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An Exercise in Iconography

W. D. Smith, OBE, University of Leeds

Attention was drawn to a controversy about the authenticity of a portrait (called the “Cambridge” portrait) alleged to be of “Joseph Priestley as a young man”.\(^1\)\(^2\) Evidence was presented against a background of nine other likenesses, some of which are perhaps as dissimilar from each other as from the portrait in question. Particular attention was paid to the “Leeds” portrait\(^2\)\(^3\) which would have been painted nearest in time to the “Cambridge” portrait. The views of the audience were invited by a show of hands.

References

Shrines of Anaesthesia in the U.S.A.

J. A. W. Wildsmith, Edinburgh Royal Infirmary.

The New England area of the United States of America contains some of the most important sites in the early history of clinical anaesthesia. Many visitors to Boston, Massachusetts, go to see the venue of Morton’s original public demonstration of the use of ether in the old building at the Massachusetts General Hospital, but few are aware that many other interesting places exist and may be reached easily from Boston.

Sadly, the redevelopment of some of central Boston has swept away the site of Morton’s dental surgery where his first ether anaesthetics were given. In Boston city gardens stands the Ether Monument, to this day recording the name of no man and thus a reminder of the great controversy between Morton and Jackson. A few miles away is Mount Auburn cemetery where the graves of Morton and nearly all those involved in his discovery can be found. Morton’s birthplaces is forty miles east of Boston, just south of Worcester.

One hundred and forty miles north west of Boston, on the west bank of the Connecticut River, lies Vermont, Where the other great pioneer of inhalational anaesthesia, Horace Wells, was born. One hundred and twenty miles down stream is Hartford, Connecticut, where his ill-starred work on the inhalation of nitrous oxide took place. His grave lies just outside the town and the site of his surgery, opposite the old State House, is marked. The Hartford Medical and Dental Museum, which contains a magnificent collection of old surgical instruments, has a room dedicated to Wells and it contains a number of his personal effects.

Not all these sites are easy to find. The author would be happy to provide more detailed information to anyone contemplating a visit to this part of the United States.

Early Ether Anaesthesia—the Enigma of Robert Liston

Richard H. Ellis, St. Bartholomew’s, London

Robert Liston performed the first major operation under ether anaesthesia in England on Monday 21 December 1846. This attracted a great deal of attention, and was one of the principal events which led to the adoption of ether anaesthesia in Britain. Liston’s dominant position would have enabled him publicly to speak and write in support of ether anaesthesia had he so wished and, at first sight, it is a paradox that he did not do so.
Liston’s views about anaesthesia were, however, inconstant and changed markedly over a period of weeks. His undoubted initial enthusiasm rapidly gave way to mere qualified endorsement of the process. Within two weeks of first using ether, he was again prepared to operate on fully conscious patients. That he did not abandon ether anaesthesia entirely was due to the efforts and skills of his early, successful anaesthetists, James Robinson (England’s first anaesthetist) and John Snow.

It was not until late in April 1847 that Liston’s confidence in ether anaesthesia was fully restored. His lack of enthusiasm for it during the interval between early January and late April 1847 (which was shared by many of his eminent surgical colleagues) did nothing to help promote the acceptance of ether anaesthesia during the early months of 1847.

Clinical Thermometry

Lauren G. Allan, Edinburgh Royal Infirmary

In 1891 Dr. Silas Weir Mitchell proposed the concept that advances in medicine were due to the progressive application of quantitating devices to the care of the sick. Just a few years later H.C. Bolton devoted a scholarly monograph to the oldest of these clinical devices, the thermometer.

The measurement of temperature is one of the most common physical measurements routinely made. About 10 million clinical temperature recordings are made daily in the U.S.A., the figures appearing on the sheet at every bed.

The clinical assessment of temperature began with the hand of Hippocrates in 400 B.C. The first device to measure temperature was probably invented by Galileo in 1603—the thermoscope. However, Sanctorius in 1611 was the first to use it clinically. In subsequent years, the development of scaling and the choice of thermometric substance led eventually to the classic maximum-reading thermometer of Cavendish in 1757. In the 1820’s thermocouples, and in the 1870’s resistance thermometers were devised.

Clinically, thermometry mushroomed after 1714 when Fahrenheit established the mercury-in-glass instrument. In 1738 Martine published the first accurate recordings in healthy man and in 1868 Wunderlich published his classic findings in 25,000 cases of disease.

The continuing art of ‘physiological trespass’ ensures that thermometry will remain and expand in anaesthetic practice; the sites and choice of instrument may change.

From Buxton to Lee. British Textbooks of Anaesthesia

D. Zuck, Chase Farm Hospital, Enfield.

The study of textbooks is important to the historian for a number of reasons. A good textbook will expound the “state of the art”. It will describe techniques and apparatus and explain their applications. It will indicated contemporary practices and attitudes, and will discuss the major contemporary problems and the ways of tackling them. By the amount of basic sciences and general medicine it introduces it will indicate the academic standards expected of the practitioner. It may reveal, perhaps inadvertently, some social history in relation to the status of the anaesthetist and the structure of the specialty, and it will contain a fund of commonsense and good advice from which one can still learn.

