

THE HISTORY OF
ANAESTHESIA SOCIETY
PROCEEDINGS



Volume 29

Proceedings of the meeting in Edinburgh
29th and 30th June 2001

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History of Anaesthesia Society Summer Meeting

Edinburgh, 29-30 June 2001

Dr Jean Horton
Dr Alistair McKenzie
Dr David Wright

The meeting was generously supported by:
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Proceedings of the History Of Anaesthesia Society

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The Society acknowledges with thanks the Meeting photographs taken
by Dr Geoff Hall-Davies of Birmingham

Editorial

The last time the Society met in Edinburgh in 1989 it was a joint event with the Scottish Society of Anaesthetists, and was broadly based, with Aberdeen, Dumfries, Dundee, and Glasgow getting a mention. There was a paper on James Young Simpson, but on this occasion Simpson was much more to the fore.

We had a paper by Dr Anthony Newsom from New Zealand about two of Simpson's letters lying fallow in the Royal Australian College of Surgeons, and Peter Worling, President of the British Society for the History of Pharmacy, spoke of Simpson's relations with Duncan Flockhart in the production of chloroform. Neil Adams and Roger Maltby continued a debate, initiated at the London meeting by Professor Russell (see Vol 28), about religious objections to the use of chloroform. John Burnett, of the National Museums of Scotland, in the Guest Lecture, gave us an anthropological insight, which would have been new to most of us, into Simpson's social standing as a University Professor.

In addition we had a tour of Simpson-related sights which included his grave, now recovering from a period of neglect, and two of his houses: Trinity, overlooking the Firth of Forth, and 52 Queen Street. We are grateful to the present owners of Simpson's 'country house' for tolerating fifty or so members wandering around the garden, and to representatives of the Simpson family for acting as guides.

Other papers with an Edinburgh connection were by Ian Verner on Charles Alston, an 18th century Professor of Medicine and Botany, who grew poppies and produced opium at Holyrood House; by Jimmy Payne, who with Alistair Masson continued the story begun in Cambridge, of the debt owed by anaesthesia to the Edinburgh Dental School; and by Alistair McKenzie, on the supine hypotensive syndrome, much of the early work on which was done in Edinburgh. Frank Holmes, one of those workers, was present for this talk.

Also with a Scottish connection was Iain Levack's account of the first anaesthetic litigation in Scotland in 1902. Other papers were Douglas Howat's description of Fanny Burney's mastectomy without anaesthesia, and Adrian Padfield's review of 50 years of chair dental general anaesthetics.

Professor Clarke, besides emphasising close relations between Northern Ireland and Scotland, remarked that there was much material still to be unearthed on the early days of anaesthesia. The correspondence column in this volume, to which we would welcome more contributions, is evidence of that. That anaesthetic references can be found in unexpected places is shown by the extract from Mrs Beeton's classic volume, found by the alert Adrian Kuipers.

Congratulations to Alistair McKenzie and his committee on a very interesting meeting.

PMED

The restoration of Sir James Young Simpson's grave at Warriston cemetery



Early on in planning the Summer Meeting in Edinburgh it was hoped to include a visit to the Simpson family tomb. Knowing that this was badly in need of restoration, I inspected the site in February 2000 with Mr George Bell of the City of Edinburgh Council, which had acquired Warriston cemetery by compulsory purchase in 1994. Then I obtained an initial quotation from Robertson Memorials. HAS Council agreed to underwrite initial costs and with their encouragement I approached several Royal Colleges for sponsorship. Next, I contacted Simpson family members, namely Dr Roderick Cameron and Mr David Cameron, an architect-planner. These two brothers are great-great-grand nephews of JYS and they obtained the approval of other family members. David Cameron, myself and Mr Jim Walker of Robertson Memorials met at the monument and discussed the restoration in detail. Following quotations, the following work was done in October: realignment of the coping stones, pointing of joints with lime putty mortar, and replacement of turf at the base of the obelisk with membrane covered by gravel chips. David Cameron kept an eye on the work and gave helpful advice.

In March 2001 I negotiated successfully for further funding to improve the steep pathway at the side of the monument, by exposing the existing brick steps and laying concrete slabs with mortar. This was completed by Robertson Memorials in May.

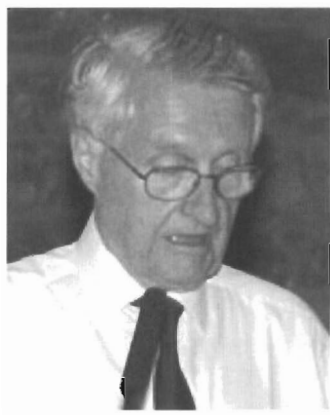
It is gratifying that HAS was able to cooperate with the Simpson family and the Royal Colleges to achieve a very noticeable restoration, which was long overdue. The total cost of £2,439 was shared by the History of Anaesthesia Society, The Royal College of Anaesthetists, The Royal College of Obstetricians & Gynaecologists, the Royal College of Physicians of Edinburgh and the Royal College of Surgeons of Edinburgh. I am very grateful for the courteous attention I received from the Simpson family and the Royal Colleges.

Meeting of the History of Anaesthesia Society in Edinburgh on 29-30 June 2001

Participants

Dr C Adam	Leven, Fife	Dr S W McGowan	Dundee
Dr A K Adams CBE	Cambridge	Dr A G McKenzie	Edinburgh
Dr C N Adams	Bury St Edmunds	Dr C A B McLaren	Wootton Bassett
Dr E N Armitage	Hassocks	Dr I McLellan	Leicester
Dr A M Barr	Reading	Dr I Middlemass	Edinburgh
Dr M Barton	London	Dr P Morris	Leicester
Dr F E Bennetts	Christchurch	Dr A Murray	Liverpool
Dr R C Birt	Rochford	Dr A Newson	Auckland
Dr J Blizzard	Chelmsford	Dr A Padfield	Sheffield
Prof R I Bodman	Cork	Prof J P Payne	London
Dr T B Boulton OBE	Reading	Dr Y Pole	Manchester
Prof R S J Clarke	Belfast	Dr J Pring	Penzance
Dr A Delvaux	Edinburgh	Dr I Rattray MBE	Aberdeen
Dr P Drury	Liverpool	Dr A-M Rollin	Epsom
Dr E P Gibbs	Billericay	Dr N Rose	Ledbury
Dr G Hall-Davies	Birmingham	Dr M Rucklidge	Lancaster
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Dr D D C Howat	London	Prof D Vermeulen-Cranch CBE	Amsterdam
Mrs J Howat	London	Dr I R Verner	Froxfield
Dr R Irvine	Sutton	Dr B M Q Weaver	Winscombe
Dr D M Jackson	Swindon	Dr D C White	Beaconsfield
Dr L Jakt	Truro	Prof J A W Wildsmith	Dundee
Dr A Kuipers	Shrewsbury	Mrs P Willis	London
Dr I Levack	Dundee	Mr J Willis	London
Prof J R Maltby	Calgary, Canada	Dr D Wright	Edinburgh
Dr D McCallum	Edinburgh	Dr D Zuck	London
Dr J McClure	Edinburgh		

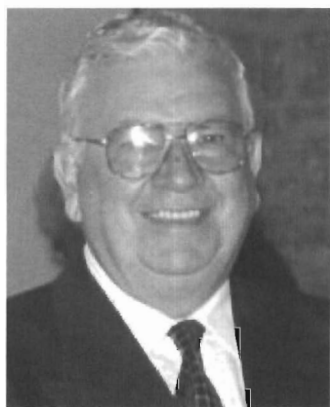
Speakers at the Edinburgh Meeting



Dr D D C Howat



Dr I Verner



Dr A J Newson



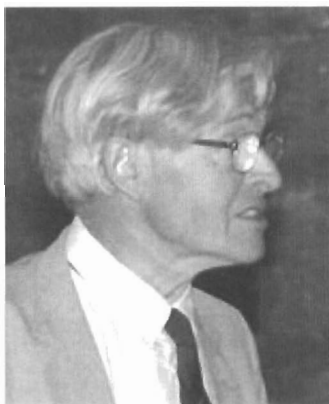
Dr P M Worling



Dr C N Adams



Professor J R Maltby



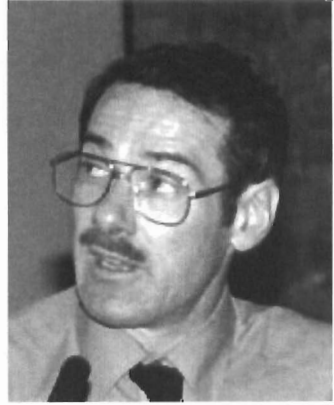
Professor R S J Clarke



Dr I D Levack



Professor J P Payne



Dr A G McKenzie



Dr A Padfield



Mr J Burnett



Dr F Holmes



Simpson's Country House



Members at Sir James Young Simpson's grave in Warriston Cemetery, Edinburgh

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A MASTECTOMY WITHOUT ANAESTHESIA

Dr D D C Howat

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Although there are many descriptions in the medical and lay literature of operations performed in the days before general anaesthesia was available, there are few which recount the experiences of the patients themselves, especially female patients, who underwent them. They are almost invariably the records of the surgeons concerned. For example, in 1748 Richard Kay, a surgeon in Lancashire, performed a mastectomy on a Mrs Driver, but merely commented in his diary that he 'left her in good Order'.¹ In 1817 Ephraim McDowell, in the United States, described three cases in which he removed diseased ovaries, but the feelings of the women were not recorded.² In Dr John Brown's *Rab and his Friends*,³ Ailie's operation without anaesthesia for an advanced cancer of the breast in the Royal Infirmary here in Edinburgh affected everyone. Even the attendant medical students, not known for an emotional reaction on such occasions, were in tears when Ailie stepped down from the table, curtsied, and 'begged the surgeon's and students' pardon if she had behaved ill'.

Fanny Burney

Surgeons were often affected by the pain and agony they had to inflict, as the following harrowing account of her own experience of mastectomy by a cultured and intelligent woman will show. Dr Charles Burney, who was a well-known musicologist and teacher of music in the 18th century, had four daughters and a son. The second daughter, Frances, better known as Fanny (Figure 1), was born in King's Lynn in Norfolk on 13 June 1752.⁴ She wrote four novels, the best known of which is her first, *Evelina*, published in 1778 when she was twenty-six years old. With its realistic description of society in the late 18th century, *Evelina* was unlike any previous novel and foreshadowed the works of Jane Austen and the novelists of the 19th century. Although a shy, even prudish young woman,⁵ Fanny became famous after the publication of *Evelina*. She became part of the literary circle which included Dr Samuel Johnson and his biographer James Boswell (born in Edinburgh); Edmund Burke, who was opposed to the government's policy on the American colonists; the actor David Garrick, the actress Sarah Siddons and many other famous names.

Marriage

After the publication of her second novel *Cecilia* in 1782,⁶ she was offered a place at court as Second Keeper of the Robes to Queen Charlotte, the consort of King George III. This she held for five years, giving it up on account of ill-health to return to her father's house in London.⁷ She had friends whom she used to visit in Mickleham, near Dorking in Surrey, about 20 miles south of London. It was there that she met her future husband who, in company with other aristocrats, had fled from the terror at the height of the French Revolution in 1792.



Figure 1. Fanny Burney

By courtesy of the National Portrait Gallery, London

A number of them were living in Juniper Hall, a house near Mickleham, which they had rented on arriving in England. Amongst them were the author Madame de Staël, her lover the Comte de Narbonne-Lara, Talleyrand and the Chevalier d'Arblay. A board at the entrance gate to the house commemorates their stay. Alexandre-Jean-Baptiste-Piochard d'Arblay had been adjutant to General La Fayette, well known for having fought in the American War of Independence.

D'Arblay and Fanny were immediately attracted to each other and were married the following year in Mickleham church. Fanny was then 41 and d'Arblay was 39. After their marriage the d'Arblays lived in Phoenix Farm near Bookham, and later in a house in Bookham, The Hermitage. The house appears much the same today, although it has been extended. After the success of Fanny's third novel, *Camilla*, in 1796, they built a cottage in West Humble, a village near Dorking, which they called Camilla Cottage. It was burnt down in 1919 and is now the site of a housing estate called Camilla Lacey. A plaque explains that the d'Arblays lived there from 1797 to 1801.

France

In 1802, after the signing of the Treaty of Amiens, d'Arblay was able to return to France with Fanny and their young son, Alexander. Napoleon was now First Consul and refused d'Arblay a commission, because he would not take up arms against England. Thanks to the intervention of General La Fayette, Napoleon eventually forgave him because he was 'le mari de Cecilia'.⁸ Fanny's second novel had an even greater success than *Evelina*, and she was as famous in France as in England. The outbreak of war again in 1803 meant that many English residents were interned, but Fanny, with her husband and young son, was allowed to live quietly in Passy,⁹ at that time in the country just outside Paris, while d'Arblay had a civilian post with the government, although he was kept under surveillance.

First sign of trouble

In 1812 Fanny wrote a long letter to her elder sister Esther, from which the following extract is taken:

'About August, in the year 1810, I began to be annoyed by a small pain in my breast, which went on augmenting from week to week, being heavy rather than acute, without causing me any uneasiness with respect to the consequences.'¹⁰

Her husband urged her to see a surgeon, as did several of her friends. She eventually consulted Antoine Dubois, a well-known surgeon (Figure 2), who had treated Fanny for an abscess on a previous occasion. Although he prescribed some medication, Fanny realised from her husband's demeanour that Dubois had advised surgery, which she naturally resisted in those days before the introduction of anaesthesia.

Dubois and Larrey

Because Dubois did not return to see her d'Arblay had been recommended to consult Dominique-Jean Larrey, surgeon to Napoleon's Imperial Guard, who was said to have performed a similar operation on a Polish lady. Larrey scrupulously insisted that Fanny write to Dubois, requesting his approval that he should take over the case. and when this was agreed she was put in Larrey's care. Fanny reveals her acute sense as an observer in her appraisal of Larrey's character:

‘M. Larrey has proved one of the worthiest, most disinterested and singularly excellent of men, endowed with a real Genius in his profession, though with an ignorance of the World and its usages that induces a naïveté that leads those who do not see him thoroughly to think him alone not simple, but weak. They are mistaken, but his attention & thoughts having exclusively turned one way, he is hardly awake to any other.’

A study of his life and actions shows that his sole interest was in his profession as a surgeon.¹¹



Figure 2. Antoine Dubois
By courtesy of the Wellcome Library

Efforts to relieve the pain and swelling, though apparently temporarily successful, were in vain. The pain and hardness of the growth, which was in the right breast, increased and she had increasing weakness in the right arm. To Fanny's dismay, an anatomist and surgeon, Dr Ribe, and a physician, Dr Moreau, were called in, but an operation could not be delayed. Dubois was again consulted, because Larrey felt that his great skill and experience might suggest some cure. Larrey told her:

‘Vous êtes si considérée, Madame, ici, que le public même sera mécontent si vous n’avez pas tout le secours que nous avons à vous offrir’ (You are so highly thought of here, Madame, that even the public will not be happy if you do not have all the help we have to offer you).

This modesty in the chief surgeon of the Imperial Guard, who had recently been created a Baron for his services to the army, completely won Fanny over to his opinion.

However, all the doctors agreed that that an operation was essential, including Antoine Dubois, who had been unable to see her several months previously. He had been appointed Consultant Surgeon to the Empress Marie-Louise and had to manage a difficult breech delivery. He told Fanny:

'Il faut s'attendre à souffrir, je ne veux pas vous tromper - vous souffrirez - vous souffrirez beaucoup!' (You must expect to suffer, I do not want to deceive you - you will suffer greatly!)

and Ribe, the anatomist, told her that she must scream and not try to restrain her cries.

Preparation

It was now a year since Fanny had first noticed the pain in her breast. The d'Arblays had moved from Passy to an apartment in the Rue du Faubourg St Honoré. It was up three flights of stairs, which Fanny now found was too much for her. Her husband moved them to another apartment in the Rue de Miromesnil (running north from the Rue du Faubourg St Honoré), which was on the first floor, and it was here that the operation took place.

The operation was delayed for another three weeks apparently, as Fanny learnt much later, because Dubois had expressed the opinion that the cancer was too far advanced. Larrey was so affected by this that he later told Fanny that he deeply regretted ever having known her, and almost requested a posting to the other end of France. However, he recalled her saying that she would rather die quickly than suffer a lingering death.

The operation was to take place at 1pm on 30 September, but was put off for two hours until the arrival of Dubois, who had been delayed. As premedication the physician, Dr Moreau, gave Fanny a wine cordial, which was probably a mixture of wine and laudanum. Fanny described what happened next:

'I rang for my Maid and Nurses - but before I could speak to them my room, without previous message, was entered by seven men in black; Dr Larry (sic), Dr Dubois, Dr Moreau, Dr Aumont (a young physician who had been sent to prepare Fanny for the operation), Dr Ribe, & a pupil of Dr Larry, and another of Dr Dubois. I was now awakened from my stupor by a sort of indignation - why so many? & without leave? - but I could not utter a syllable. Dr Dubois acted as Commander in Chief. Dr Larry kept out of sight; Dr Dubois ordered a Bedstead into the middle of the room. Astonished, I turned to Dr Larry, who had promised that an Arm Chair would suffice; but he hung his head, & would not look at me.'

The operation

Dubois said that the women must leave the room, but Fanny insisted that her maid should stay (she had asked that her husband should be kept employed until the operation was over). Fanny then mounted the bed and her face was covered by a piece of cambric, through which she could

see the glitter of polished steel. Larrey then said 'Qui me tiendra ce sein' (who will hold this breast for me?). No-one answered, and when Fanny saw Dubois' finger describing a line from top to bottom of her breast, then a cross and finally a circle, she realised for the first time that the whole breast was to be removed. She started up, and when Larrey said again: 'Who will hold this breast for me?' she cried 'C'est moi, Monsieur!' trying to show where the growth was. However she was persuaded to lie down again with her face covered as before, and she resigned herself to the inevitable. What followed can best be described in Fanny's own words:

'Yet - when the dreadful steel was plunged into my breast - cutting through veins - arteries - flesh - nerves - I needed no injunction to restrain my cries. I began a scream that lasted intermittently during the whole time of the incision - and I almost marvel that it rings not in my Ears still! so excruciating was the agony. When the wound was made, & the instrument was withdrawn, the pain seemed undiminished, for the air that suddenly rushed into those delicate parts felt like a mass of minute but sharp & forked poniards, that were tearing the edges of the wound - but when again I felt the instrument - describing a curve - cutting against the grain, if I may so say, while the flesh resisted in a manner so forcible as to oppose & tire the hand of the operator, who was forced to change from left to right - then indeed I thought I must have expired.

'I attempted to open my Eyes - they felt as if hermetically shut, & so firmly closed, that the Eyelids seemed indented into the cheeks. The instrument this second time withdrawn, I concluded the operation over - Oh no! presently the terrible cutting was renewed - & worse than ever, to parts to which it adhered - Again all description would be baffled - yet all was not yet over, - Dr Larrey rested but his own hand & - Oh Heaven - then I felt the knife racking against the breastbone - scraping it - This performed, while I remained in utterly speechless torture, I heard the Voice of Mr Larrey - (all others guarded a dead silence) in a tone nearly tragic, desire everyone present to pronounce if anything more remained to be done; the general voice was Yes, but the finger of Dr Dubois - which I literally felt elevated over the wound, though I saw nothing, so indescribably sensitive was the spot pointed to some further requisition - & again began the scraping! - and after this Dr Moreau thought he discerned a peccant atom & still, & still, Dr Dubois demanded atom after atom - my dearest Esther, not for days, not for weeks, but for Months I could not speak of this terrible business without nearly again going through it! I could not think of it with impunity! I was sick, I was disordered by a single question - even now, nine months after it is over, I have a head ache from going on with the account! & this miserable account, which I began three months ago, at least, I dare not revise, nor read, the recollection is still so painful.'

Fanny goes on to describe how, while the dressings were being applied, she said: 'Ah! Messieurs! que je vous plains!' ('Ah! Gentlemen! How I pity you!'), though she really meant this for Dr Larrey. During the operation, when they kept on finding further bits to remove, she cried: 'Avertissez moi, Messieurs! Avertissez moi!' - (Warn me, Gentlemen! Warn me!), the only words she said. Fanny thought she must have fainted at least twice during the operation, which she stated lasted twenty minutes.

Recovery

When she was removed to her own bed, she opened her eyes and saw 'my good Dr Larrey, pale nearly as myself, his face streaked with blood, & its expression depicting grief, apprehension, and almost horror.'

A medical report by Larrey's chief pupil the following day stated that, at 3.45, Madame d'Arblay had undergone the extirpation of a cancerous scirrhus tumour, the size of a fist, adherent to the pectoralis major and spreading through the right breast. Its centre showed the beginnings of degeneration. The extreme sensibility of the patient resulted in a violent spasm during the following night, followed by nausea and vomiting, causing much fatigue and weakness. She made a remarkable recovery and next day had hardly any pain or fever.

A remarkable recovery indeed for a sensitive and emotional woman, at the age of 59, in the days before anaesthesia, sterile precautions or antibiotics. Fanny lived for another 29 years, dying in 1840 aged 88. This raises the question: 'Was the tumour malignant?' If so, it was very slow-growing. The increasing pain which Fanny felt during the months preceding the operation is not typical of carcinoma of the breast. On the other hand, the increasing weakness of the arm and shoulder, which Fanny stated was better, but still present a year later, does not suggest a benign tumour. She nowhere mentions that she had any swelling of the arm, although a transient oedema frequently follows excision of axillary glands. Could it have been a chronic abscess? She apparently had a breast abscess during lactation after her son was born seventeen years previously. In a letter to her father in April 1804 Fanny had written:¹² 'I am just recovered from a very strong menace of inflammation upon the breast', and to her sister Esther in November 1806: 'I am just recovered from a breast attack.'¹³ This suggests that she had at least three previous attacks, but we do not know if they were in the same breast.

Larrey and Hickman

Larrey's obvious distress at having to operate on someone who had already become a friend has an interesting sequel. Three years ago I described to this Society how in 1828 Henry Hill Hickman, having received no support in England, appealed to the French King, Charles X, to be allowed to pursue his researches into carbon dioxide narcosis in humans in France.¹¹ The members of the Royal Academy of Medicine, to whom the matter was referred, laughed at Hickman's claims, except Baron Larrey, who was then aged 62 and prepared to act as a subject for his experiments. However, the matter was forgotten and Hickman returned home a disappointed man.¹⁴ Larrey was renowned for his concern for the wounded in many of Napoleon's campaigns. Did he perhaps remember the operation on Fanny d'Arblay seventeen years before?

Conclusion

Fanny has documented in her diaries how she became physically ill when her emotions were aroused. For example, when at her post at the court of Queen Charlotte, she found her liberty was considerably restricted; she was working under a woman who was unsympathetic, and she found that her position was much lower than that of the ladies-in-waiting. She also fell in love with

someone who did not return her affection. It is therefore a great tribute to her courage and thoughtfulness for others that when she underwent this horrifying operation, she insisted that her husband should be kept away until it was over, and expressed sympathy with Larrey for having to perform it. It also says much for her sense of the dramatic and her ability as an author that she gave such a lucid account of her suffering. She was a remarkable woman.

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CHARLES ALSTON - YET ANOTHER EDINBURGH PIONEER

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At the beginning of the 18th century, bringing opium to Britain over trade routes dominated by the Spanish and Portuguese was a hazardous and expensive business. Most of the opium we consumed came from Turkey, but imports from Egypt, Aden and the East Indies were needed to satisfy the demand for this incomparable medicine. Many objected to the hold that foreigners had on the market, and some believed not only that our opium should come from a British colony, but also that Turkey and its merchants should be avoided. *P.somniferum* (the opium poppy), long established as a wild plant, was also under cultivation in most of England's southern counties, yielding poppy heads that local chemists were keen to buy in order to avoid both duty and middlemen. From the heads and stalks they made narcotic infusions and nostrums of variable quality and it was recognised, that like the *meconium* of the ancient Greeks, they were by no means as effective as genuine opium. In 1730 Charles Alston, Professor of Materia Medica and Botany in the University of Edinburgh, grew his own poppies at Holyrood and prepared the first British domestic opium.

The Alstons

Thomas Alston, graduate of arts at Edinburgh and of medicine at Caen, married Elizabeth Kirkaldie, daughter of a minister of the Church, and together they had nine children. Charles Alston, their third son, was born at Edielwood, in the west of Scotland on 24 October 1685, went to school in Hamilton and started at Glasgow University on 28 October 1700. Shortly afterwards his father died and his mother, overwhelmed by having to provide for such a large family, soon became 'disconsolate'. Charles had to leave university, and entered the household of the Duke and Duchess at Holyrood Palace. The Duchess, to whom the Alstons were distantly related, had high hopes of a career in the law for Charles. Accordingly, she apprenticed him to James Anderson, Writer to the Signet, and by 1709 Alston was inscribed into His Grace's Service as Principal Servant. Though this was a position of considerable importance, Charles's heart still inclined to medicine, and in 1716 he resigned from the household and enrolled as a student of medicine and botany at Edinburgh. In the same year he was made King's Botanist and Keeper of the Royal Physick Garden at Holyrood. The Duchess, still protective of Charles, made sure that his appointment carried with it an annual salary of £50 'for the burden of paying gardeners', and an arrangement whereby he would receive £500 if ever his appointment should be terminated. For the next two years Alston attended the Holyrood Garden and then spent a further year studying under Herman Boerhaave at Leyden in The Netherlands.

