hypothetically, will form compounds with very special properties.

In the meantime, we are waiting with great interest towards a better understanding of the properties of element 118 and its possible medical applications.
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**Discovery of element 118**


Dr John Snow (1813–1858) – His work with infants and children

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News of the first successful public demonstration of anaesthetic ether by Morton in Boston, Massachusetts on 16th October 1846 reached Great Britain by letter two months later, on 16th December. Within three days, inhaled ether had been employed by the London dentist, James Robinson, to secure painless dental extraction. On 28th December, Dr John Snow, pioneer anaesthetist and epidemiologist, witnessed the use of general anaesthesia, at Robinson’s home in Gower Street, London.¹ He administered the first of approximately 5000 anaesthetics that he was to give over the course of his own anaesthesia career in late January 1847, in the outpatients department of St George’s Hospital.² While he cannot be regarded as, and indeed would never have claimed to be, a doctor whose particular interest or skill lay in caring for the youngest patients, it is perhaps worth reflecting on the fact that two of Snow’s earliest published papers related to paediatric topics.³ ⁴

Methods

All entries that relate to anaesthetics administered by Snow to infants and children aged from birth to approximately twelve years were identified from both Snow’s “On the Inhalation of the Vapour of Ether” and the late Richard Ellis’s transcribed version of Snow’s case books published in 1994.² ⁵ The information provided by Snow in respect of individual entries e.g. the date, the anaesthetic agent used, the location at which the operation was carried out, the patient’s age and sex, the identity of the surgeon, details of the surgery itself and any complications that arose, was recorded.
Results

Eight hundred and thirty entries considered to be relevant were identified. Snow sometimes used inexact terms e.g. “a child”, “a young boy”, “about 12 years old” where age was concerned, so that it was not always possible to be certain that the children were within the age range sought. The sex of the patient, especially where infants were concerned, was frequently not entered by him but there appeared to be a slight preponderance of males overall.

Almost 60 per cent of all operations were carried out in various hospitals, infirmaries or dispensaries but there were also substantial numbers in either the surgeons’ or dentists’ homes or in the patients’ own homes, or, indeed their lodgings if they came from outside London. Where hospitals were concerned, King’s College Hospital was by far the most common location, followed by St George’s Hospital. Snow referred to twelve operations being performed in either the “Hospital for Children” or “Children’s Hospital” – he did not enter an address. He worked with approximately 80 surgeons or dentists when anaesthetising children. As with the hospitals one surgeon, William Fergusson, who carried out 515 of the 830 operations, predominated.

John Snow initially used sulphuric ether, and later tried various other ethers including Dutch Liquid, but after its introduction into anaesthetic practice by James Young Simpson he was converted to the ease of use of chloroform. He gave amylene an extensive trial in children but abandoned it after two deaths in his adult practice. Orthopaedic surgery, most commonly for osteomyelitis but with talipes also featuring regularly, accounted for over one quarter (233/830) of his paediatric caseload. There were 152 tumours – some were clearly malignant but the majority were cysts, lipomata or birthmarks. One hundred and forty-eight patients underwent hare (or cleft) lip surgery while the majority of the remaining operations were dental, urological or ophthalmic in nature. Complications were few, with vomiting and crying at the end of surgery being the most frequent. There was no mortality among Snow’s paediatric patients.
Infants

While precise age was again sometimes difficult to identify, 225 of the entries made by Snow appeared to refer to infants aged up to approximately one year. At least twelve were aged less than four weeks, and over 100 were below six months of age. Over 90 per cent (182/225) were operated on by Fergusson. The youngest infant, aged just eight days, underwent surgery for harelip in King’s College Hospital on 4th July 1857. Snow noted that the face-piece was too large, and that the chloroform took very little effect. A higher proportion of infants (144/225 – 64%) underwent surgery in hospitals than in the overall group, with King’s College Hospital once again to the fore. There was no reference by Snow to a Hospital for Children or a Children’s Hospital where this group of patients was concerned.

Children with Serious Illness

In his casebook entry for January 29th 1853 Snow wrote that he administered two doses of chloroform to an eight month old with laryngismus stridulus. There was no mention of a surgeon or surgery, and clearly Snow was using chloroform as a treatment. A search was undertaken for similar cases in the casebooks. Sixteen instances in 15 children in which he used an inhaled anaesthetic agent in the management of apparent serious illness, most commonly croup but also including convulsions, tetanus, pertussis, meningitis, typhoid and cholera, were subsequently identified. Treatment was considered successful in nine cases, the remaining children died. It seems clear that over 100 years prior to the development of paediatric intensive care units and as previously suggested by Atkinson, John Snow was willing to use his medical and anaesthetic skills, using innovative agents and methods, in children who were otherwise likely to die, in an attempt to cure them.
Where was the “Hospital for Children” or “Children’s Hospital”?

Richard Ellis wrote a lengthy and erudite introduction to the 1994 book referred to above. In it he stated that in addition to working in larger hospitals, Snow was involved with a number of smaller central London institutions, ‘most of which no longer exist’. These included, among others, the Hospital for Decayed Gentlewomen, the Hospital for Children, the Hospital for Consumption (now the Brompton Hospital), and the Ophthalmic Hospital. The history of early paediatric healthcare institutions in London was studied in order to try and identify which hospital(s) John Snow was referring to when he entered the terms “Hospital for Children” or “Children’s Hospital” in his records, and also to confirm whether or not the institution(s) concerned is (or are) still in existence.

The Foundling Hospital opened in 1741, in Bloomsbury. At that time the word “hospital” was used in a more general sense than it is today, simply indicating an institution’s hospitality to those less fortunate. The Foundling Hospital was in fact a children’s home, established by the philanthropic sea captain Thomas Coram “for the education and maintenance of exposed and deserted young children”. It is not a place where John Snow worked. The building was demolished in the early Twentieth Century but the hospital still has a legacy on part of the original site as Coram’s Fields, an educational and recreational resource for children, and the adjacent Foundling Museum.

In 1769, Dr George Armstrong opened his Dispensary for the Infant Poor in Red Lion Square in Holborn, a few doors from the present headquarters of the Royal College of Anaesthetists. As it closed for lack of funding in the 1780s, Snow could not have worked there.

The Universal Dispensary for Children was founded by Dr John Bunnell Davis in 1816 and was originally located at St Andrew’s Hill in the City of London. By the time John Snow was engaged in anaesthetic practice it had moved to Waterloo Bridge Road, south
of the river Thames, and was known as either the Royal Infirmary for Children (from 1843) or the Royal Infirmary for Children and Women (from 1852). Over the years there was much discussion concerning the opening of inpatient wards for children, but very little action was taken until the late 1850s. There is no evidence that Snow ever worked there.

Neither the Alexandra Hospital for Children with Hip Disease in Queen Square nor the original Evelina Hospital in Southwark had opened prior to John Snow’s death in 1858.

The staff member who had done most to try and develop the infirmary on Waterloo Bridge Road into a children’s hospital with inpatient beds was Dr Charles West. He resigned in frustration in November 1849 and within two months had organised the first meeting that was to lead the way for the foundation of the Hospital for Sick Children in Great Ormond Street (now known as Great Ormond Street Hospital for Children i.e. GOSH). The hospital opened in a converted house, 49 Great Ormond Street, in February 1852.

A review of the abundant literature on Snow did not reveal any suggestion of a connection between him and GOSH. Likewise, no indication that he had ever cared for patients there was found in various published papers, books etc. concerning the hospital. The information provided by him in respect of the twelve children where he had referenced either the “Hospital for Children” or the “Children’s Hospital” in his casebooks was examined in more detail. All twelve operations were carried out within a relatively short timeframe, between May 1852 and March 1853. The children were not particularly young, most underwent orthopaedic surgery, with three urological patients. The surgeon in eleven of the twelve cases was a Mr Pollock, with one child being operated on by a house surgeon (Table 1).
Table 1.
Casebook entries made by Dr John Snow which referred to either a “Hospital for Children” or “Children’s Hospital”.