Trainees today still do most of their learning from textbooks. This was even more the case in the early part of the century, when there were no anaesthetic journals, virtually no societies, and certainly no organised postgraduate training. Even the word “trainee” is inappropriate, since most anaesthetists were self-taught. A textbook could exert a great influence on attitudes and practices; for example, the lack of emphasis on the importance of recording the blood pressure set a pattern for a whole generation. Certain textbooks in their various editions are
or were in print for more than a generation: Buxton, 35 years; Hewitt, 32 years; Ross (Fairlie, Minnitt and Gillies) 31 years; Lee (Atkinson, Rushman) 39 years so far, and going strong.

The thirteen general textbooks published between 1888 and 1947 fall into two categories—major specialist texts, and practical handbooks. Of the former, only two were published during this period, by Hewitt and Blomfield. The last edition of both, appeared in 1922. Of the latter group, two, by Buxton and by Ross, were more comprehensive, approaching the major texts in some respects.

It is remarkable that no major British general textbook appropriate to specialist requirements was published between 1922 and 1947. Where then, did the British anaesthetist look for information? Partly to Hewer’s Recent Advances, partly to monographs, such as Gillespie’s Endotracheal Anaesthesia and Rowbotham’s Anaesthesia for Operations for Goitre; partly to journals (especially the Proceedings of the RSM) and partly to American texts which, by and large, were aimed much more at the specialist than were their British counterparts.

It is symbolic both of the stagnation and of the changing times, that Lee’s (1947) was the first British textbook since 1888 that did not contain an illustration of Clover’s inhaler. It and TAB Harris’s Mode of Action of Anaesthetics (1951), were the first of the modern generation of British textbooks, and pointed the way ahead.

From Normandy to the Third World
I. McLellan, University of Leicester

The Marrett draw-over anaesthesia and analgesia apparatus described in 1942 was a simple, easily portable, piece of equipment, using air and small additions of oxygen as the carrier gas. In 1944 Dr. Marrett found that oxygen supplies on the Normandy coast and countryside were limited and working under battle conditions at Caen there was a need to conserve oxygen for administration to casualties. He discovered a coal mine rescue breathing apparatus with one-way valves, some soda lime and two small oxygen cylinders. He cannibalised this and using his draw-over apparatus made the prototype of the Marrett Head, using an army coffee tin for the soda lime cannister and rejuvenating soda lime all the time over a primus stove. The advantages were that oxygen usage was minimal and he could eke out the limited supplies. After the end of the war Rex Marrett was seconded to Shaftesbury Military Hospital for 9 months to develop his apparatus. His first prototype was made of wood and was used on ten patients. A second prototype was made costing £80 and this was eventually developed into the apparatus manufactured by Air-Med. Further developments on this was the Med-Rex head and a Trilene/ether drip-feed apparatus with close-circuit facility which he made for his own use. The anaesthetic heads bearing his name are now being re-cycled and used in the Third World where gas supplies are still limited.

Self-Administered Inhalational Analgesia in Obstetrics
T.A. Thomas, Bristol Royal Infirmary

The history of the use of inhalational analgesia in obstetric practice is a fascinating sequence of change, occuring for the most part in parallel with changes in general anaesthetic practice. The closest relationship is with dental general anaesthesia and equipment. The recurrent use of nitrous oxide is particularly interesting and should be viewed in the context of the ‘Tec’ drawover vaporiser story. The ‘rise and fall’ of this simple robust equipment was the direct chronological reciprocal of the fortunes of nitrous oxide; first in air and subsequently with oxygen.
The availability of improved agents together with changing methods of administration and cost have been major factors in changes in popularity of many items of equipment, but the philosophy behind their introduction continues to be as apt today as it was in the past.

**Captain G.T. Smith-Clarke: Engineer Extraordinary**

*Adrian Padfield, University of Sheffield*

Captain Smith-Clarke was an engineer with the Great Western Railway before serving in the First World War. He joined the Alvis Car and Engineering Company, Coventry as Chief Engineer and Works Manager in 1922. His arrival presaged the classical vintage era of Alvis sport car successes at Brooklands and elsewhere. His models included the famous 12/50, and his innovations, front wheel drive, an all synchromesh gearbox and independent front wheel suspension, as well as the famous Leonides aeroengine. He ultimately became Chairman of the Alvis Automobile division. Other interests embraced early amateur television and optical and radio astronomy, including an input into the design of the Jodrell Bank instrument.

Smith-Clarke became Chairman of the Coventry and Warwickshire Hospital Authority in 1935 and he was intimately concerned with organising and designing emergency buildings during the Second World War after the air raids on the Coventry Area. He was concerned with modifying the Both iron lung in the poliomyelitis epidemics of the early nineteen-fifties and produced his own more practical and comfortable design in 1954. He also designed and manufactured a cuirasse respirator, a rocking bed, a turning frame for burns patients, a hydrotherapy hoist and a portable sucker. His interest in respiratory apparatus culminated in his 1956 James Clayton lecture to the Institution of Mechanical Engineers on “Mechanical Breathing Machines” in which he stated that his aim had been “to design and develop British breathing equipment that would be equal or superior to that available anywhere in the world”.