Appointments in Edinburgh

Charles came home to Scotland in August 1719 and by November had graduated as a Doctor of Medicine at Glasgow University. In the following year he returned to Edinburgh, and having been appointed to the sinecure office of King's Botanist, introduced medical and botanical lectures at Holyrood in company with a Dr Munro who had been a fellow student at Leyden. In

1721 he petitioned 'for licentiat to practise Medicine within the town of Edinburgh etc without any previous examination', the first Glasgow graduate ever to do so. From then on Alston devoted himself to the university, the town and the plants under his care. In 1738 the Town Council made him Professor of Medicine and Botany and he inaugurated his lectures; *materia medica* in winter and botany in summer. He maintained this routine for the next twenty-two years, which greatly enhanced the reputation of Edinburgh's medical school.

In 1739 he took over as University Professor, reuniting Offices of the Crown and the University that had been separated since 1706. Among his interests were lime-water¹ (which he believed dissolved urinary calculi), antimony (used as an anthelmintic), and refuting the doctrines of Linnaeus, 'particularly the sexes of plants'.² However, his main occupation was the cultivation and classification of plants under his care. Ultimately he held responsibility for four Physick Gardens: Holyrood, to the north-west of the Abbey at the lower end of Cowgate; the Town's Garden near the Trinity Hospital, now part of Waverley Station; the University Garden, which lay opposite the Old College on South Bridge; and the Surgeons' Garden, situated facing the old Surgeon's Hall. For the last twelve years of his life he lived in Weir's Close, which lay off Cannongate half a mile to the east of the College of Physicians.

Publications on Opium

Altogether Charles Alston published 15 papers, dissertations and books, and his lectures were based on his personal notes about plants grown at the Holyrood Physick Garden.³

In 1736 the *Edinburgh Medical Essays* carried his first 'Dissertation on Opium'⁴ in which he thought opium to be a necessity in:

'Want of sleep, excessive evacuations, Cholera, Dysenteries, Disorders of the Nerves, Fevers Gravel, Gout, Consumption etc.'

but did not mention that by then he had produced opium from poppies grown in Scotland. 'Carolo Alston' published in 1740 both the very comprehensive *Index Plantarum Præcipue Officinalium Quæ in Horto Medico Edinburgensi*,⁵ in which he detailed 22 classes of plants, and also an *Index Plantarum Medicarum*.⁶ In 1746, writing in both Latin and Greek, he issued his *Hippocratis Medicamenta*,⁷ and in 1754 *A Dissertation on Botanv*.⁸ The latter advised that it was 'Translated from the Latin by a Physician', but modestly did not reveal his name.

Though it was in 1730 that he produced his home-grown opium, it was not until 1742 that he described his work with the white poppy and its products in his second *A Dissertation on Opium*.⁸ In this sixty-six page work he argues the differences between opium and meconium, and wonders whether the opium of the shops is the same as that of old, or 'nothing but a meconium'. He avows that opium from poppies grown

'even in this Northern Country, has all the Characters of good opium. Its colour, consistence, taste, smell, faculties and phenomena are all the same only, if carefully collected, it is more pure and more free of Feculencies'.

He is convinced that the Milky Juice 'is the real thing' and that 'Opium is the true Tear of the Poppy'. He revealed that he had eaten large quantities of the black and white seeds 'and never found them somniferous or noxious'. This is not surprising, for they are the only part of the plant devoid of opiates. He extracted the drug variously with water, vinegar or alcohol, and together with Dr Munro, experimented in the grounds of Holyrood House. He put frogs into solutions of opium in water, which he reported as destroying the circulation of their hind legs before it killed them. He thought that external opium worked just as well as internal to relieve pain, that it was not a narcotic when given externally, and that continued use of opium made it safe in doses that would be fatal when commencing its use.

He concludes: 'I am very sensible that opium is an edged tool, and may do hurt; but it is also a Divine Remedy, and may do much good'. In the same volume of the *Medical Essays* was a paper by Mr Thomas Arnot, Surgeon in Cowpar,⁹ giving directions for the sowing of the plants and for the preparation of a very concentrated extract. Out of 5 - 6 lbs of heads and cuttings from stalks he got 1 lb of product 'which is much less price than Opium'. It evinced less 'ravings, nausea and giddynefs which common Opium does'.

Opium Production

Charles Alston's interest in opium was strictly scientific, but by the end of the 18th century commercial factors and the awards and medals offered by the Society of Arts led many to attempt efficient opium production in Britain. Crops were raised but output was meagre. Mr John Ball collected only 4 ounces of opium from one fall and twenty-eight square yards of ground, and Dr Howison a paltry 8.5 ounces from a field measuring 5 square falls; yields of roughly 20 lbs an acre compared to the 60 lbs expected in India. Writing in the *Edinburgh Philosophical Journal* of 1819 an Edinburgh Surgeon, John Young¹⁰ said that though the quality of home-grown opium was good, it had never been shown that it could make a profit. However, based on crops of garden poppies interplanted with asparagus and potatoes, he estimated that a profit of £110 could be made from one acre of ground.

1823 saw the largest amount of opium ever garnered in Britain, 143 lbs from 11 acres of ground at Winslow in Buckinghamshire, a feat that gained Dr John Cowley and a Mr Staines a 30 guineas award from the Society of Arts. At harvest time they employed two women and 'six peaceable and industrious Irish workers' for nine days, at wages of 1/- a day for 11 hours work. Sadly, in the British Isles, winds that beat down the plants, and rains that washed away the opium before it could be collected meant that the pioneering work of Charles Alston never came to a satisfactory commercial conclusion.

Conclusion

Dr Charles Alston married twice and fathered one daughter. He lived through the massacre of Glencoe, the union of the Scottish and English Parliaments, and the Jacobite invasions of 1715, '19 and '45. The Professors of the University were prominent in hasty efforts to prepare a defence before the arrival and occupation of Edinburgh by Bonnie Prince Charlie. Charles Alston died in 1760, seventy-five years old and still in harness. He was buried in Canongate

Cemetery. A year later his widow petitioned the Right Honourable Lords Commissioners of His Majesty's Treasury, and was granted £150 for expenses necessitated by the gardens.

After his death his lectures were prepared for publication as a tribute from his successor, Dr John Hope, who wrote of him:

'As a man he was candid, upright and sincere, learned in his profession and humane; as a Professor communicative, knowing no greater pleasure than to form the minds of his pupils in such a manner as to render them able in their profession and useful members of society'.

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TWO LETTERS FROM PROFESSOR JAMES YOUNG SIMPSON TO DR FLEETWOOD CHURCHILL

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On the centenary of the introduction of chloroform, a brief article written by K F Russell¹ appeared in the *Australian and New Zealand Journal of Surgery* in recognition of that occasion. Russell's paper described eight different pamphlets relating to chloroform, all written by James Young Simpson. These are contained in a bound collection comprising 25 assorted pamphlets and reprints written by Simpson between 1844 and 1851. Simpson had sent these to his contemporary, Dr Fleetwood Churchill, a leading Dublin obstetrician. Fortunately Churchill retained them and they were subsequently bound into one volume. This unique collection is held in the Leslie Cowlshaw Collection of the Library of the Royal Australasian College of Surgeons in Melbourne. Two of the chloroform pamphlets in this collection include short letters written by Simpson within twelve months of his introduction of chloroform; hence they have particular interest to anaesthetists. Their appearance and indeed their existence then became relegated to obscurity.

Fleetwood Churchill

Fleetwood Churchill was born in Nottingham, and qualified in medicine at the University of Edinburgh in 1831 (the same year as David Waldie), which was one year after Simpson. The three may have been acquainted. After graduation Churchill moved to Dublin and studied obstetrics, which did not become a compulsory subject in the Edinburgh medical curriculum until 1833.² Churchill then began an obstetric practice in Dublin where he married and took up residence at St Stephen's Green. Churchill is described as a modest and unostentatious man who, like Simpson, maintained keen interests in general science, theology, and in church missionary work.

His high reputation became further enhanced in 1843 when he published an authoritative textbook, *The Theory and Practice of Midwifery*. This remained the standard text on midwifery over the following three decades, during which time it underwent six editions. Clarity and precision were the hallmarks of this book. Other notable textbooks written by Churchill include *Diseases of Women*, *Diseases of Children* and *Manual for Midwives and Monthly Nurses*.

Subsequently Churchill was appointed Professor of Midwifery in the School of Physic in 1851. At various times he held the offices of President of the College of Physicians, and President of the Obstetrical Society. He died on 31 January 1878³.

Background to the first of the Melbourne letters

The first letter was written on 12 or 13 November 1847. Before discussing its content it is appropriate to briefly review events of the previous few days that generated both the letter and the pamphlet in which it has been written.

Simpson announced his limited clinical experience with chloroform merely six days after the well known 'chloroform experiment' of Thursday 4 November 1847, conducted in the family dining room at 52 Queen Street. His announcement was made to members of the Medico-Chirurgical Society of Edinburgh at their monthly meeting held on the evening of Wednesday 10 November 1847. At this crowded gathering he formally presented a paper titled *Historical Researches regarding the Superinduction of Insensibility to Pain in Surgical Operations: and announcement of a New Anaesthetic Agent*.

After his presentation had concluded the meeting adjourned, and opportunity was then given to allow members to inhale chloroform. A report of this demonstration appeared in the December issue of the *Monthly Journal of Medical Science*. The journal's reporter describes the scene, and unknowingly described the first 'chloroform frolic'. The account stated that many members

'were unexpectedly surprised by the effects produced upon them: so that when we looked round, we saw more than one gentleman insensible and several others in various stages of apparent intoxication. They all however rapidly recovered a few stated that this sensation had been so delightful that they should have no objection to their repetition.'

In the same issue Simpson's address was published in full, titled *Anaesthetic and Other Therapeutic Properties of Chloroform*. The article was also published separately as a seven-paged reprint. Prior to presenting his address to the Medico-Chirurgical Society Simpson was fully aware that another month would elapse before his presentation would appear in the Society's journal, the *Monthly Journal of Medical Science*. Interestingly, Simpson sent a copy of this reprint to Churchill, and it carries a postal cancellation dated 8 December 1847.

Such delays were contrary to Simpson's temperament; he was a man of action and he wanted to publicise the new inhalation agent as quickly as he could. Accordingly he arranged to publish his address, excluding the introductory section, as a privately printed pamphlet. He may well have forwarded the draft copy of the pamphlet to the publisher, Sutherland and Knox, sometime before his actual presentation to the Medico-Chirurgical Society on 10 November.

The Pamphlet of 12 November 1847

The pamphlet is titled *Notice of a New Anaesthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery* and comprises 24 pages, 22 of which contain printed text. It is printed on flimsy white paper, the composition of which is free of wood pulp but rich in cotton-fibre. Its quality closely resembles that of the paper used in smaller sized copies of the Bible. The pamphlet is inscribed to 'M J Dumas, Professor of Chemistry in the Faculty of Medicine of Paris, Dean of the Faculty of Sciences &c &c &c'. There are four features of interest:

1. Text

This commences with Simpson's reasons for seeking an alternative inhalation agent to ether. Then follows a brief outline of the events at 52 Queen Street on 4 November, a description of the physical properties of chloroform, and a list of seven claimed advantages of chloroform compared to sulphuric ether. Next he describes his first use of chloroform in obstetrics. The

document concludes with a chemistry section, in which chloroform's 'elementary composition' is stated to be '2 atoms of carbon, one atom of hydrogen and three atoms of chlorine'.

There is certainly an element of what some of Simpson's biographers have called 'indecent haste' on his part to publicise the results of his limited practical experience with chloroform. Simpson was very well aware of this, as he openly admits in this pamphlet:

'I have not yet had an opportunity of using chloroform in any capital surgical operation, but have exhibited it with perfect success in tooth drawing, opening abscesses, for annulling the pain of dysmenorrhoea, and of neuralgia, and two or three cases where I was using deep and otherwise very powerful Galvano-puncture for the treatment of ovarian dropsy &c. I have also used it in obstetric practice with entire success.'⁴

2. Footnotes

The pamphlet includes five footnotes, two of which are particularly lengthy, occupying large areas of the page. The first footnote is the best known since it includes Simpson's brief acknowledgement to David Waldie:

'.....Mr Waldie first named to me the Perchloride of Formyle as worthy, among others, of a trial.....'.

In the second footnote Simpson describes his method of administering chloroform, which is:

'giving the patient from the first a large and overwhelming dose of the vapour'.

He also stresses the 'need for absolute quietude' during the induction of anaesthesia.

3. Typeset error

A hitherto unreported small typeset error on page 10, line 17 was noted in 2000⁵:

'7. No special kind of inhaler or instrument is necessary for its exhibition. A little of the liquid diffused upon the interior of a hollow-shaped sponge, or a pocket handkerchief, or a piece of linen or paper and held over the mouth and nostrils, so as to be fully inhaled, generally suffices in about a minute or two to produce the desired effect'.

4. Postscript

The main text of the pamphlet ends on page 17, followed by a 'Postscript' of five and a half pages, containing case-reports of four patients who underwent elective surgical operations whilst receiving chloroform. Simpson personally administered the chloroform to the first three cases. At the conclusion of the Postscript appears the date, 'EDINBURGH 12th November 1847'. This was a Friday.

First use of Chloroform

Simpson's first opportunity to administer to patients scheduled for elective general surgical operations occurred following his address of 10 November. At the Royal Infirmary on 11 or 12 November, Professor James Miller and Mr James Duncan allowed Simpson to administer chloroform to their patients. They also agreed to allow Simpson to publish their written case-reports for each of their operations.

When Simpson had obtained these reports he contacted his publisher and somehow persuaded him to include these case-reports in the pamphlet, which was already typeset. This was accomplished by including the four case-reports as a 'Postscript', occupying pages 17-22 of the pamphlet. Simpson acknowledges the contribution from his surgical colleagues by stating, in the text of the pamphlet:

'I append notes, obligingly furnished to me by Professor Miller and Dr Duncan, of the three cases of operation. The first two cases were operated on by Professor Miller; the third by Dr Duncan. In applying the Chloroform in the first case, I used a pocket-handkerchief as the inhaling instrument; in the last two I employed a hollow sponge'.⁴

The first patient was named Barney Dempsey, who was a child of four years of age scheduled for excision of an osteomyelitic sequestrum from a radius. Next was John Sutherland, a soldier, who required excision and closure of a buccal fistula. The third case was an amputation of the 'first phalanx of the great toe'. The fourth case-report is quite brief and was that of a 'young lady', operated upon by Mr Miller in his private practice. Miller administered the chloroform and then performed the surgery, excising an 'encysted tumour at the angle of the jaw'. Simpson was not even present at this particular operation. The inclusion of these case-reports, written by two eminent Edinburgh surgeons, confers an added respectability to the pamphlet.

Existing copies of the pamphlet dated 12 November 1847

There are at least three copies of Simpson's pamphlet of 12 November 1847 in existence today in libraries in London, Melbourne and Montreal. Two of the pamphlets are clearly inscribed in Simpson's writing 'Proof Copy', written on the left side margin of the title page. These two copies also contain brief letters written by Simpson.

1. London

This copy is held in the Wellcome Library for the History of Medicine. The pamphlet was included among material presented to that Library by the Medical Society of London. Mr E Gaskell, then Librarian of the Wellcome Library, referred to this pamphlet in his article written in the *British Medical Journal* in May 1970. He stated: 'No other proof copies of the Notice apart from the one described here are known to exist'.⁶ Earlier this year, following a protracted search for that particular pamphlet by the Assistant Curator of the Wellcome Library, it was eventually located

'in a scruffy volume of pamphlets by Simpson and others. For some reason, the individual contents of this volume were never included in the MSL card catalogue, nor in our computerised version'.⁷

The title page of this pamphlet is marked 'Proof Copy' in Simpson's handwriting. The letter in this pamphlet is written to Dr William Protheroe Smith, a London obstetrician, who was among the first of the London obstetricians to administer ether during labour on 28 March 1847.⁶ The letter is written on the dedication page of the pamphlet and reads:

'My Dear Dr. Smith,

I send you a pamphlet which I am sure will interest you. Here we are all wild on the subject. I believe I state correctly at p.13 that not above two or three of you in London have as yet used ether in labour. I have not heard of any besides yourself and Gardner. Should I change it --- say more? As to your question of flooding --- I would certainly say that I have not seen more than without it. There have been several deaths here this year from haemorrhage and I know elsewhere in Scotland --- none etherised.

Yours ever, J.Y.S.'

'p.13' is a reference to the pamphlet's fifth footnote that states:

'I am told that the London physicians, with two or three exceptions only, have never yet employed ether-inhalation in their Midwifery practice. Three weeks ago, I was informed in a letter from Professor Montgomery of Dublin, that he believed that in that city, up to that date, it had not been used in a single case of labour.'⁴

The 'two or three exceptions only' were presumably Drs William Protheroe-Smith, John Gardner, Dr Lloyd and Edward Murphy, Professor of Midwifery at University College Hospital, London. The use of ether in obstetrics between 19 January and 12 November 1847 in London appears to have been uncommon practice.

Professor William Featherstone Hough Montgomery of Dublin staunchly opposed the use of inhalation analgesia during labour and in 1849 he expressed his view publicly, claiming:

'the circumstances attending administration of chloroform for the performance of a surgical operation and for the prevention of labour pain are widely different'.

2. Melbourne

This copy is held in the Leslie Cowlshaw Collection in the library of the Royal Australasian College of Surgeons, Melbourne. Sadly, like its London counterpart, the condition of the volume is delicate and literally falling apart at the seams. The words 'Proof Copy' are written along the left margin in Simpson's distinctive handwriting, and at the upper margin is written:

'Dr Churchill

With J.Y.S.'s

Kind Regards'.

It is interesting to note that the Melbourne collection of Simpson's pamphlets contains another 'Proof Copy' pamphlet. This particular one was published in 1848 and is titled *Remarks on the Superinduction of Anaesthesia in Natural and Morbid Parturition with Cases Illustrative of the Use and Effects of Chloroform in Obstetric Practice*. The words 'Proof Copy' are clearly indicated in italic typeset at the top of the title page. It therefore appears that Simpson was quite content to send proof copies of his pamphlets to his colleagues, and that sending those of his pamphlet of 12 November was not an isolated example of this habit.

As with the London pamphlet this copy includes a brief letter from Simpson. It is written in ink, now browned and eroding through the flimsy paper. The letter is written on the dedication page and on its reverse side. Reading it is difficult as the ink from opposite sides of the paper has corroded through. Like the letter in the London copy this one is undated. A postal datestamp cancellation for 13 November 1847 on the back cover was noted by Russell¹. This page has been missing since 1986. Simpson would have written this letter late in the evening of 12 November or in the small hours of the morning of the 13th.

The use of envelopes for mailing documents such as pamphlets was not usual during the 1840s. It was customary simply to fold the pamphlet twice, secure it with sealing wax and write the recipient's address on the central third of the folded pamphlet. It was the Post Office custom to apply two cancellation date stamps to such mails, one at the place of dispatch and another at the place of delivery. Many of the pamphlets in the Melbourne volume display these postal cancellations.

Simpson's letter reads:

'My dear Doctor, I have been very 'busy' for a week, but will send you the books and tables in two or three days --- and make you most heartily welcome to them. What a sad fellow Lee is. I don't think there is any truth in him. All here are quite agog with the chloroform. And certainly the results are enchanting. I enucleated a fibrous tumour today embedded in the back wall of the uterus and weighing 2lbs. 9ozs. If anyone had said a fortnight ago it was possible-- -- I would have said nay. Six or seven days ago I bored a whole through the intervening layer of uterus with potassa; and subsequently the uterus expelled it and opened as in labour. The patient had the chloroform of course --- suffered no pain and lost no blood.

Yours ever, JYS'

Dr Robert Lee was one of Simpson's more dedicated opponents. At this time he and Simpson were conducting a particularly acrimonious and protracted argument in the pages of the *Lancet* that had begun late in 1844 concerning aspects of the management of placenta praevia. Lee was Lecturer in Midwifery at St George's Hospital in London. His persistent opposition to anything associated with Simpson included his steadfast refusal to use ether or chloroform. In 1853 Lee

referred to chloroform as 'this treacherous gift of science' and he condemned its use as 'an ignominious and disgraceful practice'.⁸

Simpson's description in his letter to Fleetwood Churchill regarding his treatment of a large fibrous tumour appears in his article published in the *Lancet* of 20 November.⁹ The very same day as this pamphlet to Churchill is date stamped, the newspaper *The Scotsman* included an advertisement placed by Kemp and Company, advising that they had supplies of chloroform available 'for painless surgical operations'.¹⁰ Presumably this was one of the pharmaceutical manufacturers approached by Simpson the day after the 'dining room experiment'.

3. *Montreal*

The third existing copy of the 'Notice' pamphlet is held in the Osler Library in McGill University. This copy lacks any inscription and does not include a written letter. It is not therefore a 'Proof Copy', but is otherwise identical to the Melbourne and London copies.¹¹ This may have been a residual copy of the pamphlets that did not get used for mailing to correspondents over the weekend of 13-14 November. The three pamphlets are identical.

The definitive pamphlet of 15 November

On Monday 15 November the 'Proof Copy' appeared in its definitive format, re-titled *Account of a New Anaesthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery*. It remained essentially the same document. The changes include only one text alteration, relating to the 'quantity of Chloroform requisite to produce the anaesthetic effect'. Thus '50 to 100 drops' has been increased to become '100 to 120 drops', and is then followed by the insertion of a new sentence: 'I have seen a strong person rendered completely insensible by six or seven inspirations of thirty drops of the liquid'.

The typeset error has been corrected and a paragraph of three sentences added to a footnote, detailing Simpson's technique using a handkerchief as an inhaler. The Postscript remains unaltered. A small number of short sentences have been inserted and a physical rearrangement of the footnotes made, so that they occupy less area per page but occupy more pages.

The pamphlet of 12 November is simply the Proof Copy of the definitive pamphlet of Monday 15 November that was published in Edinburgh and London. It sold quickly and a number of reprints were made during 1848. Simpson's biographer H Laing Gordon claimed in 1897 that 4000 were sold within weeks of its first printing. Simpson planned to publicise his introduction of chloroform as quickly as possible and he succeeded remarkably. Identical articles, based on the pamphlet of 12 November, appeared in the *Lancet* for 20 November and the *London Medical Gazette* for 26 November. The major difference between the pamphlets and the articles was the lack of a postscript, but two of the postscript cases have been incorporated into the text of the pamphlet.

This completed his primary publicity campaign. Three weeks elapsed from his dining room experiment to widespread national coverage!

The second of the Melbourne letters

Simpson's second letter to Fleetwood Churchill is written in his 52-page pamphlet published in October 1848, titled *Anaesthetic Midwifery: Report on its Early History and Progress*. The back page of this pamphlet shows a single postal cancellation dated 9 October 1848. Simpson dedicated this pamphlet to Charles J Hambro, a banker of Danish extraction. It was intended as a 'progress report' publicising the extent of the use of chloroform in obstetrics throughout Great Britain. Much of this document contains lengthy anecdotal accounts written, at Simpson's request, by selected medical practitioners around the British Isles. It includes a letter from William Purdie, a general practitioner from Edinburgh who emigrated to Dunedin, New Zealand shortly before the pamphlet was published.

The document is indexed. Simpson's letter reads:

'My dear Churchill,

Here is a hurried Report --- which will show you how Anaesthesia progresses among us. You had underdosed Mrs Lane. I had her sister 2 or 3hr sound asleep here, & knew nothing of labour. Do come over for 48 h and we will teach you all the secrets. I was with Lord John Russell for an hour last night. He was anxious about O'Brien --- and I have no doubt your Jury will be charged if there is a failure.

Yours very truly
JY Simpson

Dr Gardner says you doubt retroversion. Come and I will shew you plenty of them here.'

'All the secrets' were the three basic foundations:

- a. Absolute quiet during the process of induction.
- b. A handkerchief. This was considered by Simpson to be the 'best and safest apparatus'. It became the standard teaching for generations of students by James Syme and his son-in-law, Joseph Lister.
- c. Air

Lord John Russell was then Prime Minister of Great Britain and Ireland. The fact that he spent an hour with Simpson is a reflection of the respect and status that Simpson had attained by 1848 when he was aged only 37. It was on Russell's advice that the Queen offered Simpson the baronetcy that he accepted in 1866.

O'Brien Smith was found guilty of treason on 9 October and transported to the penal colony at Port Arthur, Tasmania.

Conclusion

These two brief letters offer further insight into Simpson's thinking during the early months of his introduction of chloroform into midwifery and surgery. As both letters imply, he was first and foremost an obstetrician who also became chloroform's greatest champion. The words of a distinguished past member of this Society, Dr Alfred Lee come to mind:

'There is a real difference between the honour due to one who first uses a drug or new method, and that due to the worker who by his faith in it and his powers of persuasion, sees to it that it becomes part of accepted practice.'

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SIMPSON, CHLOROFORM, AND THE EDINBURGH CHEMISTS

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During the early part of the 19th century, Edinburgh saw the establishment of three major pharmacies, that of Thomas and Henry Smith, John Fletcher Macfarlan, and John Duncan.