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Operation</th>
<th>Surgeon</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.05.1852</td>
<td>“About 9”</td>
<td>Removal necrosed bone, tarsus</td>
<td>Pollock</td>
</tr>
<tr>
<td>25.05.1852</td>
<td>“A child, rather young”</td>
<td>Toe amputation</td>
<td>House Surgeon</td>
</tr>
<tr>
<td>25.05.1852</td>
<td>“About 6 or 7”</td>
<td>Removal diseased bone, ulna</td>
<td>Pollock</td>
</tr>
<tr>
<td>18.09.1852</td>
<td>“About 6”</td>
<td>Laying open, diseased elbow</td>
<td>Pollock</td>
</tr>
<tr>
<td>18.09.1852</td>
<td>“About 6”</td>
<td>EUA toe</td>
<td>Pollock</td>
</tr>
<tr>
<td>18.09.1852</td>
<td>“3 years”</td>
<td>Exploration of hip sinuses</td>
<td>Pollock</td>
</tr>
<tr>
<td>05.10.1852</td>
<td>“About 4”</td>
<td>Opening of sinuses, elbow</td>
<td>Pollock</td>
</tr>
<tr>
<td>11.12.1852</td>
<td>“About 5 or 6”</td>
<td>Sounding for stone</td>
<td>Pollock</td>
</tr>
<tr>
<td>27.12.1852</td>
<td>“A child”</td>
<td>Lithotomy</td>
<td>Pollock</td>
</tr>
<tr>
<td>27.12.1852</td>
<td>“A child”</td>
<td>Removal necrotic bone, finger</td>
<td>Pollock</td>
</tr>
<tr>
<td>27.12.1852</td>
<td>“A child”</td>
<td>Exploration of hip sinuses</td>
<td>Pollock</td>
</tr>
<tr>
<td>06.03.1853</td>
<td>“About 4”</td>
<td>Sounding of bladder</td>
<td>Pollock</td>
</tr>
</tbody>
</table>
The Surgeon

George David Pollock, born in India, entered St George’s Hospital medical school in 1837. He qualified in 1840 following which he spent three years as a house surgeon to Sir Benjamin Brodie. Pollock obtained his FRCS in 1846, was elected Assistant Surgeon to St George’s Hospital in 1853, and Surgeon in 1861. He later became Surgeon-in-Ordinary to the Prince of Wales, and also President of both the Medico-Chirurgical Society and the Pathological Society. In 1870, he carried out the first skin grafting operations in England.\textsuperscript{11}

GOSH, as indicated above, was the brainchild of Charles West whose philosophy was that children with medical diseases required special facilities and attention, but that those with surgical disorders could be treated in general hospitals. West opposed the engagement of a surgeon to GOSH but the board disagreed and appointed G.D. Pollock prior to the hospital’s opening.\textsuperscript{12} However, at a meeting of the GOSH Board of Governors held on March 3\textsuperscript{rd} 1853

“A letter was read from George Pollock Esq. stating his recent appointment to the office of Assistant Surgeon at St George’s Hospital, and his consequent inability to discharge the duties of surgeon at this hospital” (Baldwin N, personal communication, 2013).

The reason given for Pollock’s departure seems valid but one would also have to wonder about his working relationship with West, who was known to be a difficult colleague, and who didn’t want surgeons or surgery in GOSH in the first place. John Snow made no further references to a “Hospital for Children” or “Children’s Hospital” in his casebook entries following Pollock’s departure from GOSH. The two continued to work together at St George’s Hospital for some years afterwards.
The Historic Hospital Admission Records Project (HHARP).

HHARP is the product of a partnership between the Department of History at Kingston University in London, and various children’s hospitals archives in London and Glasgow.\textsuperscript{13} The end-result is an online database of early admissions to GOSH, the Evelina Hospital, the Alexandra Hospital for Children with Hip Disease and Cromwell House (the convalescent home for GOSH) in London, and the Royal Hospital for Sick Children in Glasgow. Where GOSH is concerned, the registration data for inpatient admissions dating back to the hospital’s opening has survived, and all the surviving Nineteenth Century information is included, in searchable format, on the HHARP database. With respect to individual children, this includes, along with other information, some or all of the following: name, home address, age, diagnosis, previous history, name of admitting doctor, length of hospital stay, outcome and other relevant remarks.

In attempting to confirm whether or not GOSH was the “Hospital for Children” or “Children’s Hospital” referred to by John Snow in his twelve casebook entries, an effort was made to correlate the information in the HHARP database with the entries concerned. Detailed examination of all the information in HHARP relating to inpatient admissions (175 in total) during George Pollock’s tenure as surgeon to GOSH revealed just one reference to surgery where any of these 175 children were concerned. This was perhaps not as surprising as it may seem as the hospital was, at the time, primarily a place for the treatment of children with medical problems. On 29\textsuperscript{th} November 1852, a four-year old boy named William Ballard was admitted with \textit{calculus vesicae} – bladder stone. He remained in GOSH for 69 days, but when discharged, he had been cured. While in hospital, William underwent lithotomy on 27\textsuperscript{th} December 1852. Snow’s casebook entries reveal that on that very date, at the “Children’s Hospital”, he anaesthetised a child on whom Mr Pollock carried out a lithotomy (Table 1). There can be little doubt that the child concerned was William Ballard, that the “Hospital for Children”
or “Children’s Hospital” was Great Ormond Street Hospital for Children and that Dr John Snow worked there.

The question arises as to why the other eleven children referred to by Snow do not appear in the HHARP database. The most likely explanation is that they were operated on as outpatients and are absent as the early GOSH outpatient records have not survived (Baldwin N, personal communication, 2013). The earliest surviving operation records date from the 1860’s while no anaesthesia records exist from before 1894.\textsuperscript{14}

Summary

Dr John Snow had an extensive paediatric anaesthesia practice. Complications were few, and mortality zero. He used inhaled anaesthetic agents as a form of treatment in seriously ill children. It seems certain that he worked in Great Ormond Street Hospital for Children.

Acknowledgment

The author is pleased to acknowledge the assistance of Mr Nicholas Baldwin, Archivist at Great Ormond Street Hospital for Children, in researching this paper.

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‘A Munificent Gift’ Lord Nuffield’s gift of the Both Respirator to the Empire Part 2

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The author ended his last paper with the announcement by the Lord Nuffield in an interview in the Times Newspaper on 24th November 1938 that he was going to give a ‘Both Respirator’ to every hospital in the Empire that could justify the use of one.¹ The Medical Research Council received a letter from the Ministry of Health dated 2nd November 1938 in early November. They were asked by the Ministry to review all the mechanical respiratory aids that where available at the time and suggest the best and how it should be distributed. The Research Council immediately set up the Respirator (Poliomyelitis) Committee. However, its brief was completely changed by Lord Nuffield’s gift.²

There was wide publicity of the ‘Both Respirator’ throughout the news media. On 5th December, 5th Pathé News released a film of Professor Macintosh, the Lord Nuffield and Dr C. L. G. Pratt demonstrating the ‘Both Respirator’ with Richard Salt as the patient at the Cowley Motor Works, Oxford.³ On the same day British Paramount Newsreels released a film shot at the London County Council County Hall (L.C.C.) Building. Lord Nuffield describes his gift and then Dr Andrew Topping describes the features of the ‘Both’ whilst Dr R. Henderson points them out.⁴

Examples of the respirator where exhibited all over London, in cinemas, the Derry and Toms Roof Garden and in the show window of the South Australian Agent-General in Oxford Street.

This lead to complaints from the South Australian Press that such displays would put off potential emigrants because of the fear of poliomyelitis.⁵ On 14th December 1938, the Times published a photograph of Lord Nuffield presenting a Both Respirator to Guy’s Hospital.
The first letter commenting on the gift was written to the Editor of the *Lancet* and published on 19th December 1938. It was from Dr F. J. Poynton, Consulting Physician to University College and Great Ormond Street Hospitals. He starts by quoting a letter published in the *Daily Telegraph* on 26th November from Sir Henry Gauvain, Medical Superintendent of the Lord Mayor Treloar Cripples Hospital. A search of the *Daily Telegraph* on and around this date reveals only one letter on the ‘Iron Lung’ and it is from Poynton himself. Apart from the quotation from Sir Henry, the contents of the two letters are identical. Poynton goes on to describe his experiences with the ‘Drinker’ Respirator at Great Ormond Street Hospital and points out that it can be used in other types of cases apart from poliomyelitis. The main point Poynton is making, supporting the thoughts of Sir Henry, is that there is a need for experienced nursing and medical staff when managing a case of respiratory failure especially in the presence of bulbar involvement.6,7

The following week, on the 17th December, the *Lancet* published a letter from Guy P. Crowden from the London School of Hygiene and Tropical Medicine.8 He had received a letter from Dr Philip Drinker with an article by Drinker about the construction of an ‘iron lung’ from wood in the emergency situation. Drinker relates the problem of the emergency ‘iron lung’ falling to pieces despite being constructed from high quality timber by the best carpenters. He is also worried about the effects of the British weather on the wood construction.9

This produced a rapid response from E. H. B. Boulton, Technical Director of the Timber Development Association Ltd. He pointed out that the Both Respirator was made from block board not timber planks. Block board is strips of wood glued together and covered in several layers of wood laminate. This gives great strength and resistance to warping. It was widely used in the aeronautical industry.10,11

The same day the *British Medical Journal* published a letter from Sir Leonard Hill, F.R.S the eminent physician and physiologist.12 He
complained that in many press notices, Drinker, as the original inventor, seemed to have been forgotten. He makes the comment. ‘in accordance with medical custom no patent was applied for’. He goes on to say that Drinker had tried wood and found it unsatisfactory. The L.C.C. had made modifications to the Drinker Respirator but still called it the Drinker. He is wrong about the patents. Drinker applied for and was granted a patent on 1st December 1931 (1,834,580) and two more on 2nd May 1933 (1,904,453 & 1,906,844). And he went on to defend them.