It is sad that a man who devoted a considerable amount of time and ingenuity to the alleviation of human suffering, in addition to his remarkable work in the automobile and aeronautical industries, died in 1960 without recognition in the Honours List.

**Other presentations and exhibitions**

Dr. A. Marshall Barr gave an interesting introductory talk on the history of the Royal Berkshire Hospital and its anaesthetists, Dr. D.J. Wilkinson (St. Bartholomew’s Hospital, London) presented a fascinating account of Benjamin Pugh and his air pipe and its uses, and Dr. Adrian Padfield (Sheffield) compared anaesthetic apparatus and vintage cars. An exhibition of obstetric anaesthesia apparatus was arranged by Dr. T.G.C. Smith (Reading) and Dr. A. Marshall Barr (Reading) exhibited some important books from the Bryn Thomas Memorial Library.

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A presentation of the biography by Eve Blantyre Simpson
SIR IVAN MAGILL

Dr Charles Foster:

There are many here who knew Sir Ivan, or Paddy, as those who knew him well called him, much longer and better than I did and who could give a much fuller account of his life and his achievements. It is because of his great kindness to me and to St. Thomas’ that I wanted to pay this small tribute.

Sir Ivan died at the age of 98 last November. His obituaries have documented his long career and his achievements but there is still much more to be written.

He was a most charming Irishman and fortunate to have been the right man in the right place and the right time. He was a keen and excellent fisherman which is a very good illustration of his patience. His thoughtful approach to what he was doing, and his kind attitude to people, led him to be inventive, both in apparatus and techniques for the benefit of his patients who ranged from the lowest to the highest in the land. Sir Ivan very kindly sent us two of his original nasotracheal tubes and a modified Doyen gag made in the 1920’s with much bigger blades so that it didn’t slip out of the mouth. He also gave St. Thomas’ a resuscitator which he made himself from an oxygen ‘Sparklet’, an ordinary M & IE paediatric bag and a plastic facepiece.

I first met Sir Ivan when he had retired from his private anaesthetic practice and had decided to give us some more of his anaesthetic kit. I was invited to his flat in Hallam Street where I found he had arranged his apparatus around the room, and he offered me a drink but, because of his failing eyesight, he used the gin bottle instead of the sherry bottle. This I found extremely disconcerting and I didn’t quite know how to get out of the situation, but I plucked up courage and said: “Sir, I am very sorry, this is actually gin and because I am driving I really don’t think I can drink it all”. So we put it back in the bottle and I poured myself a sherry and that actually seemed to cement the relationship, rather than doing what I feared it might do.

There followed a most fascinating viva and teaching session as we moved from one item to the next. Fortunately, he seemed to approve of what I said and he gave me his dental apparatus and explained how it worked. In a cigar box, which he gave me after the viva was over, were little items – the hook that he used to deliver gases to the mouth, when they weren’t using intratracheal anaesthesia, after the method described by Hewitt in 1901. The endotracheal connections came in different sizes; he didn’t actually approve of anything that wasn’t exactly like his original description and he wouldn’t take any responsibility for such things. The original patterns were made of thick metal so that the patient couldn’t bite through them, a reminder of the problems of spasm which was quite common in the days before relaxants, even in the hands of expert anaesthetist. He used a lead plate to protect the upper teeth when he intubated and it still bears the teeth marks.

He used a right angled rubber tube when he was working with Gillies, the plastic surgeon, to connect his oral endotracheal tube to the endotracheal connection because he wasn’t allowed to have sticky tape or anything to fix the tube when Sir Harold was working on the face; this arrangement lay nicely and didn’t need fixation.

His thought for his patients is exemplified by his and Rowbottom’s use of tincture of lavender and tincture of bitter lemons to disguise the smell of ether. Ellis had used oil of lemon and oil of nutmeg in 1866 for the same purpose. We are very fortunate that most patients nowadays
have not previously had an ether anaesthetic so that we are unaware of many of the problems of the pre-relaxant days. An excellent example is from Rowbottom & Magill’s paper to the Anaesthetic Section of the RSM in 1921: “Indeed, a little ether accidentally spilled in the ward is quite sufficient to put most of the inmates off their dinner; many men begin retching immediately they enter the anaesthetic room. Fear of operations was unknown, but fear of anaesthesia was universal, many flying officers reliving their crash whilst going under”. How very different things are today! We are liable to forget what skills were needed before the introduction of thiopentone and the relaxants.

We have lost another of those great men who lay the foundations on which the new generation can build for an even brighter future. It was great honour and pleasure to have met such a kind and caring old man with his wonderful Irish sense of humour and prodigious memory.
AN INTRODUCTION TO THE HISTORY OF
ST. BARTHOLOMEW'S HOSPITAL

Miss Janet Foster, sometime District Archivist, City & Hackney Health Authority.

Bart's, founded in 1123, is the only medieval hospital in London which still exists on its original site. This, I think, is quite an achievement considering the upheavals of the centuries between.