Thomas & Henry Smith

Thomas Smith was born in 1807, son of a Paisley shawl manufacturer. He and his two brothers were all involved in pharmacy and medicine. Thomas studied in Edinburgh and was elected a licentiate of the Royal College of Surgeons. In 1827 he took over an apothecary's shop from his brother William, at 61 Pleasance, Edinburgh. In 1832 during the first major cholera epidemic in Edinburgh he stayed in the city, working tirelessly to help the sick, and as a reward he was paid an honorarium which was sufficient to enable him to open new, larger premises at 21 Duke Street (now Dublin Street), Edinburgh. Henry Smith also qualified at Edinburgh University and he was in business at 67 Pleasance. In 1836 the two brothers entered into partnership forming T & H Smith.^{1,2} Thomas evolved a process for the manufacture of morphine and its salts following the work by Professor William Gregory, and then went on to establish the company as manufacturers of many alkaloids.³

John Macfarlan

At 17 North Bridge were the premises of J F Macfarlan. John Fletcher Macfarlan was born in 1780. He was apprenticed to John Moncrieff, a surgeon-apothecary who was styled 'Herbalist or Apothecary to the Queen in Edinburgh'.⁴ Macfarlan obtained the diploma of the Royal College of Surgeons and he subsequently took over the pharmacy at 17 North Bridge. He had an outstanding career, being elected President of the Royal Medical Society, where he was Treasurer for thirty three years, and was the Scottish Representative on the Pharmaceutical Societies Council in London until his death.⁵ Macfarlan was an astute businessman and he was fortunate in that he was later joined in the business by David Rennie Brown, a brilliant chemist. He was responsible for the development of the manufacture of morphine and the isolation of a number of alkaloids and salts. They were the first to make apomorphine and ethylmorphine, and they co-operated with Lord Lister in the production of the first antiseptic dressings.

John Duncan (Figure 1)

On the other side of the street at 52 North Bridge was John Duncan. He was the only son of a country surgeon, Robert Duncan, and his wife Christian Thomson, and was born in Kinross on 26 August 1780.⁶ He was apprenticed to a druggist in the Lawnmarket in Edinburgh in 1794, and after completing his apprenticeship, which would have lasted some five years, he worked in London for Kernoth Druggists of Bear Street, Leicester Square. He is recorded as being there in 1804 before he returned to Scotland to open a shop in Perth in 1806. After having overcome some initial problems of acceptance in the town, his business prospered, and in 1812 he took in a partner (Ogilvie) and changed the title of the shop to Duncan and Ogilvie.⁷



Figure 1. John Duncan



Figure 2. William Flockhart



Figure 3. Duncan Flockhart's pharmacy at 52 North Bridge, Edinburgh

Edinburgh had gone through difficult times but it was beginning to expand. In 1817 Sir Walter Scott, appointed by George III as a commissioner to search for the Honours of Scotland, found the crown jewels in a box in Edinburgh Castle. His writings served to develop an interest in Scotland and the population of the town was showing a steady increase. Duncan was no doubt aware of the commercial opportunities and leaving Ogilvie in charge he made a number of visits to Edinburgh with his wife, finally opening a shop in 1820 at New Buildings, 52 North Bridge as Duncan and Ogilvie.

William Flockhart (Figure 2)

William Flockhart was also a native of Kinross, the son of a landed proprietor of Annacroich.⁸ He was christened on 30 November 1808.⁹ William was the first apprentice taken on at North Bridge, qualifying as a chemist at the end of his apprenticeship. In 1830 he was elected a licentiate of the Royal College of Surgeons, Edinburgh. He was made a partner about 1832 and the business was styled Duncan and Flockhart in 1833. (Figure 3) These three chemists businesses were all involved in the manufacture and supply of chloroform at some stage, but it was Duncan and Flockhart who were to be the leaders in developing the new anaesthetics.

Ether

Ether and its method of preparation were well known to science and medicine, having been first prepared in the 13th century by the action of sulphuric acid on ethyl alcohol. The story of its use as an anaesthetic in America by Crawford Long, Warren and Morton is well documented.¹⁰ The news of the success of ether spread rapidly and it was used by Liston operating at University College Hospital, London in December 1846. The glass inhaler used on that occasion was made by Peter Squire, a prominent member of the Pharmaceutical Society, and the anaesthetic was administered by his nephew William Squire, a medical student. Liston wrote a letter the next day to Professor James Miller, a surgeon at the Royal Infirmary, Edinburgh, who lived next door to J Y Simpson at 51 Queen Street. Simpson would have heard of the successful use of ether, either directly from Miller or at the Infirmary, as Miller read out the letter to his students. Simpson spent the Christmas holiday in London with Liston. This may have been a previously planned visit, but he learned about the use of ether and started using it for midwifery on 19 January 1847, the same day on which he was notified that he had been appointed one of Her Majesty's Physicians for Scotland. He reported his success to the Edinburgh Obstetric Society the following day.

Chloroform

Simpson had long been looking for a means of relieving the pain of childbirth and he welcomed the arrival of ether as an anaesthetic.¹¹ However, he did not rest content, and continued to search for another substance which would be less irritating than ether and could be used in smaller doses.¹² Unlike ether, chloroform was a fairly recently discovered substance. Work was carried out by Souberan, Leibig and others in 1831-2 on the distillation product from chloride of lime with alcohol. The resulting distillate was a solution of chloroform in alcohol, but because of faulty analysis and the use of impure samples, its chemical constitution was not clearly understood and it was named variously, chloric ether, bichloric ether, terchloride of carbon or

understood and it was named variously, chloric ether, bichloric ether, terchloride of carbon or chloride of formyle. In 1834 Dumas was able to prepare a pure sample and analyse its correct formula and he called it Chloroforme.

David Waldie

David Waldie, a Scottish surgeon apothecary working in Linlithgow, was more interested in chemistry. About 1839 he took over as chief chemist to the Liverpool Apothecaries Company from Dr Brett.^{13,14} At the time chloroform was in use medicinally in Liverpool as a solution in alcohol for the treatment of hysteria. Around 1838 or 1839 a prescription was received at the Apothecaries Hall, Colquitt Street, one ingredient of which was chloric ether. Dr Brett, the company's chemist found a method of preparation in the United States Dispensatory and was able to dispense the prescription. A number of local physicians were pleased with the solution particularly Dr Richard Formby, who introduced it into his practice.¹⁵

When Waldie took over, he found that the method of preparation gave a solution of varying strengths and a disagreeable flavour. He improved the method, separating and purifying chloroform and then dissolving it in alcohol to produce a solution of uniform strength, better taste and aroma.¹⁵ Chloric ether was tried as an anaesthetic but as Waldie commented in his paper to the Liverpool Literary and Philosophical Society:

'The vapour of the so called chloric ether seems to have been tried as a substitute for Sulphuric ether ... but without satisfactory results, which indeed could scarcely be expected ... it being composed principally of alcohol.'

In October 1847 during a visit to Scotland he met Simpson, who spoke to him about his trials of various vapours in order to find an alternative to ether. Chloric ether was mentioned and Waldie, well aware of its manufacture, explained the problem of its impurity and suggested that he should try pure chloroform. Waldie promised to make a sample and send it to him when he returned to Liverpool. Unfortunately however, the laboratories of the company had been destroyed by fire and were not in use.¹⁴ We do know that Waldie continued working at the home of a friend, John Abraham, at 87 Bold Street, and indeed it is reported that Mrs Abraham found both her husband and Waldie unconscious on the floor on one occasion, but

'knowing that they were both well acquainted with the new agent and its properties, felt that they had not taken dangerous doses and that they would soon come round'.

Supplies of chloroform

Because of the delay in supplying chloroform Simpson asked Duncan and Flockhart for supplies. Duncan had always cultivated his relationship with the medical profession. He had helped Sir James Murray with supplies when he was experimenting with fluid magnesia, and Murray in his turn had helped Duncan in obtaining the Royal Warrant.⁷ Duncan also made preparations for Simpson including the ethereal tincture of various solutions, so it was quite natural that he should turn to Duncan and Flockhart for supplies of chloroform, and the results of his experiments at Queen Street are well known.^{11,12,17} Simpson did discuss the production of chloroform with T &

opium and the salts of morphine at the time and they did not proceed with its manufacture, although later it became one of the company's important products. It is related that Thomas Smith made coffee, while Simpson was with him, from a dark extract that he had prepared by percolating ground coffee beans and concentrating the percolate. He explained that this was a great time saver and Simpson suggested that it could be a good commercial product. It was not until the 1880's that coffee essence became a major product of the company, widely advertised on the side of Edinburgh's horse drawn buses. Its production continued until 1917 when it was discontinued because of the need to find space for the production of essential war supplies, which included chloroform.¹

Manufacture of Chloroform

Duncan was by this time senior partner and unlikely to have been much involved in the manufacture of chloroform which was produced at North Bridge by David Hunter, one of the partners. There is some controversy over the method used and whether Simpson had given Waldie's method to Duncan & Flockhart or not. Certainly Simpson in his paper in December 1847 referred to the chloroform made by Duncan and Flockhart as made to the formula of Dumas. We know that Dumas came to Edinburgh to be present at one of the surgical demonstrations, so it is likely that Duncan and Flockhart were aware of his process and that this is the one they used.¹⁸

The formula was:

Chloride of Lime	lb IV
Water	lb XII
Rectified spirit	f oz XII

'Mix in a capacious resort or still and distil as long as a dense liquid which sinks in the water in which it comes over, is produced. Rectified by agitating with several portions of strong sulphuric acid and afterwards distilling it from carbonate of baryta.'

Chloroform commercially was the latest wonder of its day. Duncan and Flockhart were fortunate in being able to respond quickly to the growing demand and this **was** their entry into the manufacture of anaesthetic gases. By December 1847 Simpson noted that they were supplying 60 to 80 oz per day at 2s per oz.

Purity

The purity of the product was of course of great importance. Duncan and Flockhart always distilled it a third time from lime and said that: 'they could not supply pure chloroform otherwise'. Many others were quick to jump on this lucrative bandwagon with predictable results and the quality of supplies that were available became a matter of concern. Simpson writing in 1847 said

'of several specimens [of chloroform] I bought in Glasgow, only one was of the proper strength and purity. I bought a specimen yesterday in an Edinburgh shop sp gr 1.130 instead of 1.480. There was little or no chloroform in it.'¹⁸

Dr William Gregory, Professor of Chemistry at Edinburgh University, took an interest in chloroform. In 1850 he pointed out that some chloroform caused nausea and headaches due to the impure volatile oils which were present. However he said:

‘that the quantity of volatile oils present in the chloroform of the best Edinburgh manufacturers, although variable within certain limits, was always fit for use and only caused headache in a few particularly sensitive persons.’¹⁶

Methylated Spirit

A subject of continuing controversy was whether pure chloroform could be produced from methylated spirit (a mixture of 9 parts rectified spirit and 1 part of wood naphtha - crude methyl alcohol). This was duty free and considerably reduced the cost of preparing chloroform. The problem was that there was a great deal of prejudice against its use. However, Sir John Sibbald, HM Commissioner in Lunacy for Scotland, presented a paper on 15 February 1856 to the Royal Medical Society entitled ‘Chloroform Prepared from Methylated Alcohol’. This led to the Society setting up a committee of five, to investigate the properties of chloroform prepared in this way. They concluded that the effects were exactly the same as chloroform prepared from pure alcohol.

J F Macfarlan, Treasurer of the Society was particularly interested in the committee’s work. Just before Sibbald’s paper was presented, he had read a paper to the Pharmaceutical Society in Edinburgh: ‘Methylated Spirit and Some of its Preparations’, in which he described the use of chloroform, prepared from methylated spirit, in an operation by Professor Syme at the Royal Infirmary. The results had been just as good as with material prepared from rectified spirit. His partner David Rennie Brown and his partner’s son David Brown had carried out work to show that this was the case. Macfarlan, through Lord Macaulay, finally succeeded in getting Parliamentary approval for making chloroform from methylated spirit.²⁰

Hazards of manufacture

For those of you who know how the buildings on North Bridge are constructed with rooms going down two or three levels below the street, it will be a puzzle how it was possible to manufacture chloroform in what was an airless cellar, and it was certainly fraught with difficulty. Workers were overcome by the fumes and there were explosions. With the outbreak of the Crimean War in 1854 the demand continued to increase rapidly, but it was not until 1876 that a manufacturing unit for the company’s preparations was opened in South Bank, Cannongate. For twenty two years chloroform continued to be made in 52, and then in 6 North Bridge. David Hunter continued to be associated with the manufacture and he died in 1865 at the age of 52. The cause of death is given as ‘chronic dyspepsia many years and a fever four weeks’. It is possible that the inhalation of the vapours contributed to his early death.

Others were also involved in the manufacture of chloroform. Dr William Inglis Clark was a brilliant chemist who had been assistant to Crum Brown, Professor of Chemistry in Edinburgh. Clark was later offered the Chair in Chemistry, which he refused because of his interest in

practical chemistry. He gained a Doctorate in Science in his teens but had to wait until he was 21 before he could be capped. I quote from his wife Jane Inglis Clark's writings:¹⁹

'In those days the laboratory was below the North Bridge, and there he found that there was much impurity and wastage in the manufacture of chloroform; the workers being frequently overcome and carried off more or less insensible. With characteristic energy and thoroughness he soon remedied that state of affairs. Twenty-two years after Professor James Simpson, in 1849 [sic], read his first paper on his great discovery of chloroform to the Medico-Chirurgical Society in Edinburgh, Inglis Clark found out what was wrong and re-organised and revolutionised the whole process of its scientific manufacture, and later on, did the same for other anaesthetics. While still in his teens, the firm built a new laboratory in Holyrood Road and placed him at the head of it. All the machinery he used was invented by himself and made to his design. He was the first to have the idea of putting noxious drugs into capsules, and he invented and designed the necessary machinery for the whole process.'

I would also like to also quote from a published letter from Mrs J Binnie, who was the daughter of Alex McPherson:

'My father's name was Alexander McPherson. He died in 1930 aged 78. He knew Simpson. I remember the very long hours my father and Dr Inglis Clark worked in the laboratory in improving chloroform. There was an accident to my father when a still of chloroform on which he was working burst at Duncan Flockhart. My father was rendered unconscious, but he was carried to safety by, I think, a Mr James Bauld. He was taken to the Royal Infirmary where, despite the protestations from the nurses, he absolutely refused to have a bath. He knew, as indeed a professor confirmed to him later, that the water plus the chloroform would have sealed all the pores in his body and he would have died. As it was, the after effects of chloroform fumes proved so strong that he did not know until three days later, that as a result of his fall he had broken three ribs. My father later became manager of the firm's anaesthetic department. He retired in the early 1920s.'

So like many other industrial processes the manufacture of chloroform, particularly in the confined space below North Bridge, was not without its hazards. However, manufacture continued to expand, and Eve Blantyre Simpson noted in her biography of her father: 'that in 1895 three quarters of a million doses are made weekly'.

Conclusion

Both William Flockhart and John Duncan died in 1871, bringing an era to an end. The discovery of the anaesthetic properties of chloroform in Edinburgh by JY Simpson, and the ability of Duncan and Flockhart to prepare this substance for him, was the key to the growth of the company as a centre of excellence in the manufacture of anaesthetics.

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RELIGIOUS OBJECTIONS I: BLAMING THE CHURCH LABOURING UNDER A MISCONCEPTION

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The Answer

In 1847 James Young Simpson published a remarkable pamphlet¹ entitled, *The Answer to the Religious Objections Advanced Against the Employment of Anaesthetic Agents in Midwifery and Surgery*. Significantly for this study, he notes on the very first page that during the last few months he has often 'heard' patients and others strongly object to the superinduction of anaesthesia in labour, on the assumed ground that an immunity from pain during parturition was contrary to religion and the express commands of Scripture. He confirms opposition by medical men and adds that his conduct has been publicly denounced *ex cathedra* as an attempt to contravene the arrangements and decrees of Providence. Finally he describes earnest private communications to the same effect.

The text of *Genesis* Chapter iii verse 16: 'I will greatly multiply thy sorrow (*'itizabhon*) and thy conception; in sorrow (*'etzabh*) thou shalt bring forth children', is central to the debate. However, in defending the use of anaesthesia, Simpson is able to argue eloquently and more widely the content of *Genesis* chapter iii verses 14 to 19 which he reproduces in their entirety. Noting that the primeval curse is in three parts, on the serpent, on the woman, and on the ground, he argues that the Holy Word is not immutable as, for example, in *Deuteronomy* vii, verse 13: 'I will bless the fruit of thy womb and the fruit of thy land'.

Turning to the curse on the woman, Simpson argues that if this part of the curse is taken literally, then surely so should the others. Thus the agriculturalist who pulls up the thistles and thorns which the earth was doomed to bear is acting contrary to the third part of the curse. Employment of the ox, water and steam power is equally at fault. So why should the physician feel constrained when the agriculturalist does not?

Simpson then turns to the word 'sorrow', to ask if this really means pain. The Hebrew words of the text are *'itizabhon* and *'etzabh* which Simpson describes as synonymous in meaning though longer and shorter in form; as for example labour and laboriousness in the English language. Coming to the true meaning of the words he refers to the *Lexicon* of Professor Gensenius, according to Simpson the highest authority, and *'atzabh*, the root of the two nouns. The meaning of *'atzabh* is given as to labour, to form, to fashion as in cutting wood or stones. This theme is developed to the conclusion that the word 'sorrow' means labour in the sense of *toil* rather than pain.

From this conclusion Simpson moves to the anatomical difficulties he perceives with the erect posture of the human woman giving birth and the more muscular effort or toil that she requires. Not content, Simpson goes on to examine six Biblical passages where the word *'etzebh* appears

and looks at the sense of the translation in them, noting that *toil* rather than *pain* fits the case in each example.

Simpson then considers the position that he is in the wrong and that the passage does mean pain. He now argues that Christ has relieved this burden of the primal curse:

‘He hath given himself up for us an offering and sacrifice to God; surely he hath borne our griefs and carried our sorrows. For God saw the travail of his soul, and was satisfied.’

With regard to other medical advances, the reader of the pamphlet is reminded of the opposition to vaccination. Here, The Reverend Mr Delafaye and Mr Massey are noted to have published sermons against the practice. This is once again of interest in the context of the present study as no such direct references are made with regard to sermons and anaesthesia.

Finally Simpson turns to *Genesis* ii, verse 21 for a description of the first surgical operation ever performed on a man:

‘... and the Lord caused a deep sleep to fall upon Adam; and he slept; and he took one of his ribs, and closed up the flesh instead thereof.’

Simpson makes much of Calvin’s interpretation that Adam was sunk into a sleep in order that he might feel no pain. This passage indicates that Simpson was not the originator of this concept, as Gream later suggested. Pool quotes different authorities having the same opinion.

It is recorded that Simpson wrote the pamphlet in one day whilst recovering from influenza. There can be no doubt, from the content and the orderly presentation of his religious arguments, that Simpson had studied his subject deeply and had prepared his thoughts in an orderly fashion. He had merely been waiting for a break from clinical work to put them in writing.

The Protheroe Smith Pamphlet

Scriptural Authority for the Mitigation of the Pains of Labour by Chloroform and other Anaesthetic Agents by Protheroe Smith² appeared in June 1848. It was dedicated to J Y Simpson MD, FRSE:

‘... whose unwearied and successful efforts to advance medical science and to alleviate human suffering entitle him to the esteem of both the profession and the public’.

This pamphlet is a complicated religious debate in support of the use of anaesthesia in midwifery. On a familiar theme, Smith notes that he has frequently been asked whether anaesthesia is justifiable on Christian principles. In starting the Scriptural defence he observes that precisely the same objections have successively been made to most of the great discoveries and improvements in medicine: ‘One of the great arguments, it may be remembered, against vaccination, and in the last century against inoculation, was that the practice was a presumptuous contravention of the Divine will’.

Protheroe Smith follows much of the same ground as Simpson over the correct translation from the Hebrew. However, with regard to the 'curse', he asserts:

'I am prepared to show, however, that such objection has no legitimate foundation in the present era of redemption. On the contrary, we have indisputable evidence that since the death of Christ, there has been a progressive advance in such knowledge as is especially designed to ameliorate the curse, and to sustain the character of the Christian dispensation, viz: "*Good will towards men; mercy and not sacrifice*".'

His religious debate twists and turns to the following paragraph:

'Having thus been made our *sin* and our *curse*, Christ now occupies the place of what otherwise must have continued insurmountable barriers between creature and Creator. No longer, however, as an obstacle to our approach to God, but as Mediator between God and Man. It follows from these premises, that *sin* is the ground on which the *curse* existed; and that, to the spiritual man, *both* are judicially abolished in Christ.'

As an appendix to his treatise, Protheroe Smith attaches a letter written by Simpson to him on 8 July 1848. The following paragraphs give an insight into the debate in Edinburgh:

'Here in Edinburgh, I never now meet with any objections on this point, for the religious, like other forms of opposition to chloroform, have ceased among us.

But in Edinburgh matters were very different at first; I found many patients with strong religious scruples on the propriety of the practice. Some consulted their clergymen. One day, on meeting the Rev Dr H-, he stopped me to say that he was just returning from absolving a patient's conscience on the subject, for she had taken chloroform during labour, and so avoided suffering, but she had felt unhappy ever since, under the idea that she had done something very wrong and sinful. A few among the clergy themselves, for a time, joined in the cry against the new practice. I have just looked up a letter which a clergyman wrote to a medical friend, in which he declares that chloroform is (I quote his own words) 'a decoy of Satan, apparently offering itself to bless woman: but, in the end', he continues, "it will harden society, and rob God of the deep earnest cries which arise in time of trouble for help" '.

The implication of this passage is that the whole religious debate lasted less than eighteen months. Of particular interest is that Simpson's own writings refer to objections raised by some patients and their medical attendants with only a 'few' among the clergy said to have doubts.

The Myth

In 1855, Edward Murphy in his pamphlet, *Chloroform: Its properties and Safety in Childbirth*,³ asserts that: 'the aid of the Church was summoned' and that 'pamphlets, tracts and essays accumulated'. This notion did not originate from Simpson or any of the pamphlets so far uncovered by either ourselves or by Farr. This, therefore, is the earliest reference to the Church as a body.

In 1873 reference to religious objections was made by J Duns in his biography, *Memoir of Sir James Young Simpson*.⁴ Duns fails to quote any evidence other than Simpson's pamphlet. By 1896, Simpson's daughter, Eve B Simpson in her *Sir James Y Simpson*⁵ restates the anecdote, again with only her father's pamphlet as evidence.

In the same year, Andrew Dickson White, late President and Professor of History at Cornell University, published *A History of the Warfare of Science with Theology in Christendom*⁶ in two volumes. Anaesthesia is included in a section entitled *Theological opposition to inoculation, vaccination, and the use of anaesthetics*. Most of the passage concerns vaccination and once again, on the matter of prevention of smallpox, the sermons of the Reverend Edward Massey and the Reverend Mr Delafaye are quoted. However, when anaesthetics are discussed, no written text is quoted, all that is stated is 'from pulpit after pulpit Simpson's use of chloroform was denounced as impious and contrary to Holy Writ'. Neither Simpson nor any of the pamphleteers used the expression 'pulpit after pulpit'. White was writing fifty years after the event, so his only sources would be Simpson, Murphy and Duns. This suggests that Duns is the source of the myth expounded by subsequent writers.

White describes Simpson's use of anaesthetics in obstetrical cases as being met by a storm of protest. The hostility he believed flowed from an ancient and time-honoured belief in Scotland persisting to the middle of the 19th century. In 1591, Eufame Macalyane was charged with seeking the aid of Agnes Sampson for the relief of pain at the time of the birth of her two sons and was subsequently burned alive on the Castle Hill in Edinburgh. Sampson was convicted on 44 charges relating to witchcraft of which only the 42nd related to the attempted pain relief of childbirth. Farr considered this matter to be a red herring. Continuing the theme, White describes Simpson as writing pamphlet after pamphlet to defend the blessing. He quotes the tenet of anaesthesia being used in the first surgical operation, but states that the battle was not won until a new champion, Thomas Chalmers, entered the debate and with a few pungent arguments from his pulpit, scattered the enemy forever. At present, there is no record of Chalmers ever preaching on this subject.

It appears that possibly Murphy, probably Duns and certainly White are the originators of subsequent authors' belief that there was significant religious objection to the use of anaesthetics in surgery and midwifery. This view was repeated by J Chassar Moir, Nuffield Professor of Obstetrics and Gynaecology at the University of Oxford in 1947, the hundredth anniversary of the introduction of chloroform anaesthesia.^{7,8}

Chassar Moir leads with the discovery of chloroform anaesthesia and then gives some biographical information about Simpson. He then enters the debate on the perversity of human reasoning; no sooner had the pain-destroying properties of ether and chloroform been proved than there was an outcry and denunciation of their use.

Two other authors writing on the Centenary confirm the religious opposition myth without supporting evidence. In a pamphlet with the Simpson papers in Edinburgh, Ian Grindlay Simpson⁹ maintains that:

'the argument was frequently employed, particularly with regard to the use of chloroform to dull the sufferings of women in travail, that it was unnatural and a thwarting of the Divine Will. One minister spoke of the new drug as a "decoy of Satan".'

In a separate article from the *Edinburgh Medical Journal*, R W Johnstone¹⁰ wrote:

'But if the battle against pain had been won, the battle against prejudice had only begun. Such was Simpson's already established reputation that the news of his discovery spread like wildfire over the civilised world. And just as in the case of Jenner, of Semmelweis, and later of Pasteur and Lister, so the case of Simpson's great medical discovery aroused intense antagonism.'

He noted that this came from two directions, from the medical profession, and the Church:

'But a more subtle opposition came from the Pharisees of the day - the ultra-orthodox religious folk. These persons had comparatively little opposition to anaesthesia for surgical operations, but they took the gravest exception to the relief of pain in childbirth.'

Johnstone continues with the conventional Scriptural debate to reach the usual conclusion.