John Haven ‘Jack’ Emerson was a man very similar in background to Robert Both. His father was the Health Commissioner for New York and his two brothers where professors at Harvard University. At his father’s suggestion Jack Emerson started making equipment for the laboratories of Harvard University. He had seen Drinker’s respirator and thought he could improve on it and in July 1931 he announced his ‘Iron Lung’. The use of a bellows to provide the negative pressure rather than a vacuum pump made it a much quieter machine. It was also lighter and more efficient. The cost was $1,000 less than the ‘Drinker’ that was manufactured by Warren E. Collins, Inc. They sued Emerson for breach of patent on behalf of Drinker. The legal action started in April 1933 did not come to court until 6th November 1934. Emerson’s legal team thought his case so worthy that they undertook it ‘Pro Bono’. During the proceedings Drinker had to admit he had been receiving payments of between $200 and $400 per machine from Warren E. Collins Inc. Emerson’s defence was that he was only trying to benefit mankind and the patents contained nothing original. On 29th April 1935 District Judge McLellan of the United States District Court Massachusetts found in favour of Emerson, none of the patents being valid. The net result was that Harvard University declared, that in the future, no member of staff would be allowed to apply for patents.

In the same issue of the British Medical Journal, there is a letter from Dr G. Emyrs Harries, the Medical Superintendent of the Cardiff Isolation Hospital. He suggested to Edward Both that a zip fitted
into the rubber neck-seal would make fitting to the patient much easier. Edward Both took up this idea.\textsuperscript{20}

The first week of 1939 saw the publication in the \textit{British Medical Journal} and the \textit{Times} of the first seriously-critical letter of Lord Nuffield’s gift.\textsuperscript{21} The author was Sir Fredrick Menzies who was County Medical Officer of Health for the London County Council. He questioned many aspects of the gift. How had the number of five hundred respirators been decided on? This was an exploitation of a great benefactor and ‘\textit{a wanton waste of benevolence}.’ Respirators where constantly evolving with the increasing knowledge on design, construction and which disease were suitable for treatment. The last four years had seen the L.C.C. gain a great deal of knowledge. Demonstrations and practical literature had been provided to potential users. One thing is certain they needed specially trained nurses and medical staff. It is ‘\textit{the height of folly}’ at this stage to try and standardise the equipment. But the worst mistake of all is the distribution to all and sundry. Most of them will go to hospitals with no idea how to use them. Finally, who was it that suggested that 5,000 were needed in England and Wales when 500 would be more than enough.

The \textit{British Medical Journal} of 14\textsuperscript{th} January 1939 published three letters on the subject of ‘Mechanical Respirators’. The first is from Professor Robert Macintosh. It is his reply to Sir Fredrick Menzies criticism of Lord Nuffield’s Gift.\textsuperscript{22} He starts by wondering why Sir Fredrick had taken so long to reply to Lord Nuffield’s gift. Perhaps he had waited until both Robert Both and Lord Nuffield had left the Country. Both had left some weeks before but Lord Nuffield only a week before. He felt that such a strongly worded letter so widely publicised in the medical and national press deserved a reply. Professor Macintosh goes on to describe how Lord Nuffield had decided on this generous gift and why, in particular, how he had to choose the Both Resperator. This was described by the author in the last Proceedings.\textsuperscript{23} If Sir Fredrick Menzies had written to Cowley, all would have been explained. Professor Macintosh had written to every County Medical Officer
of Health asking for the requirements for their area. He had also written to every High Commissioners and representatives of every Colony and Dominion. There was divided opinion in the United Kingdom as to whether the machines should be widely spread or in centralised units. Lord Nuffield was well aware that there would be wastage.

'It seems a pity to think of some of the respirators being used as coal scuttles but it is more tragic still to think of the possibility of life being lost through the failure on my part to spend £20 to £30.' (Lord Nuffield).

Comprehensive arrangements were made to make sure that recipients of the respirators knew how to use them. A film had been made by Dr C.L.G. Pratt that could be purchased or hired for a small fee. During the months of February and March a suitable-trained person will be available to demonstrate the respirator. Maintenance fee of £1.00 per annum had been arranged.

The second letter is from Professor L.J. Witts (Nuffield Professor of Medicine at Oxford University). It is in his capacity as the Chairman of the Medical Research Council ‘Respirator Committee’. He relates how the Medical Research Council had received a letter from the Ministry of Health asking them to investigate and report on the range of artificial mechanical respirators available and which was the best. Before the Committee could report, Lord Nuffield announced his gift. The Committee had written to Lord Nuffield suggesting that no more than 500 respirators would be needed for the United Kingdom and they should be based in large Orthopaedic and Fever Hospitals.

The third letter was from Sir Fredrick Menzies. He was suggesting that the respirators should be centralised in well-known orthopaedic hospitals and fever hospitals. They would also supply ‘flying squads’ of specialist nurses and medical staff to transfer the patients’ to the central units. Exactly which hospitals should be decided by a Central Committee.
The following week, 21st January 1938, the *British Medical Journal* published letters from Dr John Kerr (Edinburgh), Sir Fredrick Menzies and Dr C.J. McSweeny (Dublin). Kerr supported the idea of centralisation and ‘Flying Squads’, while McSweeny supported Lord Nuffield’s gift but suggested that records of their use should be sent to the Medical Research Council Committee. He stressed the need for specially trained staff and the not to forget the Bragg-Paul belt.

The following week a letter from Dr F.C. Eve points out that respiratory failure can be divided into acute and chronic. The acute needs prompt action either by the ‘Schafer Method’ or by the use of a device like the ‘Rocking Stretcher’. The ‘iron lung’ is costly, bulky and difficult to store. It requires specialist medical and nursing knowledge. The cuirass needs a range of sizes kept in stock. The Eve Rocking Bed is ‘cheap, simple, effective and requires little skill’.

Sir Fredrick Menzies letter is a reply to Professor Macintosh’s criticism of his first letter. He points out that he was unable to write earlier. He had been in the Sudan for November and the early part of December 1938 on a fact-finding mission for His Majesty’s Government. He had spent the rest of December until Christmas at County Hall (L.C.C. Headquarters) sorting important matters that had arisen in his absence. It was only during the Christmas Holiday that he had time to read and sort through the correspondence of Lord Nuffield’s gift. It was unfortunate that Lord Nuffield had left the Country but he, Lord Nuffield, was not in the habit of keeping Sir Fredrick informed of his movements. Having read Professor Macintosh’s letter he now fully understood why Lord Nuffield had made the decision for wholesale distribution of respirators. He had obviously made the common mistake of lay people in thinking these machines were used by anaesthetists. Lord Nuffield should have contacted the ‘Respirator Committee’ for advice. As to Professor Macintosh’s idea of providing adequate training in the use of the respirators it sounded more like a ‘First Aid’ lecture. The Professor should note that
standardisation of manufacture may be all well and good in the motor industry but it stifles development. His final comment is to quote Dr Philip Drinkers statement published in the press ‘It is a piece of sentimental foolishness and a waste of money’. He finishes by hoping that the Editor will be pleased to hear that these are his last words on the subject.

The following week sees more letters. One from Dr F.C. Eve points out that respiratory failure can be divided into acute and chronic. The acute needs prompt action either by the ‘Schafer Method’ or by the use of a device like the ‘Rocking Stretcher’. The ‘iron lung is costly, bulky and difficult to store. It requires specialist medical and nursing knowledge. The cuirass needs a range of sizes kept in stock. The Eve Rocking Bed is ‘cheap, simple, effective and requires little skill’.

Then Sir Leonard Hill writes again. He is upset with Professor Macintosh for ignoring his first letter. He points out that if Dr Drinker had patented his device there would have been infringements. He objects to Lord Nuffield paying a small royalty to Robert Both. Like Sir Fredrick Menzies, he quotes Drinker’s opinion. He finishes by supporting the idea of ‘Flying Squads’ made up of orthopaedic surgeons experienced in the treatment of infantile paralysis. All they would need would be a few Drinker respirators made by Siebe Gorman.

Not surprisingly, Professor Macintosh also has a letter published that week. His is in reply to Sir Fredrick Menzies. He points out that the original plan was to make 500 respirators for the United Kingdom. How many the Empire would ask for is as yet unknown. The idea of ‘Flying Squads’ had been thought of but abandoned weeks ago. The Cowley experts reckoned that with mass production each Both Respirator would cost about £25.00 so 500 would come to £12,500.00. At the current rate of investment interest being 3.5% the invested sum would yield £437 10s. Professor Macintosh speculates to just how many ‘Flying Squads’ Sir Fredrick would be able to run on this budget. If he or any other ‘knight errant’ were welcome to try and raise the necessary funds to
equip and staff regional ‘Flying Squads’. He goes on to wonder why Sir Fredrick had not spoken to either of his Medical Officers, Drs Topping and Henderson, who were both fully aware of the gift. He does an injustice to Lord Nuffield’s interest and knowledge on the subject with his comment on anaesthetists. Lord Nuffield was fully aware of the ‘Respirator Committee’ having been informed by Professor Macintosh immediately he had known about. At Lord Nuffield’s request Professor Macintosh had written to Sir Edward Mellanby (Medical Research Council Secretary) on 9th December conveying Lord Nuffield’s appreciation of the Medical Research Council’s interest in the matter. He goes on to say all of this could have been avoided if Sir Fredrick had taken up Sir Robert’s invitation for them to meet after he had sent his personal letter on 13th January. Sir Fredrick says this is an end to the correspondence; Sir Robert leaves it to the readers.