One of the oldest deeds in the archives which I was privileged to look after, is the only deed to have the name of the founder, Rahere on it. We know something about him because one of his colleagues who helped with the foundation actually wrote down the entire story and that survives, unfortunately not in the archives but in the records preserved at the British Library in the British Museum. From this account - the Book of the Foundation - we know that Rahere came to London from East Anglia, gaining a position at the Royal Court where he was some sort of entertainer. But he seems to have tired of that sort of life and went on a pilgrimage to Rome. There he contracted malaria and was nursed on an island in the Tiber where he vowed that, should he recover, he would come back to London and found a hospital for the sick poor of the city. He did recover but, on his journey home, had a vision in which St. Bartholomew appeared to him and told him he must build his hospital with a church in Smithfield and dedicate them to the saint who would then protect them. On returning to London, Rahere gained royal permission to build in Smithfield, got his friend the Bishop of London to consecrate the site in March 1123 and began building.

Smithfield wasn't a place that you might have chosen, given a free choice of where to build a hospital. It was immediately outside the city walls where the sewers naturally drained away and it was where a horse market was held from time to time, probably a predecessor of Smithfield. It was also where public hangings took place. But, St. Bartholomew had said it should be there and so that's where it had to be.

It took probably about ten years for Rahere to supervise the building of a church, St. Bartholomew the Great, and alongside it, on the north east corner of the present hospital site, was the original hospital house. This would have been one large hall, where everybody was looked after together — people in need of medical care as well as travellers — and just anybody who knocked on the door and needed shelter.

We know in great detail about the foundation, but little about the next 400 years. In the archives there are about 2000 medieval deeds mainly recording gifts to the hospital which were the principal source of income. Occasionally, the deeds specify what the gift was to be used for and so we know that Adam of Norfolk gave a house, and the proceeds from it were to be used to buy white bread for the patients on Sundays. Another person gave money to provide covers for people taking shelter in the great ward at night. The hospital was run by lay brothers and sisters; one of the earliest deeds — about 1200 — is from a woman giving her house to the hospital and coming into the community to join the sisters in looking after the sick poor. So we know from very early on that there were women in the community working with the sick.

A splendid statue of Henry VIII is over the main gateway, the only statue in London of this particular monarch. The fact that he is there is slightly surprising in that he dissolved the monasteries and wasn’t a great friend to the clergy, but he’s there because on his deathbed he was persuaded to re-establish the hospital. He did close the Priory of St. Bartholomew the Great in 1539 but never actually closed the hospital although he had confiscated all its property causing it to run down because of lack of finance. Eventually, he was persuaded to re-establish St. Bartholomew’s, St. Thomas’s, Bethlehem and St. Bridewell, which then
became known as the four Royal hospitals. In re-establishing the hospital he totally changed its character.

Henry gave a charter which set out a new administration providing for a board of Governors to oversee the running of the hospital and, for the first time, there were to be paid officers who were to live in and see to the actual day to day business. There was also to be a matron with 11 sisters under her to look after 100 poor patients, and this fundamentally changed the hospital from being a religious house to being a civil institution. From the time of the refoundation in 1546 little books were produced which detailed all the duties of everybody connected with the hospital and are, therefore very useful for the historian. The sisters were to keep the patients sweet and clean and give them their meats and drinks after the most comfortable fashion. They were to avoid and abhor scolding and drunkenness as most pestilent and filthy vices, and there were very very strict rules about when they were allowed to be in the mens’ wards – basically not when it was dark!

The charter which Henry gave survives in the archives and remained in force as a guiding spirit for the hospital until the National Health Service started in 1948. It was only with the passage of that Act through Parliament that Henry’s charter was superseded.

Thomas Vicary was Surgeon to Henry VIII and probably one of the prime movers in persuading Henry to re-establish the hospital. He was on the first Board of Governors, although he never actually worked in the hospital as far as we can tell, he was in effect my original predecessor as archivist because in the Minutes there is an order that... ‘Mr. Vicary shall have three keys made to the room which has been set aside for the writinges and he to look after them’.

For the first hundred years after Henry’s charter, the establishment remained much the same with the matron, the eleven sisters and three surgeons. A physician was appointed in about 1560: Rodrigo Lopes, who was later hung, drawn and quartered for suspected poisoning of Elizabeth I – probably an early example of wrongful conviction.

In the early part of the 17th century, our most famous name, William Harvey, discovered the circulation of the blood. He was physician to the hospital from 1609 to 1647, however it’s unlikely that he did any of his experiments within the hospital because, against the tradition of the time, he refused to take a house within the hospital precinct, preferring his home on Ludgate Hill where he had his own laboratory. He left our first surviving prescription, for something called scurvygrass drink, which was used into the 19th century as a kind of vitamin supplement, made from unfermented beer with various herbs and spices, and large quantities of scurvygrass which presumably was rich in Vitamin C.

Just after Harvey left the hospital another revolution in the staffing took place. The sisters began to complain that they were overworked. At that time they lived on their wards and were as much housekeepers as tenders of the sick. They were supposed to keep not only the patients but the wards clean, to go to the kitchen to collect the food, feed patients if necessary, give them their medicines, watch over the cases so that they could report on them to the physicians and surgeons and take the new patients to the Great Hall where the physician sat, as he never came to the wards. In their spare time they were supposed to spin flax to make the patients’ bedlinen, which they then washed and hung up to dry wherever they could.