The Witches

White's reference to the cases of Agnes Sampson and Eufame Macalayne has already been mentioned.⁶ Robert Pitcairn details the trials of both Sampson and Macalayne.¹¹ With regard to the former the trial of 27 January 1591 is reproduced in detail. Sampson faced no less than 44 separate charges, mostly relating to witchcraft. It is only charge number 42 that relates to the case of Eufame Macalayne although, interestingly, number 43: *convict of the taking of the pane and feiknes of the Lady Hirnefloune, the nycht of hir delyuerie of her birth* is not mentioned by White. The case of Eufame Macalayne was heard on 9 June the same year. Again, there are many charges relating to witchcraft, number 18 being relevant: *Indytit, of consulting and feiking help att the faid Ammy Sampfoune, ane notorious Wich, for relief of yopur payne in the tyme of the birth of youre twa founnes.*

As most of the charges to both women relate to witchcraft, it is interesting that White should have used only the two selected items to further his case.

The Myth Explored

That the opposition to obstetric anaesthesia may not have been as extensive as would appear from the legacy of White's writing was explored by the late A D Farr, a Senior Chief Scientific Officer for the North East of England Blood Transfusion Service. His PhD thesis of 1977 (suggested by Professor Colin Russell of the Open University) was entitled 'Medical Developments and Religious Beliefs'. Subsequently, and concentrating on the anaesthetic element, he wrote in *Anaesthesia* in 1980 on the early opposition to obstetric anaesthesia.¹² This paper discusses the mid-19th century views on the medical uses of pain and covers opposition on medical, moral and religious grounds. Farr asserts in the text of his paper, that on the religious aspect, evidence of

any such attack in contemporary writings is singularly sparse and believes that Simpson's pamphlet was written to forestall objections which, in the event, did not arise. However, neither the summary nor the conclusions of the paper include this information so boldly stated.

In 1983, Farr in more robust mood, published a paper¹³ entitled 'Religious opposition to obstetric anaesthesia: a myth?'. Now specifically looking for contemporaneous evidence of religious writings in opposition to the obstetric use of anaesthesia he examined, for the period of October 1846 to December 1849, eighty four newspapers and periodicals, as well as the *Acts of the General Assembly of the Church of Scotland* and the *Acts and Proceedings of the General Assembly of the Free Church of Scotland*. In all, seven items relating to religion in connection with anaesthesia were uncovered and none was critical of the use of chloroform. Indeed five actually supported the notion. Turning to objections made privately, Farr describes two supporting texts. Firstly, in the pamphlet, Simpson refers to having heard patients and others strongly object to the process. Secondly, there was the letter used as an appendix to the pamphlet of Protheroe Smith described earlier. Farr also explored the available secondary evidence. In G T Gream's pamphlet, the *Misapplication of Anaesthesia in Childbirth*, there is a brief passage expressing the opinion that Simpson's pamphlet 'does not contain one single argument to prove that there is authority for allaying the pains of labour'. Gream is of the opinion that anaesthesia and intoxication were synonymous and were crimes by the laws of God. Charles Meigs who opposed Simpson on the medical aspects of obstetric anaesthesia was less forthcoming on the religious debate, only doubting that medical processes contravened Divine Law. His third source was W P Montgomery of Dublin whom Simpson believed to be strongly opposed to him on the religious issue. Montgomery denied this, being opposed only to the indiscriminate use of anaesthetics during labour.

Other Writings

A search of Lambeth Palace Library indicated some evidence of concern regarding mesmerism. George Sandy, Vicar of Flixton (Suffolk) presented the argument:¹⁴

'The deep sleep or torpor which would place the sleeper so completely at the mercy of the Mesmeriser, as to give an opportunity for evil, does not occur every day; and more generally, *if not always*, the Mesmeric state produces, on the part of patients, such a high tone of spirituality, and sense of right, as to make them less than ever disposed to acquiescence to what is wrong'.

However, five pages later he attests: 'Mesmerism is the Gift of God'.

One hundred and twenty years later, Dr Donald Coggan, addressed the Church and Medicine debate noting his great debt to the medical profession and indicating that he was the son-in-law of a doctor and father to another.¹⁵ Whilst transplantation, geriatrics, social responsibility, sperm storage and eugenesis all appear, no comment regarding anaesthesia was made.

Conclusion

Opposition to other matters on religious grounds can be traced to primary reference sources in the 1840's. Contentious subjects¹⁶ range as widely as objection to hairdressers working on Sundays, geology and the origin of the earth, and Darwin's *Origin of Species*.

The legacy of James Young Simpson's pamphlet was a belief that there was considerable opposition to chloroform anaesthesia on religious grounds, especially in relation to the relief of pain in childbirth. The passage of this doctrine can be traced through many authors to the present day. However, extensive research has, to date, not provided a single primary document proving the existence of such opposition. The writings of Simpson himself, and others suggest that such opposition was heard rather than read, which may indicate modest concern spoken rather than written.

The myth of religious objections to anaesthesia has previously been questioned, notably by the late A D Farr and Professor Colin Russell. We concur with Farr's statement that this particular conflict appears to be an artefact of historiography, based upon a contemporary defence prepared against an attack which never materialised. We find it surprising that this view has not, as yet, gained general acceptance.

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RELIGIOUS OBJECTIONS II: BLAMING SIMPSON A MISCARRIAGE OF JUSTICE

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We believe that Simpson has suffered a miscarriage of justice. Most commentators refer to him as if he was the only person to write an answer to religious-based opposition to the early use of ether and chloroform in childbirth,¹⁻⁴ which is not the case. More importantly, they criticise what they believe he wrote, rather than what he actually wrote. One commentator⁵ has inferred that in the absence of primary documentation, Simpson was responding to a controversy that never really existed.

What Simpson and others wrote

Sir James Young Simpson

In the first paragraph of his *Answer to the Religious Objections*,⁶ published in December 1847, Simpson wrote that he and many of his professional brethren in Scotland had:

‘often heard patients and others strongly object to the superinduction of anaesthesia in labour, by the inhalation of ether or chloroform, on the assumed ground that an immunity from pain during parturition was contrary to religion and the express commands of Scripture. Not a few medical men have, I know, joined in this same objection; and have refused to relieve their patients from the agonies of childbirth, on the allegation that they believed their employment of suitable anaesthetic means for such a purpose would be unscriptural and irreligious.

He did not name religious organisations or individual ministers.

Simpson mentioned that Dr Thomas Chalmers (1780-1847), Professor of Theology at Edinburgh University since 1827, and the leader of the Free Church of Scotland following the Great Disruption of the Church of Scotland in 1843,⁷ did not see any theological aspect to anaesthesia, even in midwifery, to avoid one part of the primeval curse. Chalmers referred to those who took such an improper view of the subject as ‘small theologians’. It is not clear who these objectors were: medical men, female patients, or ministers of the church. Chalmers term ‘small theologians’ could therefore apply equally well to any of these groups.

Medical men in Edinburgh

A single-paragraph news item in one Canadian newspaper, dated 4 February 1848⁸ confirms Simpson’s statement that some medical men objected to the use of chloroform in childbirth on religious grounds:

‘Several Scotch medical practitioners have refused to use chloroform in midwifery, on the grounds that it is ‘uncanonical and irreligious’ so to mitigate the curse imposed on women.’

Although the primary source of most foreign news items was cited, it was not given for this or several others in the same issue. We did not find any articles or correspondence concerning pain relief in childbirth, either from ministers or laypersons, in London, Edinburgh, or Glasgow newspapers 1847-53.

One recent commentator⁵ appears to dismiss Simpson's *Answer to the Religious Objections* for three reasons. Firstly, because Simpson wrote it in response to a rumour of a forthcoming lecture in Liverpool in which he expected the speaker to put forward religious objections, which apparently did not transpire.⁷ Secondly, because Simpson wrote the 23 page pamphlet in one day, while recovering from influenza. This is true, but there can be no doubt, from the content and orderly presentation of his religious arguments, that Simpson had studied his subject deeply, and had merely been waiting for a break from clinical work to put his thoughts in writing. Thirdly, he believes that Simpson misinterpreted medical opposition as religious opposition, which is not true. Simpson did recognise medical opposition. He collected data from various medical colleagues on more than 700 uses of ether and chloroform in midwifery, and published a pamphlet in answer to those criticisms.⁹

In a letter dated 8 July 1848, Simpson wrote to Protheroe Smith:^{10,11}

'I regret to hear from you that, in London, the progress of Anaesthetic Midwifery is impeded by any groundless allegations as to its unscriptural character; and I can sincerely sympathise with you in your exertions to annihilate these scruples. Here, in Edinburgh, I never now meet with any objections on this point, for the religious, like the other forms of opposition to chloroform, have ceased among us.

'But in Edinburgh matters were very different at first. I found many patients with strong religious scruples on the propriety of the practice. Some consulted their clergyman. A few among the clergy themselves, for a time, joined in the cry against the practice. And you are aware how some medical men attempted to preach, and, as you state, still preach against it on religious grounds.'

Simpson made clear that the religious opposition in Edinburgh, which came mainly from patients and from a few clergy and doctors, had virtually disappeared within eighteen months of his first use of ether in childbirth in January 1847. He received letters from theologians and those in high places in various Christian denominations that supported his views, and never claimed to have encountered opposition from such representatives of 'the Church'. However, only one such letter exists in the Simpson correspondence file of more than eleven hundred items in the Royal College of Surgeons of Edinburgh. This was from Revd Thomas Boodle of Virginia Water,¹² who wrote to tell Simpson that the pamphlet had relieved his mind from the serious objections he had entertained; and he requested further information about the 'safety and expediency of its adoption in midwifery as a means of mitigating the pangs of labour'.

Simpson's lectures on chloroform for 1854¹³ and 1862¹⁴ are in the archives of the Royal College of Physicians of Edinburgh in bound volumes of hand-written notes taken by medical students. In 1854, Simpson mentioned a discussion by Dr Lee at the Medical Chirurgical Society of London in December 1853, in which Lee declared that chloroform during labour was a vain attempt to

abrogate God's Law. However, this discussion is not recorded in the Society's journal. Simpson mentioned that one of thirteen of his private patients was denied chloroform through her husband's contentious objections on religious grounds. He provided all his own arguments, and referred his students to the 'very masterly' essays by Protheroe Smith and Bainbrigge, and to de Quincey's MD thesis. In his 1862 lecture, his criticism of ministers of religion who had attacked various scientific and medical discoveries over several centuries reads like an exposure of Chalmers's 'small theologians' rather than an attack on 'the Church' as an organised body.

Dr Protheroe Smith

Protheroe Smith MD, MRCP was Physician-Accoucheur to the Central London Lying-in Institution and Lecturer in Midwifery at St Bartholomew's Hospital. He published his 52 page pamphlet in 1848,¹⁵ in response to:

'So many communications, from both Professional and non-Professional correspondents, advocating "religious objections" to the use of Chloroform vapour in Midwifery, that I have been induced to publish my views on the subject in order to furnish a reply to each.'

W H Bainbrigge

W H Bainbrigge FRCS was Honorary Senior Surgeon to the Liverpool Northern Hospital, and Surgeon-Accoucheur to the Ladies' Lying-In Charity. He claimed that the objections advanced against the use of chloroform arose 'more particularly, as I almost daily witness, in the minds of the female sex themselves, on religious grounds'. He wrote his 43 page pamphlet¹⁶ not for his medical colleagues but for the general public. He drew heavily on Simpson's *Answer to the Religious Objections*, but he also described the actions and advantages of chloroform anaesthesia. He made no mention of clerical or church opposition, and stated that the medical profession's objections were based mainly on the supposed danger of chloroform administration.

Dr Francis J de Quincey

Francis J de Quincey, son of the writer Thomas de Quincey, wrote his Edinburgh MD thesis¹⁷ in 1849. He did not mention Church opposition but took a rather different interpretation of Genesis iii:16. He believed that if Simpson accepted the verse as an 'imperative sentence' on women, it did not matter whether the controversial word was translated as 'sorrow', 'muscular contraction' or 'pain'. It would debar him forever from the use of turning, the forceps, the air-tractor, the caesarean section and embryotomy, because all these imply reduction or abolition of muscular contraction. De Quincey suggested that the verse implied a 'simple prophetic intimation' of how women would never be perfectly happy, and that sorrow would extend throughout life in the bringing up of children. He also observed, perhaps tongue in cheek, that objections to chloroform in childbirth were chiefly urged by old ladies who never married, had no children, no desire to a husband, and no husband to rule over them. Thus, by adopting this means of escape from pains of the first curse, they were much worse sinners than those mothers who sought pain relief in chloroform!

Revd Abraham de Sola

Abraham de Sola was a Lecturer in Hebrew Language and Literature at the University of McGill in Montreal. The editor of the *British American Journal of Medical and Physical Science* invited him to make observations on the 'Plain, Grammatical Sense of Certain Words of Holy Writ', namely Genesis iii:16.¹⁸ He was of the Jewish faith, and felt that this invitation might be startling and certainly novel in character to the minds of the Christian reader. He mentioned that the use of anaesthetic agents in midwifery had been opposed by 'many persons, on grounds, both religious and professional', but did not give any personal experience. He stated that he had neither the ability nor inclination to address the professional objections. His three articles provide a detailed and scholarly discussion of Hebrew philology and grammar, and refer to Gesenius and other Hebrew authorities to address all possible meanings and nuances. He was critical of Simpson's translation, but he believed that if anaesthesia only reduced pain or 'sorrow' resulting from the travail or hard work, then it was a good, proper and scriptural practice. Only if it interfered with natural labour or endangered the safety and welfare of the mother or offspring would it be wrong, unscriptural, and sinful.

Dr Walter Channing

Walter Channing was Professor of Midwifery and Medical Jurisprudence in the University of Cambridge, Massachusetts. He devoted 23 pages of *A Treatise on Etherization in Childbirth*¹⁹ to answering objections to pain relief, and 11 of the pages to religious objections. He knew that Simpson had published a pamphlet about religious objections but, assuming the pamphlet 'to be confined very much to the clergy, as the Scripture arguments against other reforms, as intemperance, war, &c. have so often been', he decided to say nothing about it. However, he soon learned that people, including some medical men, were accepting the alleged scriptural authority against etherization in childbirth. When he wrote to a medical friend for his observations of ether and chloroform in childbirth, the friend replied:

'Dear Sir, - I have never employed ether in any obstetric case, since its introduction ... God has said, "In sorrow shalt thou bring forth children" and the very suffering which a woman undergoes in labour is one of the strongest elements in love she bears her offspring. I have fears for the moral effect of this discovery both on the patient and on the physician. Still, I participate in the enthusiasm incident to its discovery; and in some cases, and under certain conditions, should not object to its use ... Boston, Jan. 22, 1848.'

Channing sent Simpson's *Answer to the Religious Objections* to Professor Noyes, a scholar and theologian, who believed that the root of the word 'sorrow' was commonly used in the Old Testament to denote wearisome labour, trouble, or pain, and that Genesis iii:16 should be translated: 'I will greatly increase the painfulness of their conception. In pain shalt thou bring forth children'. This translation is almost identical to that of the Revised Standard Version of the Bible (1952): 'I will greatly multiply your pain in childbearing; in pain you shall bring forth children'. He doubted that Simpson's view was correct, because it was never suggested by any Jewish or Christian critic, until a scientific exigency called for it. Despite his difference of opinion, Noyes assured Channing that 'the duty of relieving distress is the express dictate of nature and revelation'.

Frances Long Taylor

Frances Long Taylor, the daughter of Crawford Long of Athens, Georgia, wrote that her mother told her that her father administered ether to her about 1847 at the birth of one of their children,²⁰ and that he used it with discretion in maternity cases until his death in 1878. She also stated that there was a deep-rooted superstition, not confined to the ignorant alone, that:

'Child-bearing was the primeval curse. The prospective mother was about to give to the world a new creature cursed with original sin, and to afford her surcease from pain was to thwart the designs of Providence.'

As late as 1874, a highly cultured and religious woman prevented Long from giving pain relief to the woman's daughter in labour because of the scriptural injunction: 'in pain and sorrow ye shall bring forth children'.

Periodicals and sermons

The only comments we found in 1847-8 were from a brief item in *The Free Church Magazine* that referred favourably to surgical anaesthesia,²¹ and a single article in the *Christian Reformer* of 1848 that summarised and supported Simpson's Answer pamphlet.²² Our computer searches of published sermons at the British Library and the Lambeth Palace Library, using the key words Genesis, pain, childbirth, ether, chloroform and mesmerism all drew blanks.

This failure to find published sermons supports Simpson's belief that there was minimal opposition among the clergy.¹⁰ Ecclesiastical historians in England and Canada, with a special interest in 19th Century church affairs, do not believe that the Church of England, the Presbyterian Church in Canada or any other denomination made any official comment on the use of pain relief in childbirth (Chadwick, Sell, and Moir, personal communications).¹³ The Church of England Convocation was not established until 1853, and was an advisory body only, while the Baptist and Congregational National Unions did not raise such issues.

The Royal Archives at Windsor Castle

In 1998 we inquired from the Royal Archives whether there was any documentation that Queen Victoria, as temporal head of the Church of England, had discussed with the Archbishop of Canterbury, or other religious advisors, the propriety of receiving chloroform during childbirth in the months leading up to the birth of Prince Leopold in April 1853. The Deputy Registrar replied:²⁴

'I regret that I have not been able to find anything in our records to indicate whether Queen Victoria discussed with anyone the religious propriety of her receiving chloroform - which, of course, is not to say that discussions did not take place, but only that we have no record of it. Nor can I find any reference to public opposition to her use of chloroform.'

The use of chloroform in childbirth was brought to the Queen's attention as early as 1847 - she wrote to a friend, the Duchess of Sutherland, on 15 December saying that she had just heard

'details of Lady Hardwicke's confinement who used the chloroform, & with whom it has succeeded so wonderfully, - relieving her of all suffering at the time, even also afterwards. How wonderful it is'. She also refers to an unspecified 'curious & interesting' pamphlet by a Dr Simpson which the Duchess had sent her, and this was presumably an essay by Dr (later Sir) James Simpson on the subject of the use of chloroform. Interestingly, earlier that year the Queen had appointed Simpson as one of her Physicians in Scotland.

Two years later, on 16 November 1849, the Queen wrote to thank the Duchess for her 'account of the use of chloroform in childbirth by the Duchess' daughter, Evelyn, Lady Blantyre. The Queen commented that: 'the mode of giving [chloroform] in a small dose, & yet without the loss of consciousness sounds most satisfactory, & I shd think wld become very general.' There is thus no indication that Queen Victoria was even aware of religious opposition to the use of chloroform at that stage.

By the date of her first letter to the Duchess, the pamphlet must have been *Answer to the Religious Objections Advanced Against the Employment of Anaesthetic Agents in Midwifery and Surgery*. There is no evidence that Queen Victoria or her friends were aware of any early 'Church' objections, and this supports Simpson's view that, by 1849, religious objections were rarely heard. The fact that the Queen Victoria received chloroform at the birth of Prince Leopold on 7 April 1853, as did the daughter of the Archbishop of Canterbury at Lambeth Palace on 20 October 1853,²⁵ without publicity²⁶ or controversy provides further confirmation that, by then, this was a non-issue.

Discussion

We believe that Farr produced sound evidence that there never was any real conflict between obstetricians and 'the Church'. The documented objections were those of individual patients, doctors and ministers. None of the writers who encountered opposition accused 'the Church' as an organisation of trying to prevent pain relief in childbirth.

The Simpson papers, held mainly in the Archives of the Royal College of Surgeons in Edinburgh, include not only correspondence but also household accounts. We found only one letter from a minister. Simpson also quoted extensive correspondence with obstetricians, surgeons, and hospitals in the British Isles and Europe when he collected statistics on use of ether and chloroform in childbirth,⁹ and surgical mortality with and without anaesthesia.²⁷ The fact that we found none of this primary material suggests that it has either been lost or destroyed, and not that it was a figment of Simpson's imagination.

One of the key issues of the Protestant Reformation, and the publication of the Authorised Version of the Bible in 1611, was that of religious authority.²⁸ Ordinary people who were literate could read what was written, but they could also misinterpret what they read or make doctrines from selected 'proof texts'. Most of those with higher education and broad-based knowledge of the Bible, like Simpson and the other writers, understood the overall message of the Old and New Testaments. They saw the one verse in question, Genesis iii:16 as part of the larger picture, whereas the objectors may have taken it as a doctrine that they believed to be exclusively, irrevocably and absolutely true. Simpson and others responded to the objectors on their own

ground with biblical exegesis to ensure appropriate patient care and women's rights to painless childbirth.

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ANAESTHESIA IN ULSTER - THE FIRST TEN YEARS

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Doctors in the North of Ireland in the 18th century could not train locally and had to go to Dublin, England or Scotland. The last was much the most popular of the three locations and in spite of the long journey the majority of students chose Edinburgh rather than Glasgow. Scotland was chosen mainly because it was the natural goal for Ulster Presbyterians and Edinburgh was regarded as the Athens of the North, whereas Trinity College, Dublin had a poor and disorganised medical school at that time.¹ After 1800, Scotland still was preferred to Dublin by the majority of students but the balance of choice had swung from Edinburgh to Glasgow.

First ether anaesthetic in Ireland

Probably the most notable of the 18th century physicians was Dr James McDonnell (1762-1845), who graduated MD of Edinburgh University with a thesis on resuscitation of the drowned (*De Submersis*), and was the founder in 1797 of the Belfast Fever Hospital which later became the Royal Victoria Hospital.²

Of more interest to us here is his son, Dr John McDonnell, who studied medicine in Dublin and settled there permanently.³ He was appointed surgeon to the Richmond Hospital and on 1 January 1847 became the first person to administer ether as an anaesthetic to a patient in Ireland. This was only three months after the first public demonstration of ether as an anaesthetic by Morton in Boston and less than two weeks after the first anaesthetics in Scotland and London.

Until recently it was believed that there was no evidence for the use of anaesthesia in Belfast for some years, as is implied in papers by earlier anaesthetists in Belfast.⁴ However, this is certainly not true for there is a clear account of an anaesthetic in the *Belfast Newsletter* of 22 January 1847.⁵

'The extraordinary discovery of the anodyne properties of the fumes of sulphuric ether, which have obtained considerable European and transatlantic fame, and which have already been explained to the readers of the *News-Letter*, were employed with some success in the surgical hospital of this town. On yesterday, it was considered necessary to amputate a young woman's arm, in order to save her life, her hand having been shattered a few weeks ago by the machinery in Mr Ewart's factory. The medical attendants succeeded in throwing the patient into a kind of trance, by means of the vapour of sulphuric ether; but owing to the imperfect apparatus used on the occasion, she could not be made altogether insensible. However, the pain she experienced was not acute; and her only intelligence of the operation was when the bone was being sawed through. We understand that the ether will be employed in another case today; and, as the apparatus will be made more perfect, every hope of the success of the experiment is confidently entertained.'

There is a contemporary comment by John Cunningham of Glenwood near Belfast, who wrote to his brother Thomas Cunningham, a medical student in Edinburgh, on 26 January 1847:

'Dr Gordon and Dr Stewart have been amputating limbs in this hospital with the aid of ether and did very well. It will be quite a new feature of the medical world and I hope a good one.'⁶

Dr Gordon was the future Professor Alexander Gordon, an Edinburgh MD and first professor of surgery in Queen's College, Belfast (Figure 1).

Dr Horatio Stewart, a Glasgow graduate was then a more junior surgeon in the hospital but was to be the first professor of materia medica in the College, and may have given the anaesthetics. He was to die in 1857 and there is no picture of him.

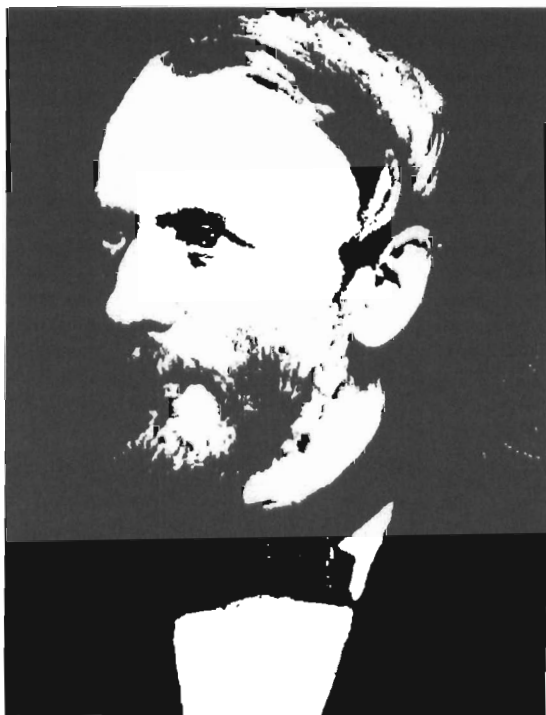


Figure 1
Dr Alexander Gordon MD (Edin) first Professor of Surgery
at Queen's University of Belfast

Cunningham - Syme correspondence

It is not known for certain how satisfied the Belfast surgeons were with ether but Thomas Cunningham replied to his brother in March that Mr Syme, the Edinburgh surgeon, had commented about anaesthesia with ether, that 'it will not do'.

This correspondence contains a wealth of information about the contemporary Edinburgh medical scene (including the students' age-old shortage of money). He comments in March on some experiments with ether:

'I know I would not have fancied trying such experiments on my lungs ... we are rather falling off as regards operations in the Infirmary, not having had a capital one for ten days'.