On the same day in The Lancet, Dr C.L.G. Pratt writes to suggest if the Lord Hill insists it should be called the ‘Drinker Respirator’, then by logic it should be named after the first person to invent a negative pressure respirator, Woillez.  

Professor Macintosh answers Lord Hill in the British Medical Journal of 4th February. He refers to Dr Pratt’s Lancet article and points out that Drinker’s patents had not held up in court. He says it is a pity that all this discussion has ignored the excellent work of Drinker, Eve and Paul. Lord Nuffield hopes that by filling the need with the ‘Both’ it will stimulate the development of the ideal machine.

Finally, a letter that brings some common sense to the matter. Dr H.N. Garrus writes in the British Medical Journal on 11th February. He points out that without the press and Lord Nuffield, the British Public would still be waiting for an adequate number of respirators. Lord Nuffield should be looked on as a partner to the Medical Profession in its fight against disease. The Kings Fund has shown that mass production and bulk buying brings about uniformity of accountancy and management. As well as reducing
costs and waste of materials, changes to designs are easily introduced. He goes on

We have two cockerels in the roost. Business acumen represented by Lord Nuffield and professional wisdom represented by Sir Fredrick Menzies and his friends. Rather than goad them into fighting we should encourage them to get together for the good of all’.

The respirator situation had been solved but the arguments went on.

The last letter on the subject comes from Sir Leonard Hill. He is still insisting on Drinker’s name being recognised. He complains about the use of wood in the construction of the ‘Both’ and the numbers required. Professor Macintosh does not answer.

Prior to Lord Nuffield’s gift, the United Kingdom had approximately 39 Bragg-Paul belts and 32 Drinker Respirators. By March 1939, 669 Both Respirators had been distributed around the United Kingdom. The Armed Services had had no apparatus for chronic ventilation but now they had 12 Both Respirators. The full Medical Research Council Report was not published until November 1939.

By the summer of 1939 reports where appearing in local newspapers from around the Empire of the arrival of the Both Respirators and a few reports on their use. In this country interest waned. Compared with the previous year, 1939 was not a particularly bad year for poliomyelitis (total cases 819,732 paralytic with 142 deaths). There were other developments in Europe that where to occupy the British that year and for several years to come.

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The Blessed Chloroform Lecture

The Society of Anaesthetists: a methodological approach to its history

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Some Background

In 2014 we heard a talk from an American student of history on the differences between professional historians and amateurs like ourselves, a subject on which I had recently published. One difference is that professional historians have had the benefit of a structured training in historical methodology and it occurred to me that it might be helpful, even though I am self-taught, if I were to give a lecture on historical methodology to this Society. It then occurred to me that you might find it unspeakably boring; but that it might be more acceptable if I were to talk about some aspects of historical methodology in the context of a subject which you did find of interest and of which you probably had some prior knowledge.

The Society of Anaesthetists has been the subject of papers by Peter Dinnick and Douglas Howat, and has also been touched on by T.M. Young and Aileen Adams in the context of work where the main focus was on its successor, the Section of Anaesthetics of the Royal Society of Medicine, so you might wonder if there was anything left worth saying on the subject; but I hope to show you that we can still squeeze some very tasty juice out of this particular orange if we ask the right questions and if we frame those questions in the right way.

If you read books about historical methodology you will probably find them somewhat opaque. This should come as no surprise. George Bernard Shaw wrote that “All professions are conspiracies against the laity”. As doctors we do it ourselves and so ingrained
has it become that we are often unaware that we are doing it. It was ever thus. The medieval guilds all had their trade and professional secrets, or mysteries, and because it was those same guilds which staged the pageants on Corpus Christi Day, the performances were called mystery plays.

We can strip away the mystery by following a principle which has been enunciated by many, but most memorably by Rudyard Kipling when he wrote that:

I keep six honest serving-men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.⁸

As we attempt to answer these six questions we must also try to get into the mindsets of our subjects and the times in which they lived; and, so far as is possible, we must think as they would have thought, excluding any prejudices or hindsights of our own.

Successful historical research, just like scientific research, stems from asking the right questions of our evidence or sources. If you read the ground-breaking series of eighteen papers published by John Snow in the London Medical Gazette between 1848 and 1851 you can see him formulating answers to all the questions listed in Kipling’s poem. Snow would have made a marvellous historian. His only historical paper, published as the ‘Historical Introduction’ to On Chloroform, is almost entirely descriptive. Only once is a question asked explicitly, but the asking of questions is implicit as a prerequisite to some of his statements.

Sources for the Society of Anaesthetists

So what are our sources for the Society of Anaesthetists?

First and foremost we have the Society’s Archive, from the date of its formation in 1893 until its merger with the Royal Society of Medicine (RSM) in 1908. We also have useful reports of the Society’s meetings in the medical journals, especially the Lancet. Not every meeting was reported and the detail was variable but
they provide a useful source, especially until the Society began to publish its own *Transactions* in 1897-98. The archives of the Royal Medical and Chirurgical Society (RMCS) and the RSM are important sources for the amalgamation of the Society with the RSM in 1908. There is probably information in biographies but I have not explored this source. Finally there are secondary sources, some of which I have already mentioned.

Let us start with the Society’s Archive. Archives can be treasure troves but they can also be traps for the unwary. Imagine, if you will, that one hundred years from now a bright young historian discovers a trunk containing all the tax returns of a well known twentieth century Member of Parliament and publisher, the late Mr Robert Maxwell. ‘Yippee!’, thinks the young historian, I can now get a really accurate picture of his income and his total wealth. You chuckle because you know the pitfalls. But by 2116 the tax laws have been rendered so clear and so simple that there is no longer any scope for tax evasion or avoidance, and such things belong to the forgotten past. There is *always* a forgotten past. We don’t know what we don’t know. All we can do is to minimise the risk. So, *as a minimum*, we must always ask of a document:

*How* do we know if it is genuine? *Why* was it written? *Who* wrote it? *For whom* was it intended? *What effect* (if any) did it have? *How* does it come to survive? *What* may *not* have survived?

The RSM catalogue entry for the Society of Anaesthetists Archive lists: The Council Minute Book, Attendance Registers and Correspondence. Note the absence of any mention of minutes of the Society’s General, Special or Annual Meetings. Note also the absence of anything to do with finances, and I can add that there is nothing on this to be found among the other papers in the archive, although there is some information to be found in the Society’s *Transactions*. We do not know why there are these deficiencies in the archive. All we can do is to note the fact.

Unfortunately the Catalogue entry is not correct, because when I asked to see the Correspondence Folder I was told that it could
not be found. What I fear might happen is that, after a few years, when the Correspondence Folder has still not been found, its former existence will be expunged from the record, as though it had never existed. Is that what may have happened with any financial records? We shall never know, unless of course they do still exist but have been mis-filed and are discovered at some future date.

The loss of the Correspondence volume is serious. Correspondence can add substance to Minutes which have been sanitised to minimise any differences of opinion, or simply abbreviated to the bare essentials because the Secretary was pressed for time or had a headache or was constitutionally lazy. Moreover correspondence can allow you to attribute specific opinions to specific people, and it can reveal tensions, foibles, and rivalries. We can never know what has been lost or was not thought worthy of inclusion in an archive. This is the ‘never known past’ and it joins the ‘forgotten past’ in the realm of our ignorance.

**Anaesthesia in the 1890s**

Now that we are at least conscious of our ignorance, we can start to study and then to interrogate the evidence which we do possess. Questions may already have formed in our minds, but then we find that some or even all of them cannot be answered from the evidence which is available to us. Either we abandon the project and go off to study something else or we keep reading in the hope that some new question will emerge as we do so.

Historical research is like bread without butter unless it is set in the context of the times. So *how* did the Society of Anaesthetists compare with other specialist societies at the end of the nineteenth century? And exactly *why* was it thought necessary to found the Society? That last question may seem self-evident but it still needs to be asked and it is the question with which I want to begin. However we must first consider the position of anaesthesia as a
discipline and the position of its practitioners in Britain at the time when the Society was founded.

Forty-one years earlier, in 1852, John Snow had written that “No person should administer chloroform without first making its action a subject of special attention . . .” However in the 1890s there were many, both inside and outside the profession, who viewed the giving of an anaesthetic as something which could be left to the most inexperienced doctor or even to a medical student. Fifty years later, in the 1940s, there were still a few doctors who resented “the efforts of practitioners who administer anaesthetics to insinuate themselves into the ranks of specialists” and who did not “realize that quite a nice anaesthetic can be given . . . by an obscure general practitioner with a bottle of chloroform and a lint mask.” Others, who were still practising in the mid-twentieth century as they had done forty years before, were proud of their unblemished records as “rag-and-bottle” anaesthetists.