In the 1650’s, they began to complain to the governors that this was all too much. Eventually the governors relented and appointed sisters’ helpers, or nurses, and the term ‘nurse’ first appears in the written records in 1652 where it says... ‘no-one shall be appointed as a sister’s helper or nurse until she has proven her ability at beating the buck’ – a kind of washtub. It was a large wooden vat in which all the soiled linen was soaked in a variety of substances, – including wood ash, – which were to get the stains out. The linen was beaten from time
to time – hence ‘beating the buck’ before being rinsed and hung up to dry. When the new
buildings were put up in the 18th century and the Great Hall was completed, the nurses took
to hanging their wet washing up in there on rainy days, until visitors complained to the
Governors that it was against the dignity of the hospital. They had to go back to hanging out
the washing in the sisters’ garden which was where all the soiled mattresses and rushes from
the floors were burned, hopefully not at the same time.

The twin catastrophes of the late 17th century, the Plague and the Great Fire, had quite an
effect on the hospital. During the Plague the surgeons and physicians left for the country
leaving the apothecary and the matron to look after the huge influx of patients. The following
year the Great Fire of London literally came up to the hospital’s gateway. The fire started
in Pudding Lane and was put out at Pye Corner which is in Giltspur Street, opposite the
present casualty department entrance to the hospital, so the flames were at the Hospital gateway
before they were put out. Although the hospital precinct survived the fire a lot of adjacent
property belonging to the hospital, and from which rents were drawn was destroyed. The
later 17th century was therefore a time of great financial crisis and the Governors hurried
to rebuild these properties to get tenants back in again and to get the funds rolling in. In the
meantime, they rehoused people within the hospital which made it extremely overcrowded
and by the end of the century the buildings were in such a dilapidated state that they felt
something must be done.

First, the Governors thought they would build a splendid new gateway just to show that they
really had come through the crisis, and that is the Henry VIII gate, which remains the principal
entrance into the hospital to this day. Later, in 1729, they decided the only way to cope was
to completely rebuild the hospital. They did not interfere with the little church just inside
the main gateway, known as St. Bartholomew the Less. That had become the parish church
to the hospital when Henry refounded it in 1546 and remains the parish church today. Bart’s
is the only hospital in England which is a parish in its own right, so anybody who is a patient
or a member of staff here is a parishioner of that church. Amongst the archives are parish
records of births, deaths and marriages going back to 1547.

James Gibbs, the famous architect, was persuaded to produce a plan for the new hospital
which comprised four wings around a central square. In the middle of rebuilding one of the
treasurers ran off with the funds and it was not until 1760 that the building was completed.
There was provision for 504 patients which made Bart’s the largest hospital in London at
that time.

For almost the entire second half of the 18th century the chief surgeon was Percival Pott,
who has given his name to many conditions which he was the first to describe or to treat,
the most common being Pott’s fracture. His career spanned the period when surgeons were
beginning to build themselves into a respectable profession and marks the time when Bart’s
was becoming stronger on the surgical side. That trend continued into the 19th century with
John Abernethy who was surgeon here until the early 1830’s and was responsible for founding
the medical college. He was so popular as a lecturer that he had at any one time up to 400
students.

Towards the end of the 19th century there was formalised training for nurses. They were
provided with uniforms by the hospital from 1877 when the School of Nursing was started.
Children were then looked after in the same wards as adults and there was no totally separate
accommodation for the children until 1954. Prior to that it was the custom for there to be
cots, sometimes laid into the window ledges, where children were looked after along with
the adults in the ward. Sisters lived in bedsitting rooms which led off the wards.

Continuing the surgical tradition James Paget had a connection with the hospital for over
fifty years. He started here as a student in the 1830’s, went on to be curator of the Pathology Museum before being elected to the staff as an assistant surgeon and was made Warden of the New Medical College in 1842. That enabled him to marry after an 8-year engagement and he and his wife moved into the Warden’s house which unfortunately was in earshot of the operating theatre. Mrs Paget always used to make sure that she was not in the hospital on Thursdays – these were operating days and she could not stand the noise from the theatre.

When anaesthetics were eventually introduced, Bart’s was the first hospital to appoint an Administrator of Chloroform in the 1840’s. Mrs Paget was heard to say on many occasions that Queen Victoria should have announced an annual public holiday to commemorate the introduction of anaesthetics. Apparently Bart’s tried to lure James Young Simpson away from Edinburgh, he did not respond but James Matthews Duncan, one of his colleagues who participated in the self-experimentation which resulted in the discovery of chloroform, came to Barts as Physician-Accoucheur. Having been very forward about anaesthesia, Bart’s was very backward about antisepsis, mainly because William Lawrence, (a great opponent of antisepsis) was the senior surgeon at the time. He would not allow the use of antiseptic techniques, however it seems that the young surgeons did use them without his knowing about it.

Further developments in anaesthesia at Barts came with the appointment of Henry Boyle as anaesthetist. He introduced the gas-oxygen-ether mixture and designed the first continuous-flow anaesthetic machine in 1916.