It appears that Syme was even prepared to amputate without anaesthesia rather than use ether and Simpson did not introduce chloroform until later in 1847, as he reported to the Medico-Chirurgical Society of Edinburgh on 10 November.⁷

The letters were purchased by Edinburgh University Library in 1958 from a dealer who had presumably acquired them from a descendant of Thomas Cunningham. A list of the material and generous extracts have been acquired by the Public Record Office in Belfast. In addition to the correspondence, many of Cunningham's medical books, (including some of Simpson's) and also testimonials and notebooks, were acquired by Dr Lawrence Reynolds, a radiologist of Detroit, and after his death passed to the Reynolds Historical Library in Birmingham, Alabama.

The town of Omagh was also early in the use of ether, for a letter in the *Tyrone Constitution* newspaper of 29 July 1847⁸ describes its administration by the surgeon, Dr Henry Thompson. He had tried it unsuccessfully on two previous cases but both surgeon and patient were completely satisfied with it in the case described, the removal of a diseased bone in the foot.

The Belfast Fever Hospital

The Belfast Fever Hospital, built in 1817, was becoming very cramped thirty years later and in 1847 two extension wings, designed by Belfast's leading architect Sir Charles Lanyon, were opened. It was presumably a coincidence that in this year of the introduction of anaesthesia to Ireland, Belfast's first operating theatre should have been built, and a plan of the ground floor of the hospital shows its layout (Figure 2). It was the standard design for a lecture theatre with demonstrating space used in the past also for anatomy and pathology demonstrations. The old theatre was pulled down over 60 years ago but the old St Thomas's theatre in London of the 1840s probably looks very like the first operating theatre in Belfast.

There is little specific information on the early history of anaesthesia in the Belfast General Hospital (as the Fever Hospital was now called) but a picture can be built up from isolated scraps in the Annual Reports.⁹ Ether is not mentioned until 1866 but the Surgical Report covering April 1849 to March 1850 states that:

'42 surgical operations have been performed, several of them under the influence of chloroform. The facts in reference to this agent are not yet sufficiently numerous to enable us to recommend or condemn its general use. It is perhaps, however only right that we should take this opportunity of stating that it requires great caution and considerable experience to render its administration safe.'

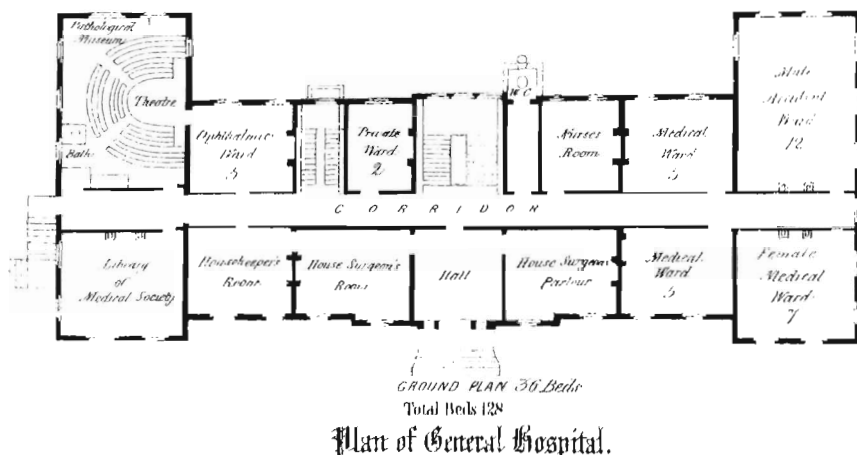


Figure 2
Plan of the ground floor of the Belfast General Hospital, with its wings added in 1847, showing the theatre on the left

Chloroform had been quickly adopted in Belfast and found to be more easily administered and pleasanter for the patient than ether, (even though there had already been a fatality (Hannah Greener) in England in January 1848).¹⁰

In 1851 the Annual Report states:

'The use of chloroform, which tends so much to allay the sufferings of the patient during an operation, has been more generally adopted than formerly, and with decided success, no injurious effects having, in any case, resulted from its employment in this establishment.'

For the first time the Annual Report for 1851 gives under Expenditure (sundries) the figure of £1-4s-0d for chloroform.

Early form of Intensive Care

Turning to the field of intensive care, there is an interesting case report from the *Transactions of the Belfast Clinical & Pathological Society*, 1853-4.¹¹ Dr Henry Johnston, a general practitioner of Donegal Street, Belfast, saw a girl of 10 with rheumatic fever, cardiac murmurs and peripheral oedema. He treated her with leeches and purgatives with some benefit but a week later she developed signs of chorea. This involved severe spasms and convulsive movements and did not respond to opiates so that the child soon became exhausted. Dr Thomas Henry Purdon, a physician at the General Hospital, was now called in and suggested giving chloroform.

Dr Johnston describes how:

'We gave her the chloroform, allowing her to inhale it from a handkerchief, Dr Purdon watching its effects upon the pulse. He observed that just as she was coming under its influence, it suddenly rose in frequency, and seemed as it were to falter, but in a few seconds it again became steadier, fuller, and slower, coming down from 112 to 104. It had the happy effect of completely allaying the spasms, and the poor exhausted child enjoyed quiet repose during the greater part of Monday, the chloroform being occasionally administered according to circumstances. In the evening, we thought it well to suspend its use for a little, but were disheartened in finding the spasms almost as severe and as general as ever. The muscles of the eyes, mouth, larynx, and those of mastication, &c being all engaged. At first, she was brought under the influence of chloroform with considerable ease, about half a drachm being used, after which she showed symptoms of awaking at intervals of about twenty-five to forty minutes, and then required its re-application for a very short period. Once or twice during the day we suspended its use for a little, in order to let her have some nourishment and medicine. At our consultation upon Tuesday at eleven o'clock, A.M., we thought her somewhat better, but the heart's action was very tumultuous. [Next day.] Symptoms of exhaustion began to show themselves: the extremities became cold. The little sufferer continued conscious to the last, but the spasms unsubsided; until from exhaustion, death afforded that relief which our art could not procure. She died at ten o'clock upon Wednesday night, the choreic symptoms having existed about five days.'

This appears not only to be the first anaesthetic in Ulster to be documented in detail but describes the first patient to have Intensive Care in this Province.

Increase in Surgery

The number of operations performed annually rose steadily, passing the 100 figure in the 1858 report. One of the advantages of anaesthesia was that it reduced the sense of urgency for the surgeon, permitting a more careful dissection or preparation of the amputation stump. It was also felt that anaesthesia reduced the risks to the patient by 'lessening the severity of the shock to the system'. This view was hard to prove and some took the opposite view, namely, that the pain of surgery was actually beneficial in helping patients to recover from the operation.

By 1859 the surgical report⁹ refers to the use of chloroform as 'so long established in this hospital' and the annual bill had risen to £5-2s-0d. An innovation to which the 1866 report refers is that 'the ether spray, as recommended by Dr Richardson' has been fully tried as a local anaesthetic in several of the minor operations. In subsequent years both chloroform and ether continued to be bought, and the expenditure is often added together, but the exact use of the ether is uncertain. Certainly chloroform was the main anaesthetic of the older anaesthetists until the time of World War II.

Summary

1. Belfast Fever Hospital was founded by Dr James McDonnell MD (Edin) in 1797.
2. General anaesthesia with ether was first used in the hospital on 21 January 1847. The surgeon and anaesthetist were Dr Alexander Gordon and Dr Horatio Stewart.
3. It was recognised as valuable but surgeons in Belfast (as in Edinburgh) were not wholly satisfied.
4. Chloroform was certainly used in Belfast by 1849 and became the principal anaesthetic for the next 100 years.
5. Chloroform was given to a child to relieve the spasms of chorea in 1854. It controlled the convulsions over 2 days but the child died soon after this, of exhaustion.
6. There is probably much more material on early anaesthesia scattered round the libraries than is generally known.

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THE FIRST ANAESTHESIA LITIGATION IN SCOTLAND Mrs Margaret Gillies v Dr John Cunningham

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The authority to claim this as a first is from the records of the Medical and Dental Defence Union of Scotland (MDDUS), the Scottish Court of Session and an incomplete survey of 19th century newspapers. The story involves Dr John Cunningham, the local Stewarton family doctor who took up practice there in 1890.

Stewarton

Stewarton is a small Ayrshire village between Glasgow and Kilmarnock and is now part of the Glasgow commuter belt in pleasant countryside to the west of Fenwick Moor. Its early importance was for cloth making and in particular the production of hats. Though there was serious rivalry with Kilmarnock as to which was the real bonnet town, Stewarton takes pride in having produced regimental bonnets, not least to Montgomery of Alamein and the balaclava worn by Sherpa Tenzing when he was the first to stand on the summit of Everest.

Andrew Gillies was a local Stewarton joiner who fell through a hatch at work, injuring his left arm. He consulted Dr Cunningham a number of times and persevered with poultices. Three months later he agreed to have the limited movement forcibly freed under anaesthesia. On Sunday 13 July 1902 this operation was carried out at Gillies' home in Springwell Place. Dr Cunningham, who lived about 200 metres away in the High Street, visited Gillies in the evening at about 9pm and suggested he should pull the arm there and then under the aid of chloroform.

Domiciliary Operation

Four persons (Gillies, Cunningham, Gillies' son and a friend of the latter) went up to the bedroom leaving Mrs Gillies and her daughters downstairs. Dr Cunningham administered chloroform by the Edinburgh method with a towel over the face and after about half a minute there was apnoea; the arm was then forced and the contractures freed. From this point it all went wrong. Cunningham was unable to resuscitate Gillies using forceps to pull forward the tongue and mustard patches on the chest and abdomen. He excused himself at one point to return to his surgery which was a part of his home nearby; this was to collect a syringe and drugs as a final desperate attempt at resuscitation.

Gillies died almost certainly from ventricular fibrillation, from which of course in those days there was no recovery and indeed little understanding. It had first been described some 15 years previously by the Aberdeen physiologist JA MacWilliam,¹ though controversy continued for some two further decades over the mechanism of death associated with chloroform anaesthesia.² DC countershock was still in the future.³

Legal action

Not surprisingly the family were aggrieved, and in an attempt to achieve some financial support in the absence of their breadwinner Mrs Gillies sued the doctor resulting in an exhumation five days after the burial. The post-mortem report on Gillies was that death was from syncope; there was no evidence of asphyxia.

The case came to Court ten months later and was reported widely in newspapers^{4,5} and the medical press.⁶ The amount claimed was £1000 which was approximately ten times Gillies' annual wage. Since he had at least ten more years of working life it does not seem an unreasonable sum for which the pursuer was suing. A comparative figure today is hard to realise but an estimate might be 200 times that or more. Much detail was published in the newspapers of the time including reports that Mrs Gillies was particularly upset by the manner in which Dr Cunningham informed her that her husband was dead. Also it was claimed by Gillies' son that he asked Dr Cunningham three times before the latter agreed to summon his partner (Dr Taylor) to help with the resuscitation. Whether these claims were justified is not known. The specific grievances were:

- no pre-operative examination (auscultation) of the heart. *Arguably, this would have been non-contributory.*
- no pre-medication had been given. *Castor oil as a purgative had been handed to Mrs Gillies earlier that day by Dr Cunningham but dosage instructions and for whom it was intended were not explicit.*
- no pre-operative fasting. *According to Mrs Gillies her husband had eaten supper at 6pm (less than 4 hours) before the operation although it was non-contributory to the cardiac arrest.*
- no consent obtained. *It was argued that Gillies implied consent by his agreeing to have the operation in his bedroom, voluntarily going up there with the group described and inhaling chloroform.*
- non-emergency operation outwith working hours. *Why the operation was done in the late evening was not satisfactorily explained.*
- no trained assistant present. *The Court was told that because the operation was minor and would take a very short time (measured in seconds) no trained assistant was required.*
- inadequate prior preparation for things going wrong. *Because Dr Cunningham returned to his surgery to collect equipment during the resuscitation, inadequate preparation is a possibility.*

The italics give some indication of how the allegations were answered.

Growth of Defence Organisations

Not surprisingly, Dr Cunningham sought legal support from the MDDUS.⁷ The increasing requirement for UK medical defence organisations was becoming apparent towards the end of the 19th century. The medical press referred to a number of instances of litigation against doctors in England,⁸ and the result was the founding in 1885 of the Medical Defence Union, followed seven years later by the Medical Protection Society. The system of law was different in Scotland, and so its own Union (the MDDUS) was established in May 1902. Previously in Scotland there had been a less formalised group called the Medical Defence Association, which subsequently withered as the MDDUS became established.

The first meeting of the MDDUS Central Committee^{9,10} was in January 1903 and the first legal case which it considered was this one concerning Dr Cunningham. The sub-committee appointed to consider the case reported that they believed the member had not handled the case 'discreetly', but nevertheless felt that the death was a pure accident. They recommended that the Union give moral support, but instead of assistance with legal expenses, they suggested that a member (a surgeon of good repute) be sent to the Court of Session at the expense of the Union as an expert witness. After all this, it emerged that Dr Cunningham had submitted details of the case to the Union on the same day as he had applied for membership on 14 January 1903. The Council belatedly recognised that Dr Cunningham had not been a member at the time when the death occurred, and it was agreed that it would set a wrong precedent to assist him under these circumstances. This ended the Union's official interest in the case.

In his summing up the Lord Justice Clerk concluded:

'The law on the matter was that a person was not liable in the exercise of his profession for a mere mistake or mere failure in some detail which might cause injury to another. There must be what in Scotland was called gross negligence (or in England crass negligence)'.

After deliberation for three quarters of an hour, the jury of twelve returned a unanimous verdict in favour of the doctor.

Update

In October 2000 I visited Stewarton with this prior knowledge and called at the post office to enquire if the postmaster knew of the Gillies family. He did know the story that Andrew Gillies had died in his home under chloroform anaesthesia and directed me to the deceased's great niece who lived nearby. Jean Gillies is well aware of what happened to her great uncle and was pleased to show me the death certificate. With pride and stoicism she led me to the local churchyard and grave. The headstone tells only part of the story on that sabbath evening of the 13th of the month. Mrs Gillies remained a widow for 18 years before her name was inscribed on the stone beside that of her husband.

Dr Cunningham lived all his life in Stewarton and died in 1947. He was not married. His family vault is in the new cemetery a short distance from the old churchyard. There is no information as to whether he continued to anaesthetise patients after Andrew Gillies' death. He became a director

on the Board of Kilmarnock Infirmary and was a recognised authority on the history of Stewarton.

Conclusion

I sought a contemporary legal view and took the opportunity to send the details to a recently retired Court of Session judge.¹¹ A current legal opinion is that on the evidence outlined, the jury should indeed have found in favour of the defendant which was the presiding judge's view in his summing up.

The First Division Court of Session is still, as in 1903, the criminal court. The Second Division (in which this case was heard) is the civil court. Civil cases now do not usually have a jury. Pressure of work has increased the waiting time of cases coming to court and today the likely delay in Scotland would be a minimum of three years. It is noteworthy that the quoted mortality from chloroform in 1902 was 1:2280. Though there is an inevitable sympathy for the widow and dependants whose livelihood was all but taken away, the legal view is that Gillies manifestly consented to the operation and anaesthetic by going with the group up to the bedroom, and voluntarily co-operating in an inhalational induction of anaesthesia. Thus he was the author of his own fate.

Domiciliary obstetrics are of course now relegated to history in the developed world. More recently, chairside anaesthesia in the dental surgery has similarly been cast out of accepted practice as an unacceptable risk to life because of an inappropriate environment for resuscitation in the aftermath of a critical incident. This is similar to that which confronted Dr Cunningham a century ago in Stewarton.

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THE CONTRIBUTION OF THE EDINBURGH DENTAL SCHOOL TO THE ADVANCEMENT OF ANAESTHESIA

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In a previous presentation to this society¹ we described the evolution of a training programme in anaesthesia in the Edinburgh Dental Hospital and School around the end of the 19th century. Indeed the Dental Hospital was at the centre of anaesthetic teaching and research in Edinburgh before the Royal Infirmary had even appointed an anaesthetist. In passing it is perhaps worth remarking that this interest in progress was not confined to anaesthesia. In 1892 the Edinburgh Dental School accepted as a student Miss Lilian Murray (later Mrs Robert Lindsay), who in 1895 became the first woman to qualify as a dentist in the United Kingdom, and went on to make an outstanding contribution to her profession.² When Miss Murray applied to the Edinburgh Dental School for admission she was told by the Dean, Dr W Bowman McLeod, that women were received in the school on the same terms as men.³ As it turned out it was not quite that way because she was not permitted to attend the medical classes in the school. Fortunately for her, some years earlier in 1886 Dr Sophia Jex-Blake, who had established the Edinburgh School of Medicine for women, had persuaded the directors of Leith Hospital to admit women students to their wards for clinical instruction.⁴ Miss Murray was allowed to join these classes and thus was able to meet her training requirements. Dr Jex-Blake was the third of a trio of medical women who changed the face of medical education in the United Kingdom, and it is surely justifiable to digress briefly from our main theme to consider their contribution.

Three remarkable medical women

The first of the trio was Elizabeth Blackwell. She was a British-born American trained physician, who graduated from the medical school of the University of Geneva in New York State in 1849, and became the first woman doctor in the United States.⁵ After graduation she travelled to Europe for further study in Paris, and then in London where she was befriended by Sir James Paget, at that time Dean of St Bartholomew's Medical School. She began to practise in London, and in anticipation of the Medical Act of 1858 she was persuaded to apply for registration. This was granted, and she became the first woman to have her name entered on the British Medical Register on 1 January 1859.

The second of the group was Elizabeth Garrett who was greatly influenced and encouraged by Dr Blackwell. Miss Garrett began studying medicine in 1860, and despite much prejudiced opposition she managed to fulfil the requirements of the Society of Apothecaries, becoming the first English-trained woman medical practitioner on the Medical Register in 1865. The following year she established a dispensary for women in London, later renamed the Elizabeth Garrett Anderson Hospital. She also became (in 1908) the first woman Mayor in England when she was elected Mayor of Aldeburgh in Suffolk, where she grew up.⁶

Sophia Jex-Blake was the youngest of the trio, but had the hardest battle to gain her qualifications.⁷ After some difficulty she was allowed to matriculate in the University of Edinburgh and began the study of medicine in 1869. However, in 1873 the University rescinded its ruling on matriculation and she failed, despite a legal action, to compel the University to grant her a degree. She obtained an MD from the University of Bern and a Licentiate from the College of Physicians, Dublin, in 1877. The following year she began to practise in Edinburgh, and by 1866 she had established the Edinburgh School of Medicine for Women, which made it possible for Lilian Murray to qualify as a dentist.

The Scottish Society of Anaesthetists

But to return to anaesthesia. In February 1914 a group of eleven anaesthetists held a meeting in Edinburgh, as a result of which the Scottish Society of Anaesthetists was established.⁸ Of those present two had a direct association with the Dental Hospital, J H Gibbs and J Stuart Ross. Both of them were destined to have a profound influence on the development of the new society and both were later to become Presidents. The first regular meeting of the new society was held on 18 April 1914 in the Guild Hall in Edinburgh, at which fourteen anaesthetists were present who became the founder members of the society. Various rules were established and a suitable annual subscription of five shillings was agreed. Once the business had been concluded the members dined together and a precedent was set. Unfortunately the First World War intervened and the Proceedings of the Society were suspended until 1919, when the second regular meeting was held on 29 November in the Hall of the Faculty of Physicians and Surgeons in Glasgow.

The immediate post-war years were largely concerned with the status and remuneration of anaesthetists and there was little of scientific interest reported. In 1924 however the influence of the Dental School was once more apparent when Dr J H Gibbs, the immediate Past President, proposed that women should be accepted as members of the society. The proposal was agreed (although not unanimously) but in the following year Dr Effie J Swann was elected unanimously, becoming the first lady member; the male chauvinists had withdrawn their opposition! In this connection it is interesting that some eighteen years earlier in 1906, it was proposed and carried unanimously at the Annual General Meeting of the Odonto-Chirurgical Society of Scotland that ladies should be eligible to join the society. On 8 November of the same year Miss A Limont and Mrs Robert Lindsay (née Murray) were the first to be elected.⁹

Anaesthetic Services in Edinburgh Royal Infirmary

In 1925 five anaesthetists, J Stuart Ross, M H Jones, Torrance Thomson, F G Gibbs, and D S Middleton were working in the Royal Infirmary. Of these Ross, Gibbs, and Middleton were also qualified dentists and all worked with their particular surgeon. In the main however the administration of anaesthetics, especially for emergency work and such teaching as there was, remained in the hands of the surgical clinical tutors. They were on the whole disinterested and sometimes incompetent but nevertheless were reluctant to give up their authority. In fact the standard of practical instruction in anaesthetics was so abysmally poor that, as early as the last decade of the 19th century, the Dental Hospital had instituted its own training programme for the students. Thus on qualification they had some basic training in anaesthesia, which probably explains why many of the anaesthetists practising previously in Edinburgh were doubly qualified.

Dr John Gillies

By 1931 the managers of the Royal Infirmary still had not succeeded in having an anaesthetist appointed to cover the emergency work, until their hand was forced by a critical letter from the Crown Office about the administration of anaesthetics by unsupervised medical students. The surgical staff asked the medical managers to appoint two resident anaesthetists who would be available at all times, and they further suggested that nurses could be trained for this purpose. The managers rejected that proposal outright and asked the Board to authorise the appointment of an anaesthetist for night work; Dr Sheina Watters was appointed to the post. However it soon became apparent that the tasks were too much for one doctor, and by 1933 three anaesthetists were covering the emergency work, one of whom was Dr John Gillies.

Dr Gillies returned to Edinburgh in 1932 after having qualified there in 1923. He spent some years in general practice before deciding to specialise in anaesthetics, and undertook training in London at his own expense with such leaders as Ivan Magill, among others. His first appointment was as anaesthetist to the Royal Hospital for Sick Children with an honorarium of £50 (soon to be supplemented by a further £150 yearly), for undertaking three emergency waiting days (8am to 8 am) each week at the Royal Infirmary. This duty Dr Gillies continued to undertake for seven years, virtually until the outbreak of the Second World War, during which time he consolidated his position as a competent and reliable anaesthetist.¹⁰

Dr George Maxwell Brown

Meanwhile other changes were taking place in the Royal Infirmary; in particular the specialty of neurosurgery was emerging. Norman Dott, after training with Harvey Cushing at Harvard during the twenties, was appointed Associate Neurosurgeon to the Infirmary.¹¹ Initially he worked under considerable difficulties, but was granted the use of a plaster room in Professor David Wilkie's operating theatre. His anaesthetist was Dr Winifred Wood, who might justifiably be described as the first specialist anaesthetist in Scotland. In 1931 she became the first lady President of the Scottish Society of Anaesthetists.¹² Shortly thereafter she married and left Edinburgh to live in Hull, and in 1934 Dr George Maxwell Brown was appointed in her stead.

Max Brown was one of the most remarkable but least known of Edinburgh's dentally qualified doctors. Edinburgh born and bred, he qualified MB ChB in 1912 and went straight into general practice. However when war broke out he volunteered and saw service in Egypt and France. After demobilisation and a short spell with the Ministry of Pensions, he became a student at the Edinburgh Dental Hospital and School in 1922 and qualified LDS in 1925.¹³ There is no record of whether or not he ever practised dentistry, but like so many qualified dentists of the period he soon took up anaesthesia as a speciality.

It has to be said that he and Norman Dott made a good team. Dott had always been a pioneer with new techniques and instruments. In 1918 he carried out the first cardiac massage in Edinburgh, as a medical student; the patient's heart had stopped during the induction of anaesthesia for a dental operation. *Inter alia* he designed an intestinal clamp and modified a Davis gag for cleft palate surgery. These interests dovetailed with those of Max Brown who was a superb precision engineer and who, during their long partnership, designed and made

instruments for Dott as well as for his own use in the practice of anaesthesia. Dott was the man who complained to an instrument maker that:

'the skull pins are unacceptable. They are rough and variable in thickness, varying from two to three and a half thou from one end to the other. They are made of copper but should be of phosphor bronze'.

Between 1934 and 1950 there were major changes in the Neurosurgical Unit. In 1938 a new department was opened but, on the outbreak of war, this was moved to Bangour Hospital, a few miles from Edinburgh, as a Brain Injuries Unit in which Max Brown played an important part.

Brown's Obituary

Little has been said about Brown's anaesthetic practice but suffice it to say that he was one of the first specialists in anaesthesia. He was a pioneer of neurological anaesthesia from the crude practices of the 1930s to the more sophisticated techniques of the late 1940s. No summary of Max Brown's contribution can better the obituary written by Norman Dott,¹³ which deserves quoting in full.

'The death of 'Maxie' Brown marks the quiet passing of a great man. His greatness lay in his humane influence on hospital team spirit and structure, in his pioneering of modern surgical anaesthesia, and in his ability to transform ideas for new apparatus and instruments into reality. A charming cultured gentleman - it was he who held our team together in the difficult days before and during the Second World War. He befriended the staff and the men and women from overseas; he was the soul of the social life of the department. This brought him neither wealth nor fame, neither of which he sought, but his example has served as a model to many other hospital teams. When everything seemed to be going wrong, Max was the steadying influence. His kindness, his gentle pawky humour and his imperturbable practical ability always saved the situation. When he took up anaesthesia in the second half of his life - about 1930 - it was a choice between 'open' ether and local anaesthesia. When he left it on his retreat in 1950 he had developed it to present day standards. Much of the apparatus was made by him in his workshop. He was interested to make it and to use it - he did not label it with his name. He was equally versatile in making surgical instruments of precision, and his self-retaining brain retractor is an outstanding example. The successive generations of medical and nursing staff and of patients to whom he was so kind a friend, so loyal a colleague, so wise a counsellor, so expert a doctor in his special field, join me in gratitude for the privilege of having known him and in mourning his passing'.