In the 1940s such views were perhaps unusual but in the 1890s they had been very much the norm and, because little or no prestige attached to the practice of anaesthesia, its specialist practitioners also lacked status. The anaesthetist was seen as subservient to the surgeon. In 1908 an anonymous hospital anaesthetist complained in The Times that

“some surgeons are inclined to dictate to the anaesthetist what anaesthetic he shall give, to request a deeper degree of anaesthesia than the administrator considers prudent, and to arbitrarily fix the times and numbers of operations without consulting . . . the anaesthetist.”

Surely the time must be fast approaching when surgeons such as these can finally be consigned to ‘the forgotten past’. A graphic illustration of the subservient relationship is given by Frederic Hewitt’s description of his treatment by the surgeon Sir Frederick Treves prior to the operation on King Edward VII in 1902.

Unlike surgeons and physicians, anaesthetists were not represented on hospital management boards or, with few exceptions, on the
governing bodies of medical schools. A practical example of the
(literally) dismissive attitude of a hospital board towards
anaesthetists occurred when the Worcester General Infirmary
decided to dispense with the services of its specialist administrator
of anaesthetics in 1900. Unaware of the importance of the
anaesthetist’s work, the general public had little respect for him. Teaching of anaesthesia was patchy and it was not until 1912 that
the General Medical Council (GMC) made the study of anaesthesia
a compulsory part of the medical student curriculum. Most
students therefore paid scant regard to the subject and junior
doctors, conscious of its lowly status, looked on anaesthetic
appointments as temporary “stepping stones towards the goal of their
appointment to a staff appointment proper” or, as we might say, “a
proper staff appointment”.

These were all important considerations in a world where status
had assumed paramount importance in Victorian professional life.
It was a world in which attorneys had become so concerned by the
odium which attached to their title that in 1874 they assumed, by
Act of Parliament, the new title of solicitor. With the exception of
a small élite in London and other large cities, many provincial
surgeons were still often regarded as little more than skilled
craftsmen, and the up-and-coming general practitioner still
remained anxious to shed any remaining taint of trade associated
with his shop-keeping predecessor the apothecary. Likewise the
army surgeon had fought to exchange the status of a warrant
officer for that of the commissioned combatant officer so that he,
like them, could enjoy the status of a gentleman.

Anaesthetists like Frederic Hewitt, Dudley Buxton and Frederick
Silk would certainly have thought of themselves as gentlemen.
Hewitt was the son of a Wiltshire gentleman and had a Cambridge
MD. Buxton was the son of a barrister and had a London MD.
Silk was the son of a solicitor and also had an MD, the
qualification of a physician and therefore of a gentleman. It
would have been demeaning, even humiliating, for them and
others to be treated as mere technicians. It is not therefore
surprising to find the status of the anaesthetist as a recurring issue in both the medical and lay press in the early 1900s. Such, then, was the state of affairs at the time when the Society was founded in 1893.

**The Society’s Aims**

The Society was founded with two explicit aims: “firstly, to encourage the study of anaesthetics and secondly, to promote and encourage friendly relations among the members; these objects to be obtained by means of debates, discussions or by the reading of short papers.” At the Society’s first dinner Dudley Buxton added that it would ‘provide a focus for good scientific work in anaesthesia and a common meeting place for anaesthetists living in different places.’ These were the explicitly stated aims but I hope to show you that there were other, unstated, objectives. As we have seen, the practice of anaesthesia lacked κύδος, and because little or no prestige attached to the practice of anaesthesia, its practitioners also lacked status. The unstated aims of the Society, as I hope to show you, were intended to correct these deficiencies. To this end the founders began by defining their specialty and, having done so, the members then worked hard to promote it.

**Defining the Specialty**

*How* does one define, delineate or demarcate a specialty? First and foremost one founds a society (or, even perhaps, a college) as Frederick Silk, the prime mover behind the founding of the Society and his colleagues on the Provisional Committee, did in 1893; and because you wish to use your society to demarcate a specialty, you then have to define a specialist. One way of doing this is to limit membership to those who have passed an appropriate examination but, because the first examination in anaesthesia, the Diploma of Anaesthesia, would not be introduced until 1935 Silk and his colleagues determined that “Duly qualified Medical Men, holding or having held office as Anaesthetists at a recognised Public Institution, shall be eligible for nomination as Ordinary Members.” Moreover candidates had to be nominated by at least two
members who had personal knowledge of the candidate and, even then, confirmation of membership was subject to approval by the Society’s Council. Membership was clearly intended to be a privilege, jealously guarded and not for every Tom, Dick or Harry, nor indeed for every Thomasina, Richella or Henrietta. I shall return later to subsequent relaxations in the criteria for membership, but as I wrote last year about the problems faced by the ladies I shall make little further mention of those in this lecture.

A specialist journal was sometimes used to define the territory of a specialty but more often it was used to promote the specialty’s image and I will consider the Society’s Transactions under this latter heading later. The Holy Grails which provided the official stamp of specialist recognition were either a Royal Charter or legislation. Royal Charters are the icing on the cake. They are only granted after the specialty is already clearly recognised and established. Legislation is an uncertain route and one that caused considerable dissension among anaesthetists in the pages of the Lancet when Frederick Hewitt tried to promote a Bill to limit the administration of anaesthesia to registered medical practitioners in 1909a.

Stephanie Snow has suggested that technology became the means by which specialists came to exert control over the administration of anaesthesia.29 Increasing mastery of ever more sophisticated technology was certainly to become a defining feature of progress in anaesthesia as the twentieth century progressed, but it was by no means an important component at an earlier time when many, perhaps most, anaesthetics outside the teaching hospitals were given with nothing more sophisticated than lint on a wire mask and a dropper bottle. Had more technical expertise been required, the governors of the Worcester General Infirmary could not so easily have dispensed with the services of their one specialist anaesthetist. As Stephanie Snow did in fact recognise, the

\[\text{\textsuperscript{a}}\text{ Between 1909-11 the Lancet published 32 articles and letters on the medical and legislative issues relating to Hewitt’s Bill which was eventually lost through lack of parliamentary time.}\]
anaesthetists of the late nineteenth and early twentieth centuries
did not base their case for specialist recognition on their
technological expertise or on their ability to operate the many new
items of equipment which they described at meetings of the
Society or in the journals. Rather they founded their case on their
extensive knowledge of the properties of the different anaesthetic
agents and, most especially, on their experience and expertise in
choosing the most appropriate agent, or mixtures of agents, for an
individual patient who was the subject of any one of the ever
increasing variety of operations, each of which had differing
requirements for anaesthesia. This was a wise decision for a
group which was seeking to enhance its professional status.
Knowledge is the perquisite of the educated person, whereas
apparatus and tools are more closely associated with the artisan
and with trade. The choice of agent or agents and the most
appropriate method of administration were to be the subjects of
much of the discussion at the Society’s meetings.

Promoting the Specialty

Having demarcated and delineated your specialty you must then
promote it until it is firmly established, in this instance by ensuring
that the Society of Anaesthetists, its existence and its works are
kept constantly in the consciousness of professional colleagues and
ideally also in the public mind as well. The meetings of the Society
were advertised in the weekly columns of the Lancet and British
Medical Journal alongside those of other specialist and general
societies. The meetings were also well reported, even if not as
thoroughly as the Council might have wished. By my reckoning
the Lancet reported 56 (or 72 per cent) of the Society’s 78
meetings. Although I have not made quantitative comparisons
with coverage of other specialist societies, my impression is that
the anaesthetists were getting their full share of coverage, if not
perhaps a little more. Some reports were only a dozen lines or so,
but many meetings received a whole column or even a whole page.
Harcourt’s paper on a new chloroform regulator, together with the
discussion, occupied three and half pages in 1903 and five
lectures were published as full papers under the authors’ names. Buxton’s landmark paper on ‘Empiricism or Science? - Anaesthetics 1847-1897’ was given seven and a half pages in the Lancet.\textsuperscript{32}

In addition to the reports of its meetings, the Society was mentioned in the Lancet on at least another twenty-seven occasions, sometimes in prominent editorials. Coverage in the British Medical Journal was not quite as extensive as in the Lancet but was still significant. The journals referred to the Society’s influence in persuading the Royal College of Surgeons and the Society of Apothecaries to recognise anaesthesia in the curricula for their qualifying examinations\textsuperscript{33,34} and Silk described how it was

\begin{quote}
“through the action of prominent members of the Society [that] the University of London was led to recognize the claims of the Anaesthetist to be placed upon the lists of University Teachers and members of the Medical Faculty”.\textsuperscript{27}
\end{quote}

The Society’s efforts to persuade the GMC to make anaesthesia a compulsory subject in the medical curriculum (to be discussed later) were unsuccessful but they attracted favourable notice in the major journals.\textsuperscript{35,36,37} When the Lancet reported that Buxton’s evidence to the Royal Commission on Vivisection had been given as ‘the representative’ of the Society, it must have come as music to the members’ ears.\textsuperscript{38} There can be no doubt therefore that the existence of the Society raised the profile of the specialty to an extent which would not have occurred otherwise.