Another of our famous names is Sherlock Holmes who, according to Conan Doyle, worked and had his historic meeting with Dr Watson at Bart’s. The curator’s office in the pathology museum is supposedly the site of the chemical laboratory where the meeting took place and it houses a laboratory chair which has ‘S. Holmes’ inscribed on the back of it. I am not too sure about the authenticity of that!
HISTORY OF THE SOCIETY FOR
THE ADVANCEMENT OF ANAESTHESIA IN DENTISTRY

Mr Peter Sykes

The history of dental anaesthesia and the history of the Society for the Advancement of Anaesthesia in Dentistry are inextricably bound together. I doubt if there is a dentist in the country who does not recognise the acronym ‘SAAD’, but only people of my generation would be likely to remember its inception. SAAD is now the second largest Society of its kind in the world; it was beaten to a membership of 3,000 by the American Dental Society of Anaesthesiology. It started as a very small organisation only 30 years ago and yet to encapsulate its history in some twenty minutes requires ruthless pruning.

By the time John Snow put the seal of respectability upon anaesthesia by giving chloroform to Queen Victoria, nitrous oxide anaesthesia was firmly established in dental practice. Although Clover gave chloroform to patients in the dental chair, he was an exception, as the development of anaesthesia in this country proceeded along two parallel lines: anaesthetists who habitually exhibited open ether or chloroform in the theatre would equally regularly use nitrous oxide when they visited a dental practice. This situation continued, with dental anaesthesia being almost entirely confined to nitrous oxide, even to the 1950’s when I was a student. We were taught the technique which Archie Marston referred to as ‘elegant strangulation’. However, when 100% nitrous oxide; leather straps; the attentions of the Guy’s rugby team; and ethyl chloride sprayed upon the pack, all failed to subdue a 20 stone brewers’ drayman from the Borough, the anaesthetic registrar was called in to give a quick shot of Pentothal and peace reigned immediately.

Why shouldn’t peace reign all the time, I wondered to myself? The motto of Guy’s Hospital you may know is ‘dare quam accipere’ which you will instantly translate as ‘it is better to give than to receive’. I have always felt that this should really be the motto of the dental anaesthetist as well.

It was with this background that a number of gentlemen met in 1955, in 53 Wimpole Street, London, the practice of Mr Stanley Drummond-Jackson, a dentist. He had been using intravenous anaesthetic agents for dentistry since the 1930’s and, having re-established his practice after the war (during which he was seconded to a field ambulance team of the Parachute Regiment, as an anaesthetist, oddly enough) he now felt the time was ripe to spread his passionate conviction that intravenous anaesthesia was the only true way. The other gentlemen were either dentists or anaesthetists and their intention was to form a study club.

When it was proposed that intravenous anaesthetics should be used in dentistry, the medical profession already largely opposed their use by anaesthetists, and you can imagine how they viewed their use by dentists even though administering general anaesthesia was an officially required part of the dentists’ trade — and still is. For some reason, the blue, hypoxic, jactitating patient was considered to be at less danger from the gas than was the pink peaceful recipient of an intravenous barbiturate. So when those gentlemen in Wimpole Street started their study club in 1955 they did so with a distinct feeling of adventure, and of living dangerously. At least one of the anaesthetists who was present, an Australian, Dr Donald Blatchley, whose wife was one of Drummond-Jackson’s patients, was there because he thought that if these other dentists were going to start using intravenous barbiturates, they had better learn how to do so properly.

By 1957 the study club had met on a number of occasions, decided to enlarge its aims, and form a Society. It had chosen a name, the Society for the Advancement of Anaesthesia in Dentistry, which aptly described its purpose, and it had drawn up a draft constitution. The
new Society was to hold its first meeting in October 1957, the speaker being Dr W.S. McConnell, Head of Anaesthesia at Guy’s and an erstwhile partner of Sir Robert Macintosh in that prestigious practice of peripatetic anaesthetists which operated out of Harley Street: the famous ‘Mayfair Gas Company’. However, before the inaugural meeting was due to take place, Drummond-Jackson learned that a Dr Harold Krogh of Washington, a well-known and much respected dental anaesthetist, would be passing through London on his way to Rome, where he was to be Reporter on Anaesthetics at that year’s Congress. He agreed to speak to the Society and thereafter one of Dr Krogh’s phrases at that meeting became the Society’s watchword: ‘The team goes into action at the first altered breath’. Another of his phrases was: ‘A good way to make a friend of an anaesthetist is to ask him what any particular drug is doing in the body at that exact moment’ – I have never had the courage to try that one out.

In March 1958, Dr John Buxton, in a lecture on training the dental anaesthetist said: ‘Every anaesthetist should become so adept in the use of the intravenous barbiturates, such as thiopentone, that this method of induction would eventually become the normal procedure and not the exceptional method practised by the minority as at present.’ That was said less than 30 years ago, would you believe, and, amazingly in dental anaesthesia it is still a minority technique.

The demand for information and for training was increasing and it became evident that some form of teaching would have to be undertaken and so six of the senior members of the Society formed a sub-committee on education and came up with a proposed syllabus for an intensive three day weekend course restricted to experienced practitioners, medical or dental, who wished to update their knowledge. Of the five lecturers, Dr S. S. Blatchley, Buxton and Hudson were all consultant anaesthetists, Dr Mandiwall and Mr Drummond-Jackson were dentists. The courses were to be held in the basement of 53 Wimpole Street, D-J’s practice, which has been adapted for the purpose with his customary enthusiasm, and fascinatingly furnished with oak panelling originating from the boardroom of St. Mary’s Hospital. The projection room was the alcove of an old wine cellar.