Some tribute from a surgeon to his anaesthetist!

Drs D S Middleton and L B Wevill

Among the other changes, the improvement and extension of surgical techniques made it inevitable that the demands for better anaesthesia increased, with the result that in 1938 the honorary staff of the Royal Infirmary set up a sub-committee to make recommendations for the future organisation of the anaesthetic service. There were five members of the sub-committee,

two surgeons and three anaesthetists. Of the anaesthetists in addition to John Gillies, Dr David S Middleton and Dr L Benedict Wevill brought special knowledge and experience to their deliberations.

Like Max Brown Dr Middleton was Edinburgh born and bred. He obtained the medical and dental qualifications of the Scottish Colleges in 1924, and became a Fellow of the Royal College of Surgeons of Edinburgh in 1930. He was appointed as an anaesthetist to the Royal Infirmary in 1925, and two years later he became an Honorary Dental Surgeon. He also held the post of Honorary Dental Surgeon to the Dental Hospital. It was as an anaesthetist, however, that he made his major contribution in the years before the outbreak of the Second World War. He had an extensive private practice, working as he did with most of the general surgeons in the city. He was a member of the Scottish Society of Anaesthetists and became its President in 1932.¹⁴

Dr Wevill qualified MB ChB Edinburgh in 1925 and obtained his FRCSEd in 1929. Unfortunately he developed a skin allergy to the disinfectants used for scrubbing up and was advised to give up surgery. He switched to anaesthesia and in 1932 he was appointed as an anaesthetist to the Royal Infirmary, a post he held until 1946. During the Second World War he served as a major in the RAMC. In 1946 he left anaesthesia for a post with Imperial Chemical Industries; there he helped to develop halothane and ended his career as Technical Services Director, Pharmaceutical Division of ICI.

Future organisation of anaesthesia

With the wide range of experience available to them, it is perhaps not surprising that the sub-committee came up with far-reaching proposals that were accepted by the honorary staff. They proposed that there should be an anaesthetist for every surgical charge, that these anaesthetists should be recognised as lecturers by the University, and that they should be represented on the Honorary Staff Committee. In addition it was advocated that two full-time anaesthetists should be appointed to cover emergency work. These were radical suggestions and were the first real official recognition of anaesthetists by honorary staff.

Unfortunately the outbreak of the Second World War delayed their implementation until 1944, when the Medical Management Committee proposed that a Senior Anaesthetist should be appointed to organise an anaesthetic service, to act as Chairman of the Anaesthetic Staff and to conduct research. The proposal was agreed but action was suspended because some candidates were still on war service. This undoubtedly referred in particular to David Middleton who was a prisoner of war in Changi until his release in 1945. When eventually candidates were considered John Gillies was appointed. David Middleton decided to give up the practice of anaesthesia and return to dentistry when he was invited to organise a regional oral service. He continued to run a twelve-bedded unit in the Royal Infirmary until he retired in 1966. During his period in post he was very active in the affairs of the Royal College of Surgeons and was the convenor of the College's Dental Council. He was also President and later an honorary member of the Royal Odonto-Chirurgical Society of Scotland.

It remains to mention one other medically qualified dental surgeon, Frederick George Gibbs. 'Freddie' Gibbs obtained the triple qualification in 1913 and in the same year he qualified LDS.

After holding resident appointments he served in the RAMC in France and Italy throughout the First World War. On his return he obtained the MRCPed in 1920 and the FRCSEd in 1925. Having set up in consultant dental practice in Edinburgh, he was appointed surgeon in 1927 to the Dental Department of the Royal Infirmary and also as anaesthetist to the hospital. He served in this dual capacity for the next 30 years in the Royal Infirmary and in other hospitals in the city, as well as carrying on a flourishing private practice. Among his other activities he was a member of the General Dental Council, and in 1955 he was elected President of the Scottish Society of Anaesthetists.¹⁵

Conclusion

In retrospect, the contribution of the Edinburgh Dental Hospital and School to the advancement of Anaesthesia can be described as taking place in two stages; the first from the establishment of the School until the outbreak of the First World War, and the second during the period between the two wars. The first stage was essentially institutional in that a training programme of demonstrations, lectures, and practical tuition was gradually evolved for the benefit of the dental students, so that on qualification they could be expected to give their own anaesthetics. The second stage was different in that it relied very much on the individual personalities of those concerned. The medically qualified dentists, and they were fairly numerous, soon discovered that there was a big demand for competent anaesthetists particularly in private practice. Many switched from the practice of dentistry to anaesthesia, much to the benefit of the Royal Infirmary and the other hospitals in the City of Edinburgh. The Scottish Society of Anaesthetists also owes a great deal to those pioneers, as do we all who practise anaesthesia.

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EDINBURGH RESEARCHES ON SUPINE HYPOTENSION IN PREGNANCY

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The definitive research on supine hypotension in pregnancy was done in Edinburgh in a ten year period from 1957 to 1967.

Earlier descriptions

Perhaps the earliest written description of caval compression in pregnancy was by the English physician Richard Lower in his *Tractatus de Corde* of 1669.¹ (Lower was the first to successfully perform massive blood transfusion (on dogs) in 1665). Next, Sir Frederick Hewitt, in his 1893 textbook *Anaesthetics and their Administration*, suggested pressure on the vena cava as a cause of barely palpable pulses in a healthy lady undergoing caesarean section under chloroform.² These reports apparently escaped the attention of obstetricians and anaesthetists practising in the 1930s-1940s, when there were reports of sudden circulatory collapse (sometimes fatal) during caesarean section performed under spinal block.³ In 1942, a German obstetrician, Rolf Hansen, drew attention to the association between collapse and the supine position in the last month of pregnancy and noted that the problem was resolved when the patient turned into the lateral position. However, he did not ascribe the disturbance to caval compression.⁴ It was not until 1950 that Brigden, Howarth and Sharpey-Schafer at St Thomas's Hospital, London, suggested obstruction of the great veins inside the abdomen by the uterus as the cause.⁵ Support came in 1953 from Howard, Goodson and Mengert in Dallas, Texas who coined the term 'supine hypotensive syndrome'.⁶ One of the pregnant women on whom they reported famously refused to lie supine, instinctively protecting herself by turning to the side.

Cause of Hypotension

In Britain in the early 1950s there was prejudice against subarachnoid block for caesarean section. Bourne and Williams had summed up:

'There is, we fear, in this country, a considerable number of young healthy pregnant women who stand condemned to death by spinal anaesthesia for caesarean section.'⁷

In 1956 an anaesthetist, Frank Holmes, working in Edinburgh, believed there was a common sense explanation for the deaths, and set out to break down the prejudice. In September that year he spoke publicly about this for the first time at a symposium on anaesthetic teaching at the Postgraduate Medical School, Hammersmith. The avoidance of his subject in the discussion made him realise the enormity of his task (Holmes, personal communication.). Aware of the American work, he published in 1957 a review and case report, suggesting that caval occlusion (by the gravid uterus) compounded by reduction of vasomotor tone (by spinal block) was the mechanism of sudden circulatory collapse during caesarean section under spinal analgesia.⁸ Again the case report was of a patient who was reluctant to lie supine, because 'she felt faint on her back but all right on her side'.

In 1960 Holmes published his findings on 500 women during their last month of pregnancy: in 8.2% of cases there was severe supine hypotension (i.e. fall in systolic pressure $>30\%$)⁹. In quick succession came Holmes' four case reports for the attention of anaesthetists in what is now considered a classic paper.¹⁰ Diagrammatically he showed a typical sequence of events: grave supine hypotension followed spinal block with procaine, the hypotension being partially relieved by raising the patient's right side and completely relieved when the uterus was displaced forward. Holmes carried out these studies at the Simpson Memorial Maternity Pavilion (SMMP) in Edinburgh. Based on the evidence therefrom he gave advice on the conduct of spinal analgesia in the pregnant patient. Most importantly he recommended that whenever supine hypotension is diagnosed, the supine position should be avoided and the patient instead placed in a semi-lateral position.¹⁰

Venous Pressure

Young consultants continued Holmes' work at the SMMP in Edinburgh. In a series of women undergoing caesarean section in 1963 the anaesthetist, D Bruce Scott, and the obstetrician, M G Kerr, inserted a catheter via the femoral vein into the lower inferior vena cava (ivc) and measured the pressure continuously by transducer.¹¹ They noted that in the supine position ivc pressure was far higher in gravidae than in non-pregnant women; the former also had damping of the normal respiratory wave pattern. On turning the gravidae into the lateral position, and on lifting their uteri off the ivc, there was a sharp fall in ivc pressure and the waveform showed normal respiratory impulses. In supine gravidae, advancing the catheter into the thoracic ivc also resulted in a fall in pressure and appearance of a normal respiratory waveform. Delivery of the fetus also resulted in a rapid fall of ivc pressure. Scott and Kerr concluded that there was occlusion of the abdominal ivc in supine gravidae, but since supine hypotension occurred only in a minority, collateral circulation via the vertebral and azygos veins must be adequate in most cases.¹¹

The following year Kerr and Scott, with the help of the radiologist E Samuel, produced the first radiological evidence of caval compression in late pregnancy.¹² Twelve women in late pregnancy underwent bilateral femoral venography in the supine position. The x-ray films revealed complete obstruction of the ivc in ten of the cases and partial obstruction in the remaining two. Instead, the venous return passed through the ascending lumbar veins and the paravertebral venous plexuses to the azygos veins. In eight of the patients undergoing caesarean section the venogram was repeated after emptying the uterus; the films demonstrated a normal patent ivc. In four patients with abnormal fetuses (in whom pregnancy was to be terminated) the venogram was also obtained after rotation to the lateral position: the films demonstrated movement of the dye up the ivc, but there was still some degree of compression by the gravid uterus.

Cardiac output

In 1966 another obstetrician at the Edinburgh Royal Infirmary, M M Lees, measured cardiac output, heart rate, arterial and right atrial pressures in eight healthy women in late pregnancy: in both supine and lateral positions.¹³ He was assisted by Scott and Kerr as well as the physician, S H Taylor. Lying in the supine position produced in all cases a fall in right atrial pressure; however, this was less pronounced in those patients in whom the fetal head was firmly engaged in the pelvis. In six of the women arterial pressure was maintained in the supine position by an

increase in systemic vascular resistance (svr) only, i.e. there was no compensatory increase in heart rate. In the remaining two (fetal head not engaged) severe hypotension occurred in the supine position (after a brief initial period of compensation); this was due to bradycardia and accompanying decrease in svr. Lees and his co-workers noted that this sequence of events was similar to the vaso-vagal fainting reaction. After removal of the baby in a second group of six gravidae undergoing caesarean section, the researchers manually occluded the ivc below the level of the renal veins for 2.5 minutes. Before, during and after occlusion, the right atrial pressure and ivc pressure below the level of compression were recorded continuously. The right atrial pressure fell while the ivc pressure rose, but hypotension did not occur, owing to adequate compensatory increase in svr. This study therefore explained why less than 20% of gravidae exhibited the supine hypotensive syndrome; hypotension was only manifested by those who were unable to compensate for ivc compression. The same workers rapidly published another study of cardiac output at rest throughout pregnancy.¹⁴ To summarise, they found that cardiac output at rest increases during pregnancy by 1.2 - 3.1 litre min⁻¹, (30 - 40%), most of the increase being established by the end of the first trimester. Notably when measurements were made in the supine position, cardiac output fell in late pregnancy due to supine caval occlusion.¹⁴ These two studies were among the first in which the work was performed by a truly multi-disciplinary research group.

In 1967 a London physician, M H Pappworth (author of *A Primer of Medicine*), published a controversial book called *Human Guinea Pigs*.¹⁵ In this the author cited some 200 papers in which he considered there was grave doubt as to whether there had been informed consent or whether the experiments had any real bearing on the investigation and treatment of the individual patient. He included the definitive 1963 paper by Scott and Kerr, and also alluded to the 1964 radiological paper by Kerr, Scott and Samuel, though he did not actually condemn them. *Human Guinea Pigs* aroused a strong reaction among clinical investigators and it seems fair to say that the book was unbalanced. Suffice to say that Bruce Scott went on to serve on the Confidential Enquiries into Maternal Deaths in Scotland organisation for many years.

Leg blood flow

The discovery in 1968 that, in the supine position, the gravid uterus also compressed the abdominal aorta, came from the obstetrician R Caldeyro-Barcia's team in Montevideo, Uruguay.¹⁶ Nevertheless, the Edinburgh group had a further contribution to make. In 1974 the anaesthetist G B Drummond and colleagues (including Bruce Scott's daughter, Sarah), measured in 55 pregnant women, arm and leg blood flow in the supine and left lateral positions. Measurements on 40 women in the last month of pregnancy were compared with those on 15 patients in the early puerperium. It was found that blood flow was unchanged in the arms in both groups and in the legs of the puerperal subjects. As anticipated, a significant reduction in leg flow occurred in the pregnant subjects when the supine position was assumed.¹⁷ In a further thirty women in late pregnancy leg flow was measured in the left lateral, supine, right lateral and the two mid-positions. It was found that the leg flow significantly increased on moving from the supine to all other positions, except the right intermediate position, indicating that left tilt is more effective in preventing caval compression.¹⁷ The cumulative work in Edinburgh on the supine hypotensive syndrome of late pregnancy had a major impact on the management of this condition, particularly during operative delivery under general or regional anaesthesia.

Conclusion

Finally, it is interesting to reflect again that in the early 1950s in the UK some doctors regarded the performance of spinal block for caesarean section as close to a criminal offence. Fifty years on the pendulum seems to have swung to the opposite extreme - some anaesthetists now viewing general anaesthesia for caesarean section in a similar light!

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FIFTY YEARS OF CHAIR DENTAL ANAESTHETICS AND MORTALITY

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First an explanation of the title. Many dentists and anaesthetists object to the word 'chair' as it is years since any practitioners anaesthetised patients sitting up or even in a chair. It is sometimes difficult to make clear the difference between the archaic practice of general anaesthesia in dental surgery from other forms of out-patient/day case anaesthesia to some audiences, particularly foreign ones. General anaesthesia in dental practice surgeries, a technique that dates back to G Q Colton and Horace Wells, officially ends in December 2001 in the UK. Thus it seems a good point to review the recent history, for which there are reasonably accurate statistics since the start of the National Health Service.

Analysis of deaths

First, tribute must be made to the late Mike Coplans and Ivan Curson who, in a letter to the *British Medical Journal* in 1973,¹ suggested an objective scientific analysis of deaths associated with dental procedures. Others had estimated death ratios: 1 in 2000 General Anaesthetics (GAs) by Sir Frederick Hewitt in 1922 seems very high. In 1947 Seldin in the USA reported 15 deaths in 2.4 million GAs, an incidence of 1:160,000. Both of these were quoted by Victor Goldman, perhaps the most famous British dental anaesthetist after Sir Frederick, in *Deaths under anaesthesia in the dental surgery*.² It is a fascinating review of chair dental GA practice of the time and aimed at several targets. He was concerned with posture in the dental chair and pointed out the problems consequent on accepting Bourne's condemnation of anaesthesia in the upright patient. Bourne's paper in the *Lancet*³ purported to show that under general anaesthesia patients' blood pressure fell and that this was dangerous if they were sitting up. (Bourne had written several papers about this). Goldman cited a paper that he and colleagues had written in the *Lancet* 6 months after Bourne's, which showed no fall in blood pressure in 100 patients anaesthetised sitting up.⁴ They found that the blood pressure rose during anaesthesia; this was confirmed in a study done 20 years later in Sheffield. Goldman thought patients at the Eastman Dental Hospital might have been less frightened, and he felt that 'posture can be discounted as a cause of cerebral anaemia (sic) by itself'.

Intravenous barbiturates

Goldman was also unhappy about the use of intravenous barbiturates. It is here he quotes the Dental Estimate Board (DEB) numbers of NHS dental GAs for the four years 1952-55 which totalled 6.68 million. He added another million for hospital, school clinics and private GAs. Fifty six deaths of ambulant dental patients had been reported to the Registrar-General in those four years; a mortality rate of 1:137,500. Out of the 56, 20 followed IV anaesthesia. Goldman estimated that barbiturates were used in only 1 in 100 dental GAs and therefore the death rate was about 1:4,000. Following this there were interesting letters to the *British Dental Journal*. Drummond-Jackson quoted the Registrar-General's *Official Statistics* which showed 125 deaths associated with dental GAs between 1949 and 1957. He then stated: 'it is doubtful if one of the

125 deaths reported was caused by a dentist'. This breathtaking claim perhaps was the first public assertion of dentists' belief that they were better at providing GA for dentistry.

In May 1960 writing as 'Librarian' Drummond Jackson tried to show that medical anaesthetists were ten times more lethal than dentists. In June, Coplans replied pointing out that Drummond-Jackson was comparing death rates for dental procedures in hospital with general dental practice. As Coplans knew of no dentists providing GA in hospital the comparison was valueless. Even dentists felt that Drummond-Jackson had misrepresented the figures. Correspondence in the *British Dental Journal* continued from May to December and included the statement by Schofield that dentists were twelve times less lethal than doctors; there was an amusing reply from Coplans.

Further analysis: Goldman

As this was going on, Goldman read a paper at the Annual Conference of the British Dental Association in Edinburgh in July 1960. Entitled: *Halothane in the dental surgery* it was published in the *BDJ* in October 1960.⁵ The paper is of interest because it updates the 1958 figures quoted above:

Table 1 Dental cases under General Anaesthesia 1952-1958	
National Health Service cases	12,447,140
School Dental Service	4,549,769
Additional cases (estimated) [with the help of the Ministry of Health]	4,900,000
Approximate total for seven years	21,896,909

It is ironic, however, that the NHS cases do not include Scottish dental practice GAs. The author has checked this by adding up the 1952-58 Dental Practice Board (DPB) figures for England and Wales. 'Additional cases (estimated)' are actually three times those in 1958 but do not include Scottish GAs. Numbers of Scottish GAs are unobtainable before 1968 when there were 249,000, or 20% of the 1.29 million in England and Wales. According to the Registrar-General there were 100 deaths but some were hospital in-patients. Goldman again attacked the use of iv barbiturates by dentists in practice. Overall the death rate was 1:219,000 but for iv methods it was 10-20 times as great. He described in the paper his halothane vaporiser, including percentages produced and technique of administration. No mention of its derivation was made but the author believes it was inspired by the AC-Delco petrol pump. Discussion at the meeting is reproduced with the paper and makes interesting reading.

In May 1967 the *British Medical Journal* published an article *Anaesthesia for dental extractions*.⁶ As usual it was anonymous and it has not been possible to discover the author. It was not tendentious, stating 'there had been an improvement from 22 dental deaths in 1952 to the present

4-6 per year ... rare in relation to the vast numbers of dental anaesthetics administered'. The author was not impressed with Bourne's posture theory or dangers of demand flow apparatus but thought operator anaesthetists were dangerous. It ended with a warning about IV barbiturates; suggesting intermittent IV anaesthesia may reduce oxygen saturation below 85%.

Joint sub-committee's report

On 23 May 1967 a *Report of a Joint Sub-Committee on Dental Anaesthesia* was published.⁷ It considered whether GA should be used for conservation and if operator anaesthetists were justified. There are useful figures in the Report; it showed there were about 2 million dental GAs per annum in England and Wales of which 55% were given by dentists and 45% by doctors, less than half (19%) of whom had special training in anaesthesia. The *Report* disapproved of the two-fifths of dentists who were operator anaesthetists. It gave examples of operating times; less than 2 minutes for 79% of patients, and also figures for deaths comparing 87 deaths in 1952-56 to 25 in 1962-65, of which 17 had been in hospital. The British Dental Association held a conference *General Anaesthesia in Dentistry* on 25 May 1967, published as a supplement in the *British Dental Journal* in June 1967.⁸ All leading figures were present and most criticised the *Report*. Coplans pleaded for accurate statistics so that valid comparisons could be made. The only thing agreed was that postgraduate training should be improved.

In 1969 the controversial paper on intermittent methohexitone⁹ was published in the *BMJ*¹⁰ with a leader condemning the technique, and became the subject of a libel action by Drummond-Jackson. A better study of the method was carried out in Sheffield¹¹ with the co-operation of Gerry Holden, one of Drummond-Jackson's disciples and would have been used by the defence if the judge had not stopped the action.

Coplans' and Curson's letter to the *British Medical Journal* in January 1973: 'Deaths associated with general dental anaesthesia,' pointed out that previous papers and letters often got the administrator's identity wrong; one anaesthetist described as a consultant actually specialised in infectious diseases. They showed also that the 17 hospital deaths (1962-1965) did not differentiate between place of death and place of collapse, so skewing the interpretation. They uncovered two further deaths associated with dental treatment not on the Registrar General's list and succeeded in improving the collection of data. They announced that from 1969 they were going to make their own study of the available data. Discussion continued about the problems of posture in dental GA. In 1976, Coplans and Curson wrote both to the *BMJ* and *BDJ*¹² pointing out that of 9 deaths, 6 of the patients were supine, 1 sitting with 2 not stated. They agreed with Tomlin (1974):¹³ 'posture is seldom if ever causally related to the anaesthetic death'.

Numbers of Chair Dental GAs

Until this time there had been no detailed or accurate statistics about the numbers of chair dental GAs. The Dental Estimates Board (DEB), latterly Dental Practice Board (DPB) published numbers of GAs paid for in England & Wales and the Scottish Home & Health department for Scotland. NHS hospital administrative statistics gave dental in-patient admissions but did not provide figures for DGH out-patient GAs. Numbers of GAs in the Community Dental service

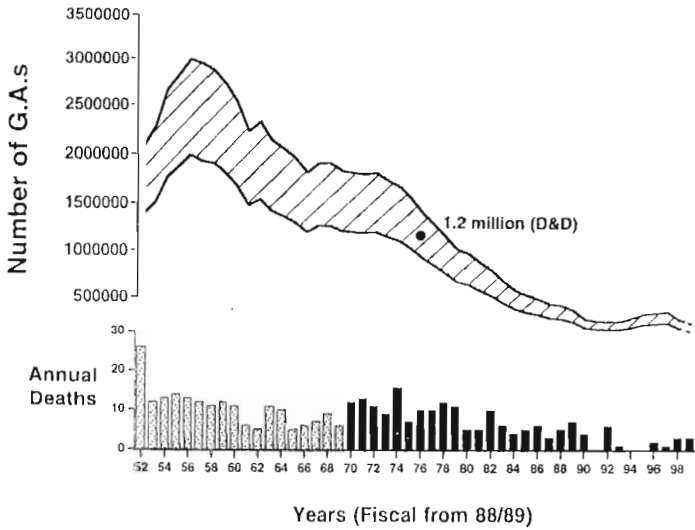


Figure 1

Dental 'Chair' G.A.s & Deaths

by the decade

Decade	DEB/DPB nos millions	'Enhanced' millions	Deaths	Ratio
1950-1959	16.26m	24.39m	134	1:180,000
1960-1969*	13.96m	20.95m	70	1:299,300
1970-1979#	10.37m	15.56m	64	1:243,100
1980-1989/90	4.39m	6.58m	20	1:329,000
1990-1999/00	2.06m	3.10m	12	1:258,300
50yr TOTAL	47.05m	70.58m	300	1:235,200

* Last decade of hypoxia/unsupplemented Nitrous Oxide?

DEB stated that these figures included GA, RA & IV sedation

Figure 2

obtained by personal request. In 1978 Dinsdale and Dixon published the results of their 1976 survey of 1 in 8 dental practices.¹⁴ This is the most accurate analysis of one year of chair dental GAs in England and Wales but does not include hospital out-patient GAs (DGHs or teaching hospitals) and excludes Scotland where there were probably another 20%.

The 1970s

In November 1982 *Deaths Associated with Dentistry* by Coplans and Curson was published¹⁵. It is an extremely detailed, painstaking and thorough analysis of the decade 1970-79. 120 deaths had been reported of which 100 were associated with GA, 10 with LA, 6 with dental disease or treatment without any form of anaesthesia and 4 uncategorised. Thirty six of the 100 were hospital inpatients, who were distinctly different in terms of age, health, and complexity and length of surgery. In the other categories, general dental practice, community dental service and hospital outpatients there was no difference between fit patients. The safest technique was nitrous oxide and oxygen alone with a mortality of 1:1.37 million but these were short uncomplicated cases in the hands of very experienced administrator-dentists. There was no difference between supine and non-supine postures but longer conservative dentistry had a higher mortality rate. The overall mortality rate was 1:267,000. Goldman's paper given in 1960⁵ in Edinburgh was not cited, perhaps because of its title.

The 1980s

Coplans' and Curson's next paper *Deaths associated with dentistry and dental disease*¹⁶ covered the decade 1980-1989 and was published in 1993, eleven years later. They investigated 71 deaths; 42 were associated with GA (22 in hospital), 3 with LA, 2 two with sedation. There was a mixed group of 20 (miscellaneous or no treatment), some only remotely connected with their dental condition, and there were 4 with inadequate information. Coplans and Curson regretted that there had been no further study comparable to Dinsdale and Dixon's.¹⁴ They concluded there had been a reduction of one-third in deaths in healthy patients undergoing GA for dentistry. Deaths attributed to operator-anaesthetists had declined to 4 compared with 13 in the previous decade. In 1983, 16 years after the *BMJ* editorial and Joint Sub-Committee condemned it, the GDC finally outlawed this practice.