In 1895 the Council saw the annual BMA meeting, to be held that year in London, as another opportunity to promote the Society’s existence and purpose. In March a letter was sent to all members asking if they could arrange to give demonstrations of the administration of anaesthesia in their hospitals while the meeting was being held, whether they could loan any instruments or apparatus to an exhibition or deliver short papers on the subject.\textsuperscript{25} The response is not recorded but Silk was asked to “fit out’ the Society’s room at the BMA meeting. However, there was no
mention of the Society’s efforts in the *British Medical Journal*’s
reports of the meeting and no record of the Society attempting to
repeat the exercise.

In 1896 the Society was slow to exploit the opportunities
presented by the fiftieth anniversary of Morton’s ether
demonstration at the Massachusetts General Hospital in Boston. A
proposal to mark the anniversary with a *conversazione* is first
mentioned in the Minutes in July and then on 8\textsuperscript{th} October, just
eight days before the anniversary, the Minutes record that it had
proved impossible to raise sufficient funds to commemorate the
event “in a fitting and suitable manner”. Instead members were now to
be asked their views on commemorating the fiftieth anniversary of
the introduction of chloroform.\textsuperscript{25} The President, G Hewlett Bailey,
referred to the ether jubilee in his speech at the Society’s Annual
Dinner on 15\textsuperscript{th} October, the eve of the ether anniversary and
announced that planning for the chloroform jubilee would begin in
December, nearly a year before the event.\textsuperscript{39}

What had been a missed opportunity now threatened to turn into a
public relations disaster. An editorial on the ether jubilee in the
*Practitioner* suggested that “The Society of Anaesthetists has suddenly
awakened, almost at the last moment, to the fact that the fitness of things
demands that it should do something to commemorate the event.”\textsuperscript{40}

Meanwhile the *British Medical Journal*, in its report on the
celebrations in Boston, noted that the event had begun with the
reading of congratulatory telegrams, including one from the
Moscow Surgical Society which had assembled specially to mark
the occasion.

“Would it not [asked the *British Medical Journal*] have been a
graceful act of international courtesy if our own Society of
Anaesthetists, which had also assembled in a special meeting -
around the dinner table - on the evening before, had sent a
similar message?”\textsuperscript{41}
An anonymous member of the Society tried to exonerate it by suggesting, perhaps unwisely, that he was not aware that any of the Society’s members had

“received an official invitation to or even an intimation of the Boston celebration and I very much doubt whether any [of those present at the Society’s dinner] could have given the date of the Boston function.”

Adding that that the “question of international courtesy need not concern us”, he thought it “only right and proper” that the celebrations to commemorate

“this magnificent discovery should be held in Boston but that it must not be forgotten that the chloroform jubilee was due in 1897 and he hoped that both anaesthetists and surgeons would combine in paying homage to the memory of Sir James Simpson.”

The Society’s officers must now have felt under some pressure to ensure that the chloroform jubilee celebrations were a success. In January 1897 a subcommittee recommended that the commemoration should consist of an oration and a conversazione, and that a fund of £100 be raised to finance the event. It was also decided to invite Sir Joseph Lister to deliver the oration. The Society was aiming high. No doctor in the country had a higher profile or was more respected than Sir Joseph and, even if his views on anaesthesia did not coincide with those of many of the Society’s members, he had published on the subject over many years. However Sir Joseph replied that he could not accept the invitation because he failed to see why a chloroform commemoration was necessary as it was quite secondary to the discovery of anaesthesia with ether.

The Council now decided that the oration would be delivered by the president or past president of the Society and all members were asked to subscribe to the Jubilee Commemoration Fund. It was perhaps only at this time that the Council began to realise that there was no great enthusiasm for the idea among some of the
membership because, at this late stage, they decided to ballot members on the proposal. The results were not encouraging. Fifteen were in favour, five of them (including Buxton) strongly so, but six were against, twenty-two were indifferent and three did not reply. Nevertheless Council decided to proceed. By mid March they had raised £72 with promises of a further £20. Plans were announced to send out 1000 invitations, even though it had previously decided that

“the amount of room at the disposal of the Society did not permit the extension of invitations to ladies except those who are members of the profession.”

In the event Dudley Buxton did the Society proud with his paper on “Empiricism or Science?” and the occasion made a surplus of £27 11s 8d which was used to start a library and museum. One of those who attended the conversazione was A.E. Sansom who had carried out research on chloroform in the 1860s. His interests had subsequently moved elsewhere and he was never a member of the Society, but he had lent instruments for the Society’s exhibition in 1897 and subsequently offered them to the museum. The criticism which had been directed at the Society over the ether anniversary evidently still rankled because, at the annual dinner, Buxton claimed that it had been better not to have had a “rival demonstration” to the one in America.

Also in 1897 the Council hoped to enhance the Society’s standing by inviting the presidents of the Royal Colleges of Physicians and Surgeons to attend the annual Dinner as guests of the Society. In the event neither was able to accept, perhaps not surprising as the invitations were issued only two weeks before the event. However Sir Henry Howse, the President of the Royal College of Surgeons, did accept the invitation in 1902. In 1905 Council again resolved to invite the President of the Royal College of Surgeons, or T. Lauder Brunton if the former was unavailable, but no record of those attending the dinner has survived, either in the Society’s archives or in the journals.
When I first saw the attendance records at the Society’s meetings I was surprised by the large number of visitors. The average attendance over 78 meetings was 21 of whom, on average, five were visitors; so that visitors accounted for 25 per cent of total attendance, more than at any society to which I have ever belonged. Many of the visitors came as the guests of existing members but, when the subject under discussion was one of wider interest, the notice in the journals sometimes indicated that the meeting was open to any members of the profession who presented their visiting cards at the door. So this was yet another method by which the Society promoted its existence and its work to those outside the specialty and also to those anaesthetists who were not yet members. As membership required not only nomination by two existing members but also the approval of Council, the visitor system provided a mechanism whereby potential candidates could meet Council members. Thus Mary Scharlieb first came to a meeting as the guest of Walter Tyrrell and a few years later Louisa Brandreth Aldrich-Blake attended the Annual Meeting and Dinner as a guest of Mary Scharlieb before becoming a member the following year. Alfred Goodman Levy seems to have had some difficulty deciding whether he wished to join because he came as a guest on five occasions, before joining in 1904, but then resigned after just two years. Some of the guests were distinguished men like Sir Jonathan Hutchinson and Sir Frederick Treves. When the Oxford chemist Augustus Vernon Harcourt (who was not a member) was invited to talk about his chloroform regulator, the meeting also attracted another non-member, the physiologist AD Waller who was already well known for his pioneering work on the electrocardiogram. The presence of these eminent men must have lent prestige to the Society and contributed to the status of its members as they aspired to that already enjoyed by physicians and surgeons.

Bernard Spilsbury attended the two meetings on status lymphaticus in 1907-8, but this was only two years after he had been appointed resident assistant pathologist at St Mary’s Hospital and two years before his name first came to public prominence when he gave evidence at the trial of Dr Crippen.
The Society’s Transactions - and the importance attached to them.

Silk tells us that the reporting of the Society’s meetings in the medical journals “proved very unsatisfactory, and after sundry alternatives had been tried, it was finally decided to undertake the publication of an annual volume of ‘Transactions’.”²⁷ He does not say in what way the journal reports had been unsatisfactory and nor does he explain the “sundry alternatives”. At the Council meeting on 16th January 1896 Dr Buxton had drawn attention to “an inaccurate report of the discussion at the last meeting” and noted that a reporter had been present without the permission of Council. This related to a report in the Medical Press and Circular of a paper by Dr. Carter of Weymouth on the administration of chloroform and ether.⁴⁷ A letter was sent to the editor who denied any impropriety, but in February 1896 the minutes record that he had agreed to correct the name of the president (the name given was that of the former president who had demitted office a few months earlier).²⁵ The inaccuracies in the report of the discussion are not mentioned and are not apparent from reading the report. Nor is there any evidence that the editor ever did correct the name of the editor. Council agreed to Buxton’s proposal that the Society employ its own reporter in future.