It was anticipated that five courses would probably be sufficient to cope with the demand and, with hindsight, it seems an absolutely incredible misjudgment – forty people all told! The technique taught was originally that of a single shot of thiopentone or hexobarbitone; the drug and dosage being chosen to allow sufficient operating time. It was recognised that intermittent, or rather, incremental dosage, would lead to summation and take the patient unpredictably and dangerously deep. Tremendous emphasis was placed on the maintenance and protection of the airway and on the safety of the unconscious patient. Although hexobarbitone (Cyclonal) took longer to wear off, it was often the preferred drug because it was nice to use and gave the patient a tremendous feeling of euphoria.

The first series of courses was heavily over-subscribed and numbers of members increased steadily; still the waiting list grew. There were, in addition, four scientific meetings a year, and February 1960 saw the production of the first of the ‘librarian’s news-sheets’ which led directly to the writing and production of the first issue of the SAAD handbook; the sixth edition of which I produced just after D-J’s death and which is shortly due to be replaced.

The first news-sheet noted a prize of 200 guineas offered by the Association of Anaesthetists of Great Britain and Ireland for “the best essay based upon new and original work related to the subject of general anaesthesia for dental surgery” (with the addition of sedation, this was essentially the same subject matter for which SAAD has twice now awarded prizes each totalling £1,000, in memory of Stanley Drummond-Jackson). That news-sheet also indicated that Eli Lilly & Co. of Indianapolis had just produced a new intravenous anaesthetic agent called methohexital sodium.
The paragraph carried this sentence: "It is probable that this drug will herald a greater advance in dental anaesthesia induction in the ambulant patient than in any other branch of anaesthesia": not even the writer himself could have foreseen how amply this prophecy was to be fulfilled. When methohexitone had been in use for some time it became recognised by many dentist administrators that the operating time could be extended very satisfactorily by incremental intermittent dosage, and after much testing to produce an assuredly safe method, this was adopted as the Society's principal technique.

You have to remember that at this time the NHS was very new and dentists were struggling against an unparalleled backlog of need; thousands of patients who hadn't visited a dentist were in desperate need of treatment. Many of them were extremely fearful and yet needed large amounts of restorative work, while none of our present sedative drugs was available. Now whether you call it ultra light anaesthesia, or deep sedation, or even, if you were clever enough, light sedation (and that is quite possible) there's no doubt that it was a most successful technique which, whatever its theoretical dangers, proved in practice to have an unmatched safety record and which pointed the way to the use of total intravenous anaesthesia by anaesthetists. But of course, only after the horror about its initial use by dentists had died down.

Those early days were filled with innovation; a sense of enquiring discovery. There were notes about the explosiveness of di-vinyl-ether when mixed with oxygen — patients were advised not to smoke after the anaesthetic — and about the mortality rate of dental anaesthesia — Dr Victor Goldman gave it as 1:80,000 from 1952-1957 (in 1980 it was, according to Coplans and Curson at the very most 1:260,000). Consideration was given to the use of alcohol as premedication, (often more essential for the administrator than for the patient), and to the use of rectal thiopentone; this latter was advised, amongst other cases, for the difficult child. One speaker cited the case of a boy who vociferously refused all treatment. Eventually his trousers were forcibly removed and the thiopentone suppository inserted; whereupon he calmed down immediately and in a very hurt tone of voice said "Well, that was not a very nice thing to do, I must say".

There was a constant flow of new discoveries and inventions, particularly instruments and materials, in order to keep pace with changing techniques. Patients were still seated upright in the conventional dental chairs and so 'do it yourself' adaptations abounded; to be closely followed, if they were successful, by commercial versions.

In 1963 D-J conceived the idea of an update meeting. It was organised at very short notice, held at the RSM and attracted almost half of all the past course members, together with a most distinguished list of speakers. Chaired by Sir Robert Macintosh and by Dr McConnell, the first day was devoted to question panels and table demonstrations and culminated in dinner at the Cafe Royal, largely because Charles Forte was a patient of D-J's. This two-day meeting was so successful that it led immediately to the idea of a successor designed to be more open and generally instructional. It was called a Two-Day Tutorial and it took place in July, 1964. An investigation of possible venues revealed that at University College there was a lecture theatre which seated 250 and another room which could be converted into a clinical demonstration theatre from which closed-circuit television could be transmitted. D-J booked the place, inserted a notice into his 'librarian's news-sheet' and then waited to see whether the whole thing would be dreadful failure. It was booked to capacity.

This meeting was so successful that it gave D-J the idea which was to make his and the Society's name better known than he could possibly have imagined. If he could cope with 250 people for a two-day seminar — which in the event became nearly 3 days anyway — why not run a properly structured 3 day mass teaching course? The waiting list then stood at about 240, made up of both doctors and dentists, so that a thorny and worrying problem would be
removed at a stroke. So, in July 1960, the first of the so-called “jumbo courses” took place. The opening speaker was Dr John Buxton, who opened every course thereafter until he eventually retired from the Society.