Conclusion

The author has assembled chair dental GA numbers collected from various sources (Figure 1). The lower line of the graph shows DEB/DPB numbers for fees paid in England and Wales only. The upper line attempts to estimate the numbers of GAs for the UK (but not Northern Ireland) by following and modifying Goldman (1960)⁵ and using Dinsdale's and Dixon's 1976 survey¹⁴ (marked), together with the author's own collection of school chair dental GAs. The numbers of deaths are from the Registrar General's list, from Coplans and Curson's papers and for the last decade of the century from *A Conscious Decision* (2000).¹⁷ Finally there is a table (Figure 2) which is a estimate of the total chair dental GAs and deaths covering the fifty years.

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GUEST LECTURE

SIMPSON - THE OUTSIDER?

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Introduction

Sir James Young Simpson (1811-70) is one of the giants of Scottish medicine.^{1, 2, 3} Professor of Midwifery at the University of Edinburgh from 1840, Simpson made many advances in the practice of obstetrics, and in 1847 he introduced chloroform anaesthesia. He was made a baronet in 1866. In the first biography of Simpson, his friend John Duns, Professor of Natural Science at New College, Edinburgh, presented him as a social outsider; his father was a tradesman, and Simpson himself was neither a surgeon nor a pure physician, but had adopted the dubious trade of midwifery. I am going to suggest that there were ways in which he was also an intellectual outsider, though it must be stressed that he adhered to all the central tenets of rational medicine, and had no truck with the colourful unorthodoxies of his day, particularly homeopathy and phrenology.

In order to understand the ways in which Simpson did – and did not – fit into the Edinburgh medical world, and to characterise that world, I will draw on the ideas of the anthropologist Mary Douglas, set out in her book *Thought Styles* (1996).⁴

Mary Douglas and the Culture of Groups

Douglas's method is to examine different groups within society in relation to two dichotomies: whether the group is structured or unstructured, and whether it is 'incorporated', that is, whether individuals see themselves as members of a group. Taking the two dichotomies in combination produces four kinds of culture.

First, people who see the world as structured, but do not feel that they are part of any group capable of taking collective action, are in her word *isolates*. They do not believe that they have any power to act in society, though they accept that other groups have power.

Next, people who see the world as structured, and see themselves having a place in that structure, are *hierarchists*. To them, power resides with the people at the top of the hierarchy, with lesser amounts of it distributed to those in positions further down. The hierarchists are hostile to many kinds of change, for to them the only change that makes sense is movement within the hierarchy. They tend to be particularly hostile to people who break rules or do not believe in hierarchies. A traditional bureaucracy is a clear example of a hierarchist culture.

Thirdly, there are *individualists*. Their world is unstructured, and they have little commitment to the community. Competition is essential to their mode of operation, and other people's rules can be broken in pursuit of competitive advantage. They believe that each individual has power, and

the right to exercise it. The Edinburgh medical school had a strongly individualist culture in Simpson's time.

Finally, there are *enclavists*. They do not believe that the world is structured, but they do believe in the power of the group. They would like society to be egalitarian and they often react to hierarchies by means of organised dissent. They see power as residing with the group as a whole.

These are the four cultures. A crucial part of the theory is that the four are locked together by antagonism: as Douglas puts it 'Mutual hostility is the force that accounts for their stability'.⁵

Douglas has successfully applied this theory to explain the appeal of alternative medicine, changes in Chinese art, and contemporary Western consumerism. In applying it to groups within nineteenth-century medical culture, we have to be aware of the overall nature of that culture. It can be characterised in her terms as *individualist*. There were many competing kinds of practitioner, and even if we leave aside quacks and charlatans, the conventional medical world was composed largely of general practitioners who had been trained by apprenticeship and whose ability, training and attractiveness to their patients varied, for there were no clear standards. Medical training in Edinburgh may look structured, with named institutions and titled posts, but it was complex and regulation was minimal. The University gave medical courses in competition with the Royal College of Physicians and the Royal College of Surgeons, and some of the best teachers lectured extramurally; that is, they were freelance. Between about 1790 and 1870, the medical professors were engaged in a series of vicious wrangles with one another, carried out both privately and in public in print. Sir William Tennant Gairdner looked back on his student days in the 1840s; 'they were giants in those days; but they were very quarrelsome giants'.⁶ Simpson could not help being part of this culture. However, the purpose of this essay is to suggest that he and the medical school can be better understood if we recognise that there were significant enclavist elements in his thought.

The Social Backgrounds of the Edinburgh Professors

When Simpson was elected to the chair of midwifery in 1840, the other ten professors of medicine came from professional families. James Home, Professor of the Practice of Physic, was the son of Francis Home, who had held the chair of Materia Medica. Alexander Monro, Professor of Anatomy, was the son and grandson of Professors of Anatomy, who had accumulated 114 years in the chair by 1840, and when he retired in 1846 he was succeeded by John Goodsir, son and grandson of country doctors. Robert Graham, Professor of Medicine and Botany, was the son of a medical practitioner. Thomas Charles Hope, Professor of Chemistry and Medicine, was the son of John Hope, Professor of Botany, and grandson of Robert Hope, surgeon. And Simpson succeeded James Hamilton, son of Alexander Hamilton, Professor of Midwifery, who was in turn the son of a practitioner at Fordoun in Angus.

Two of Simpson's colleagues were sons of Episcopal clergymen; Charles Bell, Professor of Surgery, and William Pultney Alison, Professor of Medicine, who was on his mother's side the grandson of John Gregory, Professor of Medicine at Aberdeen and at Edinburgh. George Ballingall, Professor of Military Surgery, was the son of the minister of Forglen in Banffshire, and Thomas Stewart Traill, Professor of Medical Jurisprudence, was the son of the minister of

Kirkwall. Robert Christison, Professor of Materia Medica, had an academic parent, Alexander Christison, Professor of Humanity (Latin). Finally, James Syme, Professor of Clinical Surgery, was the son of a Fife landowner who had a law degree.

The explanation for these family traditions is that it was difficult to reach the summit of the medical profession without capital. The training was long, and the newly qualified doctor might wait five or ten years before he could cover his costs, let alone earn a healthy income. During this period he had to dress well, behave sociably, and live at a respectable address. A young man with a medical father could be introduced to his patients, and thus establish an income before his coevals could do so.

In the first half of the nineteenth century, there was only one Edinburgh medical professor other than Simpson who did not come from a professional family. John Thomson (1765-1846) was born in Paisley, the son of a handloom silk weaver. The father fell heavily into debt but refused to escape his creditors by declaring himself bankrupt. He put his children to work, and John Thomson was a weaver from the ages of eight to twenty. Then, by apprenticeship and hard reading he made himself into a medical man. When Simpson graduated in 1831, he was offered a cruise as a ship's surgeon, but it was Thomson, by then Professor of Pathology at Edinburgh, who offered to take him on as an assistant, and later it was Thomson who suggested that Simpson should specialize in obstetrics.

When the chair of midwifery fell vacant late in 1839, Simpson offered himself as a candidate. He knew that some of the Senate disliked the possible election of a baker's son, but the University was the 'Tounis College' and it was the Town Council who had to make the appointment. Part of the process of election involved each candidate in collecting testimonials from eminent medical men, and having them printed and circulated. An example of the hostility against Simpson is a pamphlet that parodies this practice, saying on its title page:

Chair of Midwifery in the University of Edinburgh, Testimonies in favour of James W. Sawneyson, M.D. A.S.S., Doctor of Medicine ... Physician to the Northern, Southern, Western, and Eastern Lying-in Hospitals, formerly President of the Royal Medical Society, Ordinary Member of the Royal Medical Society, Member of the Royal Medical Society, Corresponding Member of the Esquimaux Society for the Promotion of Obstetrical Science, President of the Lilliputian Lying-in Institute⁷

The ludicrous listing of titles was standard practice, but here it is used to draw attention to Simpson's limited experience: he was only 28 years old. The name Sawneyson comes from Sawney (itself a familiar form of Alexander), a Scots name for a young country yokel. Simpson came from Bathgate, West Lothian, then a rural village.

One of the testimonials purported to be from Simpson's mother: 'I always said you was a bright bairn. You were always good at extraction - we used to call you light fingered Jamie'. Apparently his talent was for extracting jam and jelly.⁸ The point, though, was the use of Scots grammar rather than English. Some of the humour was brutal. A medical lecturer was expected to have his own museum of specimens for use in teaching and Sawneyson's was sketched out:

1. Two babies in alcohol.
2. Teetotal baby in water
8. Sawneyson, Junior, dried and injected, a brainless monster.⁹

Finally, the pamphlet drew attention to the fact that Simpson was below average height. This is a lightly coded message, for the lately deceased James Hamilton had been diminutive – which is also the explanation for the reference to the Lilliputian Lying-in Institute. Did Edinburgh want another small, argumentative professor of midwifery?

Antiquarianism and Religion

In medical teaching and practice, Simpson was constrained to be conventional. These constraints did not apply to his religious beliefs, or his historical studies, and he was able to express himself in a different cultural form, as an enclavist.

Simpson did not enjoy the past primarily through classical literature as many medical men did. He was an antiquary, and was President of the Society of Antiquaries of Scotland in 1860-1. An interest in classical literature enabled a man to exercise taste and discrimination in relishing a text. In contrast, the antiquary studied archaeological sites, buildings and medieval manuscripts; his thought tended to be open-ended and speculative, for one of its central questions was 'what was life like'? Classical literature was in the distant past, but antiquarianism, dealing largely with the Middle Ages, engaged with more recent times. Its patron saint was Walter Scott, and Simpson said that its greatest achievements in Scotland were the publications of the Bannatyne, Abbotsford, Maitland and Spalding clubs; their sole purpose was to print collections of medieval documents. Antiquaries were concerned with the matter of everyday life, and Simpson at various times was interested in buildings, coinage, the histories of law and language, and in place names. In his time, there was a limited but persistent interest in the history of medicine. This was largely manifested in inaugural and graduation addresses in which professors of medicine paid tribute to their professional forebears. Simpson wrote instead about the social problems of dealing with disease, most notably in a very long paper on medieval leper hospitals.¹⁰

In 1843, Scotland's national church split in two, when the Free Church of Scotland separated from the Church of Scotland. A significant part of the motivation behind the creation of the new kirk was the feeling that the established church was in the hands of the landed gentry; as enclavists the members of the Free Kirk were in Douglas's phrase 'indignant against the misuse of power and wealth'.¹¹ They sought a church which was independent of both the state and the laird. When nearly two-fifths of the ministers of the established church left it, only two of the Edinburgh medical professors did so, Simpson and James Miller. In the cities, the Free Church appealed to commercial and manufacturing classes, and not to professional people. Simpson, in joining it, was choosing to remain in the culture of his family rather than that of the Edinburgh medical school.

Simpson was thus, in his social views, an enclavist. Here are two further examples of his attitudes. In the late 1860s he supported Sophia Jex-Blake's attempts to receive a medical

training in Edinburgh; she said that had Simpson not died, she might have been able to complete her course. And he was egalitarian in the simplest way, through his hospitality to all at his dinner table.

Simpson and Medical Progress

Returning for a moment to Douglas's theory, we can consider how an individual's creativity is likely to be shaped in an enclavist culture. The enclavist sees creativity as a way of enriching the experience and power of the group, and because the creativity belongs to the group it can be used to attack other groups. The enclavist also, being an egalitarian, sees the whole world as being within the reach of his creativity, and is therefore insensitive to the territoriality of the individualist and hierarchist, and the hierarchist's dislike of boundaries being breached. This gives us a way of looking at Simpson's views on the power of surgery, the design of hospitals, and the future of medicine.

In 1846 Simpson became concerned about the survival rate of patients upon whom ovariectomy had been performed, for it had recently become a response to a diagnosis of ovarian cancer. His conclusion was that normally the operation was too dangerous to be justified, because of the risk of postoperative infection, though in a small number of cases it was a risk worth taking. Some surgeons said that the survival rate was quite good, but Simpson showed that it was the same as for amputations. His underlying point was that surgeons were not good at judging when to operate. He recognised that grave errors were made in the diagnosis of ovarian disease, 'but he doubted if as grave errors were not as frequently committed in some other recognised capital operations. A much greater amount of caution was undoubtedly requisite on this head'.¹²

In advocating surgery in certain instances, but not in others, Simpson was crossing boundaries and explicitly criticising surgeons' judgement.

Simpson also criticised the designers of hospitals. He realised that the proportion of patients who survived amputations was lower in hospitals than when operations were performed in the home, and that in hospitals the proportion had fallen since the 18th century:

'The increase (in mortality) is traceable, I believe, chiefly or entirely to our system of huge and colossal hospital edifices'.¹³

He suggested instead that hospitals should be transformed:

'from wards into rooms, from stately mansions into simple cottages, from stone and marble palaces into wood, brick, or iron villages'.¹⁴

We now have two ways of explaining this. First, as the natural egalitarian approach of an enclavist, and second as a member of the Free Church emphasising the fact that society is made up of individuals. One of Simpson's suggestions was that each patient should have a room of their own.

The method that Simpson used to argue his point about the low survival rate after amputation in hospital was the collection of a huge quantity of figures from surgeons all over Europe. John Duns wrote moderately, as befitted a Free Church minister: 'The professional atmosphere became charged with electricity'.¹⁵ On this point, too, surgeons resented what they saw as Simpson's attempt to interfere with their practice. Most of his colleagues regarded a medical specialty as a possession, but Simpson saw it as a focus.

Simpson had a broad view of the world; this is the clearest characteristic of his thought. In one of the several disputes over the Chair of General Pathology, he explained:

'Medical men have been enabled to collect and establish a series of *general facts or principles*, which, by diminishing the number of *special or isolated facts*, that the mind might otherwise require to keep in remembrance, tend in a very great degree to facilitate and advance the study of Medicine as a science, and promote its application as a practical art.'¹⁶

While Syme and others were staking out territory, Simpson was thinking about the power of generalisation.

Yet he was the only one of his generation of Edinburgh professors who looked for ways in which medicine might not so much move forward as change direction, and he was not afraid to make apparently mundane points. He praised the discovery of alkaloids, not as a scientific achievement, but because patients would not have to take 'nauseous decoctions, infusions and tinctures', and he went on:

'A better covering for a pill than we yet possess, or a way of disarming of their disagreeableness the revolting forms of most medicinal fluids and draughts, could in reality prove a more important discovery for the promotion and utility of true practical medicine, than the discovery of matters of apparently far more scientific bearing and moment.'¹⁷

He predicted the use of X-rays:

'Possibly ... by the concentration of electrical or other lights, we may yet render many parts of body, if not the whole body sufficiently diaphanous for the inspection of the practised eye of the physician and surgeon'.¹⁸

But more broadly, he expected that instruments would be used more and more in diagnosis. Then he moved on to imagine the physician:

'familiar with the chemistry of most diseases ... when the few wounds then required in surgery shall all be swiftly and immediately healed by first intention; when medical men shall be able to stay the ravages of the tubercle ... when our hygienic condition and laws shall have been changed by State-legislation, so as to forbid all communicable diseases from being communicated...'¹⁹

Conclusion

I have tried to use Douglas's view of cultures to clarify some of the ways in which the Edinburgh medical school operated in the middle of the nineteenth century, and in particular the role of James Young Simpson in it. And it also emphasises that the point about chloroform anaesthesia, seen in the light of Simpson's life and ideas, is not that he discovered it, but that he was looking for it.

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OBITUARY

DR GORDON JACKSON REES FRCA FRCP FRCPCH **Pioneer of Paediatric Anaesthesia**

Gordon Jackson Rees, known to all his friends as 'Jack', was born on 8 December 1918, a 'Shropshire Lad' from Oswestry on the Welsh border, some 40 miles from Liverpool. He was the second son of a marine engineer, who served in the Royal Naval Reserve in the two World Wars. His mother, also from Salop, was a Miss Jackson, from whom he inherited his second Christian name. His first Christian name derives from his mother's admiration for General Gordon of Khartoum. Jack's elder brother, whose son Martin has recently become Astronomer Royal and received a knighthood, went to Cambridge and then established and became headmaster of a very successful preparatory school in Shropshire.

Education

Jack was educated at Oswestry School. Whilst travelling to visit various ships with his father, he assisted in the maintenance of many mechanical devices and became familiar with, amongst other techniques, the measurement of pressure-volume loops, a determination which was subsequently of value in his professional career. Despite his father's hopes that he would follow in his profession, Jack was determined to study medicine, having been inspired by the doctor father of a great friend at school. Apart from cross-country running, (a sport he continued later, being selected for the University team), his scholastic achievements, by his standards, were modest and gave little hint of his later academic brilliance and practical innovative ability. His school leaving grades were satisfactory for entry in 1937 to the 'local' University of Liverpool to study medicine.

During his second year he met a fellow medical student, Miss Elisabeth Schofield, and after they both qualified MB, ChB. in late 1942, they were married and enjoyed an extremely successful partnership for 58 years. Betty has, of course, developed her own medical specialty and is recognised worldwide for achievements in her field. They had four children, one of whom, Andrew, is Regius Professor of Medicine at Aberdeen University.

Royal Air Force

Early in 1943 Jack was called up into the Royal Air Force medical branch and served as a station medical officer to a flying boat squadron in Freetown, West Africa. He returned to the United Kingdom in 1945 and was offered a postgraduate course in anaesthetics. He was sent to the Radcliffe Infirmary, Oxford to study under Professor Robert Macintosh and William Mushin. He was then posted to RAF Hospital, Cosford, where he joined Douglas Howat who coached him for the one part Diploma in Anaesthetics, which he easily passed in 1946.

Return to Liverpool

Jack was demobilised later that year and returned to Liverpool. Largely due to economic pressure and a desire to utilise his specialist knowledge, he obtained a post in anaesthesia at the

Royal Southern Hospital. He became a Consultant Anaesthetist to the Royal Liverpool Hospitals in 1949. It was at this point that the course of his subsequent career was to be dramatically influenced by two people, Dr (later Professor) Cecil Gray, Consultant Anaesthetist, and Miss Isabella Forshall, a Consultant in Paediatric Surgery, originally described by Jack as 'rather a formidable lady'. With both of these he developed a life-long close friendship.

Cecil Gray, just appointed Reader in the new University Department of Anaesthesia, recognising Jack's tremendous potential, invited him to join the department as a part-time demonstrator. Together they proposed and introduced the revolutionary concept of the 'triad of anaesthesia', using different specific agents to produce a desired effect. This was a far cry from the conventional method at the time, of the use of a single anaesthetic agent. Shortly afterwards Miss Forshall persuaded Professor Gray to second him (at first rather reluctantly) to the Royal Liverpool and Alder Hey Children's Hospitals to develop paediatric anaesthesia. Jack continued to hold Consultant Anaesthetic posts in five adult hospitals because his conscientiousness and expertise were constantly in demand for difficult emergency cases. Gradually over the ensuing years he devoted his professional activities solely to the care of infants and children.

Paediatric Anaesthesia

The so-called Jackson Rees technique of paediatric anaesthesia initially developed as a result of his experiences in adult anaesthesia, and an intense desire to humanise the management of children in hospital. Jack gradually introduced a number of important and radical changes. These included heavy premedication, an intravenous technique of induction of anaesthesia (to replace the unpleasantness of open ether induction), the routine employment of muscle relaxants and the use of endotracheal intubation and controlled ventilation by means of a simple adaptation of the Ayre's T-piece with the addition of an open-ended bag and a high frequency of respiration. In 1950, within a year of being appointed to the Liverpool Children's Hospitals, he published a seminal paper in the *British Medical Journal* on neonatal anaesthesia. His technique, which became the yardstick of successful and safe paediatric anaesthesia, was associated with a great improvement in the results of infants and children undergoing surgery, and subsequently permitted the important development of more complicated operations in a variety of surgical fields. Further innovations, particularly related to prolonged intubation in intensive care, were to follow.

This technique soon became known throughout other centres, and resulted in the operating theatres at the children's units in Liverpool being packed with many distinguished paediatric anaesthetists and trainees from around the world, to witness this phenomenon. As a result of these contacts Jack was invited to many national and international meetings. He travelled widely to many centres as a visiting Professor and invited lecturer, was made an honorary member of a large number of prominent learned societies, and was presented with many prestigious awards in this country and abroad. He inspired a large following of devoted trainees throughout the world, and continued to receive visits from many colleagues during his active years of practice, with whom he remained in contact long after he retired.

Honours

He was awarded the Joseph Clover Medal of the Faculty of Anaesthetists in the Royal College of Surgeons of England, the Frederick Hewitt Medal of the Royal College of Surgeons of England, the Henry Hill Hickman Medal of the Royal Society of Medicine, London, the John Snow Medal of the Association of Anaesthetists of Great Britain and Ireland and the Robert M Smith Award of the American Academy of Paediatrics. He was extremely popular, and became well known as a superb speaker, a witty panellist and a persuasive debater. His writings are a model of lucidity and a pleasure to read, though he confessed that he was a 'reluctant writer'.

He was elected a Fellow of the Faculty of Anaesthetists of the Royal College of Surgeons of England, Fellow of the Faculty of Anaesthetists of the Royal Australian College of Surgeons, Fellow of the Faculty of Anaesthetists of the Royal College of Surgeons of Ireland, Fellow of the Royal College of Physicians of London, and Fellow of the Royal College of Paediatrics and Child Health; 'not bad', as he himself remarked, 'for someone who had sat only one postgraduate degree examination'!

His flair for clarifying complex issues, together with his modesty and courtesy, made him eminently qualified for membership of numerous examining bodies for various university degrees, and a natural President and Chairman of many important local and national committees. He was particularly proud to be a guiding founder member, and later President, of the Association of Paediatric Anaesthetists of Great Britain and Ireland. He attended nearly every annual meeting since its inception in 1973, enjoying particularly the gossip at the bar after the annual dinner. His influence on the development of the speciality was recognised subsequently by his appointment as the first President of the Federation of European Associations of Paediatric Anaesthesia in 1986.

The recognition of Jack's achievements was not confined solely to the field of medicine, and it is of note that among many other honours he was made an Honorary Citizen of the ancient university city of Coimbra in Portugal, a tribute rarely bestowed upon an anaesthetist. Furthermore, in recognition of his contribution to the welfare of children, the Liverpool branch of the Athenaeum club, which celebrated its bicentenary in 1998, chose him as one of five distinguished citizens from the whole of Merseyside, who had contributed both locally, nationally and internationally to the advancement of knowledge and humanity; a unique award for a unique man.

Retirement

Jack retired from anaesthetic practice in 1983, but was quickly invited to be guest Professor of Paediatric Anaesthesia in the Erasmus University of Rotterdam for a year.

Fortunately for his colleagues and for posterity, Jack's life was recorded on videotape in 1997-8 during a series of excellent interviews expertly conducted by Dr Max Blythe of the Educational Unit of Oxford Brookes University. The tapes span over 4 hours and tell in explicit detail an intriguing and spellbinding story. The interviews highlight his modesty and the clarity of explanation of his innovations, making them all appear extremely very simple; but they could

only have occurred as a result of a comprehensive fundamental knowledge of medicine coupled with astute clinical acumen and observation.

Conclusion

The revolutionary improvements that Jack had initiated laid the foundation for a practice of anaesthesia in infants and children, which could not have been envisaged 50 years ago. He loved life and fellowship, and his wide circle of friends have fond recollections of many enjoyable and memorable occasions. With his high intelligence, wisdom and ability to solve seemingly impossible problems, he could have achieved great success in any chosen field. He was generous, genial and genuinely interested in everyone, and gleefully admitted to being 'a social animal'. He bore his last illness with characteristic good humour and immense fortitude. He will be sadly missed by the many who had experienced his friendship.

Dr Jackson Rees died peacefully at home on Friday 19 January 2001.

Gordon H Bush

An Extract from Mrs Beeton's Book of Household Management¹

First published in 1861. An enlarged edition was published by the Clarendon Press in 1982 and reprinted in 1984. Mrs Beeton married a publisher and died in childbirth at the age of 26.

2462. There is another condition of what we may call 'mute births', where the child only makes short ineffectual gasps, and those at intervals of a minute or two apart, when the lips, eyelids, and fingers become a deep purple or slate colour, sometimes half the body remaining white, while the other half, which was at first swarthy, deepens to a livid hue. This condition of the infant is owing to the valve between the two sides of the heart remaining open, and allowing the unvitalized venous blood to enter the arteries and get into the circulation.

2463. The object in this case, as in the previous one is to dilate the lungs as quickly as possible, so that, by the sudden effect of a vigorous inspiration, the valve may be firmly closed, and the impure blood, losing this means of egress, be sent directly to the lungs. The same treatment is therefore necessary as in the previous case, with the addition, if the friction along the spine has failed, of a warm bath at a temperature of about 80°, in which the child is to be plunged up to the neck, first cleansing the mouth and nostrils of the mucus that might interfere with the free passage of air.

2464. While in the bath, the friction along the spine is to be continued, and if the lungs still remain unexpanded, while one person retains the child in an inclined position in the water, another should insert the pipe of a small pair of bellows into one nostril, and while the mouth is closed and the other nostril compressed on the pipe with the hand of the assistant, the lungs are to be slowly inflated by steady puffs of air from the bellows, the hand being removed from the mouth and nose after each inflation, and placed on the pit of the stomach, and by a steady

pressure expelling it out again by the mouth. The process is to be continued, steadily inflating and expelling the air from the lungs, till, with a sort of tremulous leap, Nature takes up the process, and the infant begins to gasp, and finally to cry, at first low and faint, but with every engulp of air increasing in length and strength of volume, when it is to be removed from the water, and instantly wrapped (all but the face and mouth) in a flannel. Sometimes, however, all these means will fail in effecting an utterance from the child, which will lie, with livid lips and a flaccid body, every few minutes opening its mouth with a short gasping pant, and then subsiding in a state of pulseless inaction, lingering probably some hours, till the spasmodic pantings growing further apart, it ceases to exist.