Having its own journal gave the Society control over what was written in it, but reports continued to appear in the weekly journals in which there were further instances of inaccurate reporting but they were infrequent and of minor significance.⁴⁸ ⁴⁹ ⁵⁰ The dispute with the editor of the Medical Press and Circular does illustrate how sensitive members were to what were perceived as infringements of accuracy and etiquette at a time when they were seeking to project an image of specialism and professionalism. Buxton seems to have been especially conscious of etiquette and propriety, having previously drawn attention in December 1895 to a breach of what he had understood to be a confidential discussion in Council and which subsequently came to the attention of other members of the Society.²⁵
Buxton, who had been the main instigator of the move to publish the Society’s own Transactions,27 claimed that they enabled members “to focus their work and supply a ready means for referring to valuable papers, discussions, &c., which had been given during the year.”51 However there were also disadvantages. Papers were not published until a year or more after they had been presented and the expense proved to be a considerable drain on the Society’s finances. Yet so much importance did the Council attach to their continued publication that the membership rules were relaxed to generate additional income in order to finance the Transactions. The original requirement to have held office as an anaesthetist at a recognised public institution had already been widened in June 1894 to include those who were “in bona fide practice as anaesthetists” and in May 1899 the rules were further relaxed to include all those who were “in practice as anaesthetists, or specially interested in the subject of anaesthetics.”25 In the Annual Report for 1900 both the Council and the Treasurer urged existing members to recruit new members for the specific purpose of generating income to maintain publication of the Transactions

“which have been so much appreciated both at home and abroad” and which were “so very valuable, and so creditable to the Society, that nothing but absolute necessity would, in the opinion of Council, warrant its discontinuance . . .”52

The recruitment drive was successful and the membership increased by fifty per cent from 68 in 1899-1900 to 103 by 1908. Even so the Council was still obliged to economise by twice publishing two years of the Transactions in a single volume, so that no Transactions appeared in 1904 or 1906.

In the third volume of the Transactions the Council claimed that the medical journals had now stopped giving full reports of the Society’s meetings and that, in consequence, attendance by members at meetings had increased. In fact the reporting by the Lancet and the BMJ does not appear to have changed and, although the numbers attending meetings did indeed rise, the increase
paralleled that in membership so that, when expressed as a percentage of the membership, attendance remained stable.

The minutes of the Council meeting in July 1898 show that copies of the Transactions were sent not only to members but also to the Lancet, British Medical Journal, Medical Press and Circular, to journals in Edinburgh, Glasgow, Dublin, the USA, Canada, Australia, Germany, France and Switzerland, to the Royal Colleges of Physicians and Surgeons, to the Royal Medical and Chirurgical Society and to the Odontological Society. In October 1903, when the Society had 93 members, the Council ordered 150 copies of the next volume of the Transactions, so about one third of the print run was intended for non-members. Clearly the intention was to broadcast far and wide the Society’s existence and its work. The prestige which derived from publishing the Society’s own Transactions was permitted not only to threaten the Society’s financial viability but also to dictate the Society’s membership criteria which had originally been used to define the specialty itself.

The Society’s Council was evidently now in confident mood: confident that the Society could weather its financial difficulties and confident that the specialty had by now been defined and promoted. The aim now was its further promotion. At first sight it seems paradoxical that the members were soon to decide that this aim could best be achieved by dissolving the Society.

But first there are other questions to be asked. To what extent was the Society a national one; why did non-attenders join the Society and how did the Society meet its aim of encouraging friendly relations within the Society?

A National Society?

Douglas Howat suggested that the name “London Society of Anaesthetists”, which sometimes appeared in other journals, had always been a misnomer because the Society had, from its origins, drawn its membership from the provinces as well as from London. However the majority of the membership was always London-based. Eighty per cent (32/40) of the original members
lived in London and from 1900 to 1908 the percentage of London-based members varied between 62 and 72 per cent. Moreover the Society followed the practice of most London-based societies by holding all its meetings in the metropolis on weekday evenings. The Society’s meetings were scheduled to start at 8.30 pm and to last for one hour (longer by agreement on the evening) on a Thursday and then, at a later date, on Friday evenings during the winter months from November to March. This must have been a significant disincentive for many members and potential members in the provinces. All of the Society’s eight presidents lived in London at the time of holding office. The domination of the Society by London-based members, as evidenced by attendance at meetings, was even greater than the membership figures alone would suggest. Membership names and addresses are available in the Society’s Transactions from 1898-99 so I have examined attendance registers from 17 November 1898 to 28 April 1908 (the last meeting). During this period 782 people signed in as members. Excluding five names which do not appear in the membership lists (and were probably visitors signing in the wrong column) and ten signatures which are illegible, 82 members attended on 767 occasions at 49 meetings. Sixty nine members (84.1 per cent) had London addresses and 13 (15.9 per cent) did not. In fact the London dominance is even more marked than these figures would suggest because London members attended more frequently than did provincial members. If we look at the numbers attending rather than at individual members, we find that 692 had London addresses (90.2 per cent) and 75 (9.8 per cent) did not. Even these figures do not give the full picture because the majority of attendances by provincial members (55/75 or 73 per cent) are accounted for by just two members, Dr Starling of Tunbridge Wells and Dr McCardie of Birmingham. If these members are excluded then London members accounted for 97.2 per cent (692/712) of all attendances. The Society of Anaesthetists was, in essence, a London Society.
Why did non-attenders join the Society?

During the last five years of the Society’s existence there were 130 members, of whom only 70, or perhaps 80 to take account of the illegible signatures, attended a meeting during this time; so there were 50 or 60 members who never attended a meeting. Apart from copies of the *Transactions*, what did these doctors gain from being members? At the time it was the only way of demonstrating an official recognition of one’s status as a specialist anaesthetist. Thus, in May 1893, William Fingland of Liverpool wrote to complain that his name had been omitted from the list of original members. Fingland described himself as the first “pure anaesthetist” in Liverpool, by which he presumably meant that he regarded himself as the first specialist anaesthetist in the city. He continued: “It is of the greatest importance to me to possess some official recognition of my previous determination to pursue anaesthetics as a pure specialty, that is to say when a Society like ours actually exists.” The Provisional Committee wrote to reassure him that it was only by an oversight that his name had been omitted. Of 103 members in 1908, 95 had entries in the *Medical Directory* and of these 77 (81 per cent) mentioned membership of the Society in their entries. Provincial members were slightly more likely to mention membership than were the London members (26/30 or 87% v. 51/65 or 79%). Of those who did not mention their membership, all gave their appointments as anaesthetists at major hospitals and some listed several publications on anaesthesia.

Promoting friendly relations

The second of the Society’s stated aims was to promote friendly relations among members. The Society’s annual dinners contributed to this aim and they shed some light on the social life of members. From 1893 until 1898 the dinners were held at Limmer’s Hotel in Conduit Street. At one time this hotel had a rather dubious reputation, being much patronised by the racing fraternity and, though Americans might disagree, as the reputed home of the Tom Collins gin cocktail. In 1879 it was recommended in one guidebook as “chiefly for bachelors”, so was
perhaps a surprising choice after the Society had elected its first women members in 1894.\textsuperscript{53} A successful first dinner in 1893 culminated with music and recitations supplied by friends of Dudley Buxton,\textsuperscript{26} a formula which was repeated on several occasions. Guest surgeons either teased their anaesthetist hosts or said kind things about them and the latter reciprocated in like manner. For example, in 1904 Mr P.J. Freyer (surgeon) and Mr C. Carter Braine (anaesthetist) were able to agree that a good anaesthetist was “one who kept his eyes and ears open and his mouth closed”.\textsuperscript{54} One of the musicians who regularly attended as a guest of Buxton was Herbert William Schartau (1858-1915) who specialised in arrangements of old English folk songs, forty one of which are to be found in the catalogue of the British Library. There are only two mentions of medical topics in the reports of speeches given at the dinner. These were the tantalisingly brief statements attributed to C. Carter Braine in 1904 that “... the dangers to be overcome by the anaesthetist were increasing year by year” and that “Full notes of all administrations should be kept.”\textsuperscript{54}

The dinner at Limmer’s cost 10s 6d per head, the hire of a Steinway piano was one guinea and Schartau’s fee was 2 gns. In 1899 Council decided that the dinner be moved to the Café Monico as its rooms in Shaftesbury Avenue, were thought to be “more convenient”,\textsuperscript{46} but perhaps it was because the cost of the dinner was only 7s per head, though Schartau’s fee had more than doubled to 5 gns. The sumptuous Café Monico had opened in 1877 and survived until the 1950s.\textsuperscript{55} In 1904 the dinner was held at Auguste Oddenino’s Imperial Restaurant in Regent Street. This was, if anything, even grander than the Café Monico but perhaps it was also more expensive because by 1907 the dinner had returned to the Monico. The choice of such prestigious restaurants is itself a statement of the status to which members thought themselves entitled.

The Society’s aim of promoting harmonious relationships among its members was not always successful. The name of Frederick Hewitt, one of the foremost anaesthetists of his day, is
conspicuous by its absence from most of the Society’s proceedings. He had been a member of the original steering committee and attended all the Society’s meetings in 1893, half of those in 1894 and again in 1895 but, after attending the meeting on 16th January 1896, his name disappears from the records. The reason almost certainly lies in a bitter dispute with Frederick Silk which has been documented by Douglas Howat.56

H Bellamy Gardner, an anaesthetist at Charing Cross Hospital, was active in the Society and presented a paper to its members on 17th March 1899 but then resigned on 17th November. The reason is not known but his abrupt departure suggests the possibility of a disagreement with another member. Somewhat paradoxically those who resigned from the Society continued to discuss anaesthesia together in other fora. For example in 1904 Hewitt, Bellamy Gardner and Lawrie, all of them former members of the Society, took part in a discussion on chloroform anaesthesia, under the aegis of the Royal Medical and Chirurgical Society, with Silk, Blumfeld, Buxton, Carter Braine, Herbert Scharlieb, Willett and Levy, all of whom were members of the Society at the time, and five others (Brunton, Horsley, Chapman, Eve and Rowell) who were never members though at least two had attended the Society’s meetings as visitors or guests.57 Why someone like George Rowell who was senior anaesthetist at Guy’s Hospital and Demonstrator of Anaesthetics in its medical school should not have joined the Society is unknown.