2465. The time that this state of negative vitality will linger in the frame of an infant is remarkable, and even when all the previous operations, though long-continued, have proved ineffectual, the child will often rally from the simplest of means - the application of dry heat. When removed from the bath, place three or four hot bricks or tiles on the hearth, and lay the child, loosely folded in a flannel, on its back along them, taking care that there is but one fold of flannel between the spine and heated bricks or tiles. When neither of these articles can be procured, put a few clear pieces of red cinder in a warming-pan and extend the child in the same manner along the closed lid. As the heat gradually diffuses itself over the spinal marrow, the child that was dying, or seemingly dead, will frequently give a sudden and energetic cry, succeeded in another minute by a long and vigorous peal, making up, in volume and force, for the previous delay, and instantly confirming its existence by every effort in its nature.

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Dr A Kuipers

BOOK REVIEWS

Surgery, Sand and Saigon Tea. An Australian Army Doctor in Vietnam. Marshal Barr. Allen & Unwin, Australia 2001, UK 2002, ISBN 1865084. Paperback pp xii + 252. Aus \$27.50.

Surgery and Sand are easily understood but *Saigon Tea* was a drink, purchased as the price of the company of a bar girl in any of the bars in any of the towns in South Vietnam. It consisted of a thimble-sized glass of an amber liquid described on the bill as Cognac Coke.

Colonel Donald Beard, a retired regular in the Australian Army Medical Corps, has written the foreword to this book. He joined 8 Field Ambulance at the end of Marshall Barr's stint in Vietnam and features in chapter 28. It praises his sterling work and the standards he set, and provides an overview of the situation in 1967/8. After a preface and prologue, the first chapter is a short account of Marshall's boyhood in Brisbane and Perth and medical

training in Adelaide and Perth. He decided to specialise in anaesthesia, despite his father's wish that he should be his partner in general practice. He subsequently enlisted in the Perth Citizen Military Force Field Ambulance, which led to Vietnam.

In May 1966 the Australian Army Taskforce was sent to Vietnam, and Part II describes the hectic preliminaries to the training and preparation of 8 Field Ambulance before its departure in April 1967, to replace 2 Field Ambulance. This was at Vung Tau, south east of Saigon, as part of the 1 Australian Logistic Support Group and adjacent to the US 36 Evacuation Hospital. It is said that though MASH was set in Korea it actually reflected what happened in South Vietnam, and to a certain extent Marshall's account (based on his diaries) is reminiscent of the frenetic activity, both medical and social, portrayed in the film and TV series. But this is a superb chronicle of all aspects of the stressful time spent by a keen and dedicated young man in a war that seemed to threaten civilisation.

Naturally, there is much about the medical care of casualties including, in Chapter 10, an interesting comparison with the US army doctors who at this time infused large volumes of crystalloid via cut-downs. They also took much longer to operate and were governed by strict protocols, deviation from which was an offence; unlike the small Australian unit which could make and change their own rules. There are some less than complimentary comments about native doctors and Vietnamese hospitals which he visited, but the local attitude to sickness and disease was fatalistic. Apart from this, Marshall took Vietnamese language lessons (not very successfully), and helped to set up a weekly clinic in Nam Binh, a nearby village where there were Roman Catholics who had fled from North Vietnam, and where he also extracted teeth. This all helped to relieve the claustrophobic stress of a small mess who perforce were forever in each other's pockets.

Marshall took the opportunity for 'swanning': visits to other hospitals, including a self-inflatable US military hospital near the Cambodian border. This entailed a terrifying trip in a single-engined plane known as the flying house brick, one of several such flights. He was impressed by the hospital, but not by the morale of its medical and nursing staff who were within range of the Viet Cong. After rest and recreation in Thailand, vividly described, his arrival back in Vietnam in January 1968 coincided with the Tet offensive.

An astonishing military defeat for the Viet Cong was presented to the world media as victory, but the large number of patients pushed 8 Field Ambulance to its limits. Undoubtedly these limits had been extended by Marshall's leadership and management of casualty resuscitation, but he felt 'absolutely shattered'. Not long after this, on April Fool's Day 8 Field Ambulance became 1 Australian Field Hospital and expanded. That same day, ironically, Lyndon Johnson announced the US withdrawal from Vietnam. Three weeks later Marshall was discharged, and a year and one week after he had arrived he left for the UK.

I read this book straight through with great enjoyment and it was no chore to re-read it for this review. It is clearly written, evoking the horrors of war and the necessary escapism. I fully recommend it to young and old anaesthetists, Armed Forces doctors, nurses and other medical staff. I needed to use the glossary to clarify some unfamiliar abbreviations but it

is written in an easy style and is aimed to be comprehensible to laymen. I could find no errors or misprints, but which is the mirror image – the cover or the photo on page 138? Marshall is unable to trace the origin of two sayings used by the unit's Roman Catholic padre, which are quoted on page 148. I am still searching, but perhaps before publication in the UK the sources will be found.

Adrian Padfield

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Careers in Anesthesiology - Autobiographical Memoirs Volume 4.

Fink BR, McGoldrick KE, eds. The Wood Library Museum, Park Ridge, Illinois, 2000. \$40. Chapters by Nicholas M Greene, Erwin Lear, Jerome H Modell, and Leroy D Vandam.

The oldest of the contributors was born about 1915; two, whose childhood was marked by the Great Depression, in the early twenties, and the youngest in 1932. Two were the children of immigrants from Eastern Europe, and three served in the US Navy during the formative period of their lives.

Nicholas Greene secured a residency with Beecher at the Massachusetts General Hospital. He was learning how to use the staple agents, cyclopropane, ether, and thiopentone when a visit from Gillies, to demonstrate his hypotensive spinal method of minimising blood loss, so impressed those MGH surgeons involved in massive pelvic exenteration and porto-caval anastomosis that he was seconded to Edinburgh to gain experience in the technique. Returning with the ability to maintain the systolic blood pressure at between 60 and 80mmHg, he was in great demand by general surgeons, gynaecologists and neurosurgeons alike. However he found that the initial decrease in operating time was not sustained, and he gradually came to limit his use of hypotensive spinal anaesthesia.

After a senior clinical and academic appointment in Rochester, where he set up a training programme, he was called to the chair at Yale. Here he describes the problems he encountered in staffing and in setting up an academic training programme, in a department which was administratively a sub-section of the department of surgery. Because of his interest in spinal anaesthesia, much of his research revolved round the physiology of sympathetic activity, and resulted in an impressive number of publications. An advisory appointment to the National Institute of Health followed, then editorship of *Anesthesiology*, and a large number of academic honours, including the FFARCS. Ornithological visits to East Africa resulted in his becoming involved in the development of the ASA Overseas Teaching Program. In 1987, he was appointed a trustee of the Wood Library Museum, and became responsible for a programme of translations of seminal books related to the history of anaesthesia, and for instituting the WLM Laureateship of the History of Anaesthesia. He has retired only from the clinical practice of anaesthesia, he says, and hopes to continue to contribute to the specialty.

Erwin Lear considered himself fortunate during the 1930s depression to be able to contribute \$2 a week to the family income by working as a milkman's assistant from 3am to 8am, when his

school day started. He had a spell in the Navy, during which he took part in anti-submarine patrols and the landing in August 1944 in the South of France. He studied at the Long Island College of Medicine, and even before graduation he worked as part of a small team that provided weekend cover for emergency pathology and haematology investigations, becoming skilled in the use of the Van Slyke apparatus and in blood grouping. His career in cardiac anaesthesia was launched after a one-day attachment in 1953, and a family connection in pharmacology led to research into chlorpromazine, and later naloxone. He occupied the Chairs of Anesthesiology at Mount Sinai and Yeshiva Universities, retiring as Emeritus Professor. Service in the ASA led to the Presidency in 1976. Dr Lear looks back 'with fond memories at a practice of medicine that was kinder and more gentle than what I perceive will be the practice during the twenty-first century' - which says it all!

Jerome Modell provides the longest and most detailed account, a story of determination to succeed against the odds, which he says could happen 'only in America'. To support himself he participated in drug trials while still a medical student, and then to free himself of debt he joined the US Navy, which offered a student commission in return for graduate service. This took him into anaesthesia, and thence into an early attempt to develop oxygen and respiratory therapy. Completion of his training saw him appointed by NASA to the first medical recovery team for Project Mercury. The need to resuscitate a drowning colleague was the experience 'that would change my life'. It took him into academic anaesthesia, research into drowning, and into respiratory intensive care. His attempts to centralise this facility will strike a note among those similarly engaged during the early 1960s. He brings out the importance in the American system of the influence of the hospital administrator in securing the development and modernisation of services, all of which have to earn their keep. His research into drowning, and the accompanying electrolyte changes led to 'liquid respiration' studies with perfluorinated hydrocarbons. Appointed Chairman of the Department of Anesthesiology at the new medical college of the University of Florida, he was successful in building up a first class team and training program. With this came widening administrative invitations and responsibilities, from which he found relaxation in the breeding and training of thoroughbred racehorses. At the age of only 65, in which he calls his twilight years, he relinquished all his administrative responsibilities and returned to the chair of his department. He hoped to be free to engage in clinical work, teaching and research, but already he finds that he is spending more and more time on the administration of special projects.

The shortest contribution is from *Dr Leroy D Vandam*, the oldest of the contributors born, it appears, about 1915. He livened up his medical school vacations by studying art, etching and lithography, and for a time thought of becoming a professional artist. After a fellowship in pathology at Harvard he began an internship in surgery, and in the following year entered the Army, but a succession of retinal haemorrhages brought an honourable discharge. Pondering on his future, a newspaper item took him to anaesthesia at Johns Hopkins, where Blalock's programme of cardiac surgery was in full swing. This involved him in the development of cardiac catheterisation, with blood gas and cardiac output studies, of which he was one of the pioneers. The decision not to spend the rest of his life in laboratory work took him to the training program at the University of Pennsylvania, where he co-authored a textbook, contributed to a landmark study on the long-term effects of spinal anaesthesia, and was an early worker on the development of therapeutic nerve blocks.

Returning to Boston with the hope of a lighter work-load, he anaesthetised 80 patients with advanced breast cancer metastases for hypophysectomy, without a death, and became involved in renal transplants. Relief, of a kind, came in 1962 with his appointment as editor-in-chief of *Anesthesiology*, being succeeded in 1973 by Nicholas Greene. At this point the autobiography becomes synoptic, terminating with a list of developments that took place during Dr Vandam's editorship.

While they provide a pleasant journey back in time for the older among us, this series of volumes will only serve its more important purpose if the books are read by the younger members of the specialty. There is much to be learned from the experiences of their predecessors.

David Zuck

Careers in Anesthesiology - An Autobiographical Memoir. Volume 5.

Peter J Safar, Fink BR and McGoldrick KE eds. The Wood Library Museum of Anesthesiology, Park Ridge, Illinois 2001. ISBN 1-889 595-06-3 (hard cover) pp 379.

This autobiography is the fifth in the series published by the Wood Library Museum. Peter Safar's story makes fascinating reading. He writes with passion, honesty and generosity to his colleagues. Compared to the previous four volumes in the series it is a seriously large tome (with some 379 pages), but it is a good tale, and the detail and personal views are interspersed with the formidable list of achievements of this remarkable man.

The book is divided into two sections - from Vienna to Pittsburgh 1924-1961 and Pittsburgh 1961-2000. The story is ongoing, for Peter remains active in cerebral resuscitation and continues to catalyse training programmes in life-supporting first aid for the public. There we have the broad spectrum of his devotion to all aspects of resuscitation.

The first section of the book begins with a description of his young life in pre-war Vienna. We learn of his relationship with his surgeon father and physician mother and his immediate family, his exposure to, and hatred of, the Nazi regime during the occupation of Austria in the 1939-1945 war and his early medical career. There is an insight into the character of the man who was destined to make a huge impact in medicine and international humanitarian aid. Stories abound in the book that testify to his hatred of war. He deliberately rendered himself medically unfit to fight in the German Army by exacerbating his chronic eczema to a fulminating state by smothering himself with tuberculin ointment. Thus he avoided service on the dreaded Russian front. Here, many of his close friends died in their teens.

Instead of serving in the infantry he worked in a military hospital, studying deep into the small hours. He became a medical student and saw at first hand the horrific casualties produced during the Battle of Vienna at the end of the war.

In Vienna the autocratic attitude of the medical hierarchy at the time was not to his taste and he applied successfully for a scholarship to work at Yale University. Although initially he planned a

career in surgery, he later changed to anaesthesia - a decision he has never regretted. He arrived in the States with one suitcase and \$5 and loved America immediately, particularly the feeling of freedom and democracy and the informal attitude in the medical profession: 'even the professors ate lunch with the students and listened to their opinion'. His story up to this time was not atypical. Europe, including the UK, had been utterly devastated by the war, and many young doctors sought a chance to practise medicine in an environment where facilities were available and research was possible. It was the 'brain drain'; Europe's loss was America's gain, and it was to be some time before we caught up.

After returning briefly to Vienna, mainly to get married to Eva, the love of his life, we learn of his emigration for good, starting anaesthesia in the best centre of the time in Philadelphia. He describes the benign doyens there - Robert Dripps, Leroy Vandam and Julius Comroe and we gain an insight into how an anaesthetic department should be led. After being seconded to Lima in Peru for a year he went to Johns Hopkins in Baltimore. There he had his first experience of discord in the operating room that culminated in the resignation of the entire membership of the anaesthetic department.

Moving across town to the City Hospital, a less prestigious but happy institution, his research work took off and he produced his seminal work on the head tilt, chin lift and jaw thrust in the creation of a clear airway. The germs of this concept had been prompted by observing anaesthetists back in Vienna, who seemed to do it as if by instinct, but without scientific proof. A chance meeting with James Elam led to the rebirth of mouth-to-mouth ventilation. In a remarkable series of experiments, mouth-to-mouth ventilation was compared to the manual methods (Holger-Neilson) in sedated volunteer colleagues who had received 1-3g of suxamethonium! No harm was done and all volunteers 'ate a good supper' at the end of the day. What price that passing through an ethical committee these days?

Across town, Kouwenhoven and his colleagues had produced remarkable results with closed chest massage, now known as external chest compressions. Safar realised that chest compressions without oxygenation would not be fruitful in the long run and so combined this with his airway and breathing technique. Thus the ABC of CPR was born and Safar is rightly acknowledged as the 'father of modern CPR'.

In 1961 Safar moved to Pittsburgh to take up the position of Professor and Chairman. The offer of the post was entirely verbal, as was its acceptance. There was nothing on paper and salary was not discussed: 'I trusted it would be fair ... I considered it poor taste to talk about money ... it often spoiled collegiality and friendships' He has stayed at Pittsburgh ever since.

The second section of the book describes his happy life and endeavours over the next 40 years; his teaching and research, and his frustrations trying to establish an effective emergency medical service. On the international front he was involved, with the late Rudolf Frey, in the creation of the Club of Mainz, later to become the World Association of Disaster and Emergency Medicine (WADEM). His hatred of violence, kindled by his experience as a teenager, runs as a thread through the book. He has an abhorrence of nuclear war and was a key figure in the 'Physicians against Nuclear War' movement. During the Cold War he did his utmost to foster professional

and friendly relationships behind the Iron Curtain, notably with Negovsky and his team in Moscow.

Peter Safar's pride and joy was the creation of the International Resuscitation Centre which is now named after him. Built on the site of an old coffin factory (from resurrection to resuscitation) it allowed principally a programme of cerebral resuscitation to be developed, with a series of talented research fellows working under his direction.

The book reveals many inside stories of these times - the personalities, the problems and perverse attitudes, the frustrations, and the unlikely but warm and lasting friendships. It is a very good read and spans a fascinating period when anaesthesia emerged from the operating room to encompass resuscitation, critical care and emergency and disaster medicine.

For the medical historian and resuscitation tyro it is a 'must' and a marvellous resource of information - there are 335 references! I learned a lot.

Peter Baskett

Editor-in Chief *Resuscitation*

CORRESPONDENCE

The Editor

Dumfries Ether

Sir,

Having been involved for the last 40 years or so with the 'Dumfries ether', the account in Volume 28 of Dr H A S Payne's presentation was of more than a little interest to me. I suspect that his knowledge of the Dumfries operation is related to the fact that his former employer, Macfarlan Smith of Edinburgh, financed the first edition of my monograph *From Boston to Dumfries*. Unfortunately, Dr Payne includes one statement which is erroneous, and three which are unsubstantiated and possibly incorrect.

'Baillie suggests that Fraser had been present at the Ether Dome' This statement does not occur in any of my four publications on the subject;¹⁻³ on the contrary, on page 25 of the publication cited by Payne² the narrative reads: 'There is no evidence to suggest whether he [Fraser] was present at Morton's celebrated exhibition of etherisation on October 16th or at a subsequent demonstration given by Morton or another anaesthetist'.

'In Dumfries on the afternoon of the same day'. There is no known reference to the time of the Dumfries operation on 19 December 1846.

'Dr William Scott who performed an amputation'. The statement that the operation was an amputation is one of several unfounded statements, made to the late Dr Stanley Sykes, by a former hospital secretary at Dumfries and has never been confirmed.

'The operation was not a success.' Dissatisfaction with the outcome of their experiment may well have been one of the reasons why it took Dr Scott so long before communicating with the *Lancet*⁴ but this has never been confirmed.

Many questions regarding the Dumfries ether have still to be answered but I feel we have to be wary of giving expression to suggestions for which there is no foundation.

T W Baillie

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Editorial note

The Dumfries Ether Diary. The first surgical use of anaesthetic ether in the Old World. ISBN 1 899316 35 3.

This volume was published in 1996 as a contribution to the celebration at Dumfries and Galloway Royal Infirmary of the 150th anniversary of the event. It is a revised and updated version of Dr Baillie's earlier monograph, most handsomely produced as a hardback with illustrated dust jacket. The 70 pages contain additional background information and discussion of more recent findings. The book is available from the Department of Anaesthetics, Dumfries and Galloway Royal Infirmary, Bankend Road, Dumfries DG1 4AP for the very modest price of £7 including p&p.

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The Editor

The first use of ether anaesthesia in UK

Sir,

Dr N G Coley's excellent article on 'Early experiments with inhalation anaesthesia' (*HAS Proceedings* 2000; **28**:10-18) contains one unfortunate inaccuracy, Robert Liston's first use of ether anaesthesia at University College Hospital was not on 2nd but on 21st December 1846. Unfortunate because as this date is so important to historians it raises the spectre of 'Dumfries' (like Banquo's ghost!), challenging the claim of an august London teaching hospital. The present state of our knowledge, derived from the publications of Sykes¹ and Baillie² is briefly as follows:

W T G Morton administered an 'anaesthetic' (though he would not divulge what it was), and surgeon J C Warren removed a tumour on 16 October 1846 in Boston, Massachusetts. The success of the demonstration and the date are now celebrated as 'Ether Day' in the USA. The news was carried to the UK on the Cunard paddle-steamer *Acadia* by a letter from Dr Henry Bigelow to his friend Dr Francis Boott in London, and also by Dr William Fraser, a surgeon, who was returning on leave to his home at Dumfries in Scotland. The *Acadia* left Boston on 2nd December 1846, calling at Halifax, Nova Scotia on 3rd. The *Nova Scotian* newspaper of 7th December³ names the passengers from Boston and those proceeding to Liverpool, where she arrived on the 16th. Sykes assumes that Dr Bigelow's letter arrived in London the next day, the 17th. Dr Boott, with commendable application, devised an inhaler and proceeded to give ether for a dentist, Dr Robinson, to extract a tooth privately in his rooms on 19th December. Two days later on the 21st Liston amputated the leg of a patient who was under ether at University College Hospital; this was a public demonstration.

Meanwhile Dr Fraser, with equal enthusiasm, travelled from Liverpool to Dumfries, his home town. Here he met with his friends in the Royal Infirmary and his colleague, Dr William Scott (surgeon) 'exhibited ether on the 19th to a patient' in the Infirmary. Unfortunately, he does not say what operation he performed.

Sykes, whose calculations are as meticulous as those of Bishop Ussher, could not account for five days of 'the 64 which elapsed from 16th October to 19th December'. Consideration of a proposed Royal Mail contract to be issued by the Admiralty may help to explain the discrepancy. The contract would contain heavy penalties for late delivery, such that the vagaries of wind and weather would deter anyone undertaking risks under sail. However in 1838, the first Atlantic crossing was made under steam. The paddle-steamer *Sirius*, of Cork left Passage West, Ireland, at 10.30 am on 4th April under the command of Lieutenant Richard Roberts RN. She carried 40 passengers and a crew of 38. In spite of two 'heavy gales' she steamed all the way and arrived in New York at 10 pm on 22nd April, having made a passage of 2,897 nautical miles at an average of 161 nautical miles per day. Her arrival was greeted with triumphal celebrations.

Samuel Cunard, a Canadian of Halifax, Nova Scotia, immediately realised the advantage of reliability which steam would have over sail. He at once set about negotiating a Royal Mail contract with the Admiralty to deliver mail across the Atlantic. He built four paddle-steamers to the same design, of which the *Acadia* was the second. The contract, commencing in 1840, was for weekly crossings during eight months of the year and fortnightly crossings during the winter months.⁴ This would explain Sykes' problem with the delay of Dr Bigelow's letter to Dr Boott. It would have had to wait for one of the only two crossings in December 1846.

Richard Bodman

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2. Baillie TW. *From Boston to Dumfries*. Dumfries: Dinwiddie, 1969.
3. *The Nova Scotian*. Halifax, Nova Scotia: 7 December 1846.
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Barbara Duncum

As we went to press we heard the sad news of Barbara Duncum's death on 16 October 2001. Her book, *The Development of Inhalation Anaesthesia*, first published in 1947, was a landmark in the history of medicine, let alone anaesthesia, at a time when its place in literature was less prominent than it is today.

In 1994 a new edition of the book was published by the Royal Society of Medicine Press on behalf of the History of Anaesthesia Society. In the introduction Christopher Lawrence from the Wellcome Institute wrote: 'Its reissue is not only a delight, but a necessity'. A fuller appreciation will appear in Volume 30. The HAS was represented at the funeral by Jean Horton, Douglas and Joan Howat and Davis Zuek.

PMED

SANTIAGO DE COMPOSTELA - SEPTEMBER 2001

The 5th International Symposium on the History of Anaesthesia was held in Santiago de Compostela from 19 to 23 September 2001. Approximately 130 delegates attended; there were some absences because of the tragic events in New York eight days previously. Some managed to make the journey from the United States, including our Honorary Members Lucien Morris and John Severinghaus.

The meeting was held in the spacious Neo-classical Medical School, where we were looked after by an impressive group of secretaries who also assisted with audio-visual aids. To get there most people, especially if their hotels were within walking distance, would have crossed the splendid square of Obradoiro containing the Cathedral and the Hostal de los Reyes Catolicos. In the former we witnessed the extraordinary 'Botafumeiro' ceremony, where the vessel was swung through an angle of 180° and seemed at times in danger of going through the roof; in the latter we dined in state.

There was an interesting opening lecture by Professor Hervás using extracts from Robert Macintosh's diary during his time in Spain. The subjects of the Plenary Sessions included Oxygen, Spinal Anaesthesia, Technological Evolution, and of course historical perspectives, including Latin America and the Ancient Greeks. There was a wide range of Free Papers, and museum and poster displays to visit. Speakers from the HAS included Alistair McKenzie (three papers), Adrian Padfield (two papers), Jean Horton, Yash Pole, and David Wilkinson. It was encouraging to have contributions from three junior doctors, namely Harper (London), Williams (Bury St Edmunds), and Prusinkiewicz (Canada). If there was a complaint, it was that the parallel sessions from 1000-1100 on each of the three mornings meant that some of us may have wished to be in two places at once.

Unavoidable absences meant that gaps among the speakers and the chairmen of sessions had to be covered, but this was arranged by the organisers so that it all appeared to be seamless.

The accompanying persons had an adventurous trip to Cape Finistere, and the whole party, accompanied by a superbly well-informed guide, explored the Galician coast and enjoyed a buffet supper preceded by a display of traditional dancing.

Our congratulations must go to our hosts, especially Professor Franco and Dr Diz, for organising such a memorable meeting. The event in 2005 will be at Cambridge.

PMED

HISTORY OF ANAESTHESIA SOCIETY
NOTICES, FUTURE EVENTS AND MEETINGS

2002**8 June**

Summer Joint Meeting AHA/HAS
 The Concourse Hotel & Governor's Club, Madison, Wisconsin

Contact: Mark E Schroeder MD
 Associate Professor, Department of Anesthesiology
 University of Wisconsin Medical School
 600 Highland Avenue, Room B6/319
 Madison WI 53792-3272
 USA

e-mail:
 Website:

5 – 6 July

HAS Summer Meeting – Norwich
 Provisionally –The Swallow Nelson Hotel

Contact: Ms Keely Gipton
 Department of Anaesthesia
 Norfolk & Norwich Hospital
 Norwich

9 November

HAS Autumn Meeting – Sheffield
 The Hilton Hotel

Contact: Dr Adrian Padfield
 351 Fulwood Road
 Sheffield S10 3BQ

2003**8 May (Wednesday)**

The Poynter Lecture
 Dr Tilli Tansey
 The Wellcome Library, 183 Euston Road, London NW1 2BE

2003

8 June

HAS Summer Meeting –Ludlow

Contact: Dr A Kuipers

e-mail:

3 – 7 September

20th BSHM Congress – Reading University

Contact: Mr Desmond O'Rourke
38 Stanhope Road
Reading RG2 7HN

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