The beginning of the end

In July 1905 the Society was one of more than twenty London-based societies which were approached by the Royal Medical and Chirurgical Society with a view to amalgamation.58 It is evident that the Society’s Council saw potential benefits in becoming a ‘Section’ in a much larger organisation but how those benefits were perceived are not described in the surviving Minutes.25 However it does seem probable that the reasons were again related to status and also to a fear of isolation. As fellows of the new society, the male anaesthetists would be entitled to attend meetings of any of
the Sections on equal terms with physicians, surgeons, laryngologists, obstetricians, neurologists, dermatologists and others. As an isolated Society, their status would be less certain. However the members did have two major areas of concern which had to be considered further before they were prepared to join the new society. Firstly, as I described last year, Council members initially objected to the proposal to bar women from the Fellowship of the new society, allowing them only to become members of the individual specialist Sections. Secondly Council asked for further information regarding the autonomy of the proposed Sections.

The apprehensions expressed by Council members were reflected in a ballot of the Society’s membership in October 1905, and Dr Probyn Williams, the Society’s Treasurer who was leading the negotiations, wrote to the secretary of the Committee for Amalgamation on 7th December to inform him of the Society’s concerns which were also expressed by five other societies involved in the negotiations. After prolonged discussion, the Society of Anaesthetists decided not to join the new Royal Society of Medicine (RSM) when it was formed in June 1907. However negotiations were reopened in March 1908 and three successful meetings were held with the RSM over the next two weeks. As a result, the last meeting of the Society of Anaesthetists was held on 28th April 1908. The consequences for its lady members have already been described. It is not clear from the minutes what assurances had been given about the autonomy of the new Section of Anaesthetics but, on 25th May 1908, the RSM gave its receipt for the balance of the Society’s funds and the Section of Anaesthetics came into existence on 12th June 1908. It met for the first time on 6th November 1908.

The decision to become a Section of the RSM may well have contributed to the specialty’s international standing when, for the first time, it was given its own Section, with Buxton as chairman, at an International Medical Congress in 1913.
The Society’s Meetings - 1893-1908

Young gave a detailed list of nearly all the topics which were discussed by the Society of Anaesthetists during the sixteen years of its existence, while Dinnick provided a useful summary and categorisation of the more important ones. Dinnick thought that only through its failure to recognise European developments in regional anaesthesia could the Society be said to have lagged behind the cutting edge of progress in anaesthesia, though he noted that there had been a paper and discussion on spinal anaesthesia at the Society’s final meeting in March 1908. Perhaps it is not so surprising that this topic attracted little attention from British anaesthetists. Alfred Lee suggested that regional and particularly spinal anaesthesia were slow to become established in the United Kingdom because the standards of general anaesthesia were much superior to those in much of mainland Europe where it was more often given by inexperienced administrators, some of whom were not even medically qualified. At this time the great proponent of regional anaesthesia in England was a surgeon, A.E.J. Barker, and Lee noted with wry amusement how Barker expressed concern about the technique of spinal anaesthesia “drifting into the hands of professional anaesthetists” because he thought it preferable that the injections should be given by a surgeon. It is not therefore surprising that the Society of Anaesthetists should have paid little attention to what was seen in Britain at the time as being surgical territory. Lacking anyone among their own members who could speak on the subject in 1908 they sought a surgeon to do so. The acknowledged expert, Barker, had been complimentary about anaesthetists when he spoke at the Society’s annual dinner in 1903 but, after his recent comments on spinal anaesthesia, was probably now “beyond the pale” in the eyes of “professional anaesthetists”. Instead they chose Percy Dean, the mercurial star of the London Hospital whose life was so soon to be blighted by the profound melancholia which followed the death of his beloved wife and his only child from acute tuberculosis in 1912.
Members did not confine themselves to clinical and scientific matters. Student education was high on the Society’s list of priorities because most members believed that improved instruction in the administration of anaesthesia would help to reduce deaths attributable to anaesthesia. When Dudley Buxton read a paper on the advisability of including anaesthesia as a compulsory subject in the medical curriculum in April 1901, eleven of the nineteen members who were present joined in the discussion. 69 Several of them endorsed Buxton’s suggestion of an approach to the GMC. However the president, Frederick Silk, was hesitant, suggesting that notice was required before such a resolution could be entertained, and that such an approach would be “hedged with so many difficulties . . . that it would not be expedient yet to make any pronouncement on the subject.” Despite Silk’s reservations it was agreed that Council bring the matter to the notice of the GMC.

Silk’s apparent reluctance is surprising because he had long been an enthusiastic evangelist for improved student education on anaesthesia and ten years earlier had delivered a major paper on this subject. 70 The Society’s Council did eventually make representations to the GMC, only to be told that the Council’s Education Committee

“fully appreciate the importance of proper teaching on the subject of anaesthetics; but they are of opinion that it is not expedient that it should be compulsorily included as a separate subject of the medical curriculum.” 71

Although unsuccessful on this occasion, the Society’s initiative did attract some favourable notice, as described earlier.

Buxton and Silk had disagreed previously in Council in March 1896 when Buxton had proposed a standing committee of the Society to investigate deaths under anaesthesia but Silk wanted a separate committee to investigate each death. The proposal was torpedoed by Dr Starling of Tunbridge Wells who was concerned that it might reflect badly on the anaesthetist if the reports of such
investigations became public. Buxton was obliged to settle for an emasculated committee “...for the investigation of any case of interest brought before the Society”, and thereafter the proposal appears to have sunk without trace. Death associated with anaesthesia was to become a sensitive and potentially contentious topic among doctors a few years later when coroners began to hold more frequent inquests into postoperative deaths. The subject reflects the sensitivities associated with professional etiquette and reputations, sensitivities which continued in discussions in the Section of Anaesthetics.

At this point I must remind you of the curious incident of the dog in the night. Followers of Dr Arthur Conan Doyle will recall that in the story of Silver Blaze Inspector Gregory asks Sherlock Holmes “Is there any other point to which you would wish to draw my attention?”

Holmes replies "To the curious incident of the dog in the night-time.” “The dog did nothing in the night-time.” replied Gregory. “That was the curious incident” said Holmes. What is not said or not discussed can be as revealing as what is, sometimes even more so. For example, the Society avoided any discussion about doctors who gave anaesthesia for unregistered dentists or for bone setters “as being rather dangerous ground”. This is a fascinating subject to which I hope to return on another occasion.

Conclusions

In conclusion, I hope I have shown you that historical methodology is not so very different from scientific methodology, though each has its own pitfalls. The essence of both disciplines is a clear and, ideally, an unambiguous understanding of the available evidence and of its validity, followed by a structured interrogation of that evidence and an attempt to set the findings in the wider context of the time.

Underpinning the founding of the Society of Anaesthetists was the definition of what constituted a specialist anaesthetist. This, in turn, defined the specialty itself; and so the founding of the Society was, quite literally, a defining moment.
Because this defining moment occurred at a time when all professions were particularly conscious of their own status, the members of this new society were keen to establish and to enhance their own status within the hierarchy of the medical disciplines. This process was all the more important because anaesthesia was still such a young specialty. Most medical specialties emerge over time, evolving out of existing specialties, but anaesthesia arose almost *de novo*. The specialty had to develop its own culture and to establish its own position within an existing hierarchy of medical specialties. By founding the Society, Silk and his colleagues on the Provisional Committee contributed to the establishment of anaesthesia as a recognised specialty in Britain and its colonies long before it was accepted as such in other countries. It was a momentous achievement.

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Book Review:


Michael G Cooper, Christine M Ball and Jeanette R Thirwell, eds.


At just short of 800 pages containing 104 papers from 105 authors, this book is no lightweight but what a wealth of information! Every four years or so since 1982 devotees of the history of anaesthesia have gathered together to present and place their researches in the public domain. This is now the eighth book in the series, being the papers delivered at each symposium.

The Symposia held in Sydney and Melbourne has given us some excellent papers on an extremely wide range of subjects, from the mainstream to the obscure, but all of interest. The papers are grouped into symposia of half a dozen or so on related subjects.

This is not a book to read cover to cover but to savour the individual papers for their fascinating facts and insights, one at a time. Collectively the book represents many hours of research throughout the world that is now made easily accessible and everyone will find something to inspire or help his or her own understanding.

Should one buy this book? For the anaesthetic historian, it is a must but for others it will be interesting and informative reading. Hopefully it will find its way into the departmental or hospital library where it can be used for reference or just read for pleasure.

I. T. Houghton