The original concept of teams of 4 for venepuncture practice was compulsory and if the numbers were not even, the demonstrators had to sit in and take what was coming to them. After some trials with closed-circuit television, clinical demonstrations settled on what was called a “four-ring circus” — it was a sort of non-musical chairs where all the viewers changed seats when the bell rang and four different techniques were demonstrated simultaneously.

We never did find a really satisfactory solution to the problem of good clinical demonstrations in all our years at University College, but the courses themselves acquired a legendary reputation for their efficient organisation, even if subject to instant extemporisation. When the air conditioning failed during one summer course, everyone was boiling in the lecture theatre and so D-J sent out on the spur of the moment for 200 ice-creams to be issued ‘on the house’.

The list of speakers during those years reads like an honour roll call of the greats in dental sedation and anaesthesia — Sir Ivan Magill, Sir Robert Macintosh, Professor Monheim, Dr Donald Burns, Professor Neils Jorgenson, Professor Dundee, Professor Mushin, Dr Galley, Dr Massey-Dawkins, Harry Langa of Relative Analgesia fame, Sylvan Shane, Daryl Beech and many many more.

By 1969, not only were the courses well established but so many overseas dentists had participated that D-J was well known abroad. In that year he was invited to Temple University, Philadelphia, to start the first of their courses in dental anaesthesia. In 1971 he went with Ruth, his wife, to Hong Kong, Sydney and Dunedin. As a direct result of SAAD’s teaching our sister society in the USA adopted the name of the American SAAD; there is an Italian SAAD and there are daughter societies in Australia, New Zealand and Ireland.

Nineteen seventy one was, I suppose, the last peaceful year for Drummond-Jackson because, in 1972, the libel action came to court which was to make British legal history. In 1969, Professor John Robinson of Birmingham University Anaesthetic Department, together with other anaesthetists and a dentist, published in the British Medical and Dental Journals the results of a series of trials which they had conducted into the use of methohexitone in conservative dentistry. I have to say that, by SAAD standards, where ultra-light anaesthesia and minimum dosage were the rule, the times taken were excessive and the doses massive and, when the paper appeared, I for one was so appalled by the technique they had used that I wrote immediately to the journals to condemn the investigation — and I wasn’t alone. Several consultant anaesthetists did the same and indeed, some even joined the Society as a result. To add what D-J considered insult to injury, the authors referred to what they had done as “The Drummond-Jackson technique” and he was so incensed that he took both the authors and the BMJ to court for libel.

Having first proved to the satisfaction of a judge that he had a case, D-J was allowed to proceed and the action came to court in March, 1972. It ended in that November, at the judge’s insistence, having by then become the longest libel case in British legal history, with astronomical costs. Drummond-Jackson’s case had not yet been fully presented, and the defendants’ case had not been heard at all; so there was an agreed compromise whereby each party whitewashed the other and both parties bore their own costs. Although it was a personal action it had a deep effect on the Society generally, because of the animosity which it engendered. It didn’t do much for the anaesthetic profession either, and although things went on much as before, the effect on D-J was profound. In 1974 he had his first heart attack; appeared to recover; was even more energetic than before; was elected President of SAAD in April, 1975 and died of his second coronary in that December.
Naturally, things have changed; not only because of changing faces and changing personalities, but also because of changing circumstances. New drugs have been developed which allow effective sedation to be used instead of anaesthesia. This is now the main thrust of the Society’s teaching.

The theoretical part of our courses is now held in the Robin Brook Centre at St. Bartholomew’s Hospital and the clinicals are carried out in much more intimate circumstances elsewhere. The courses themselves have a modular structure with a compulsory first part, mostly physiology and pharmacology.

SAAD has originated a programme for evaluating both individuals and practices where sedative and anaesthetic techniques are used. A certificate is issued if the practice meets the requirements of a consultant anaesthetist and a dentist from the Society visiting together.

The SAAD Digest has become a journal of reference and no longer consists solely of reports and abstracts. There is original work in each issue, frequently from eminent academics, and it offers an international platform for papers on dental, or dental-related anaesthesia, and sedation.

The Society has always moved with the times, but its philosophy has remained constant as exemplified by its motto — ‘Abolish pain to conquer fear’ — and, certainly, the first 20 years of SAAD owed almost everything to that remarkable man, Stanley Drummond-Jackson. It was not always an easy path to follow nor, I suppose, was it always an acceptable Society to belong to at times. But it continues to be in the forefront of developments in dental sedation and anaesthesia in this country, and it has established a sound foundation upon which others have discovered that they, too, could build.
Franz Kuhn was a German surgeon who worked at the end of the 19th and the beginning of the 20th century in the town of Kassel. He is remembered for a number of reasons, including the introduction of sterile catgut into clinical practice. In anaesthesia, he pioneered the closed circuit circle system, introduced a very early vaporiser and developed a new, and at the time revolutionary approach to anaesthesia for thoracic surgery. However, it is for his work on endotracheal intubation that he is chiefly remembered and for which he deserves most credit.

Intubation was not a new idea at the turn of the century; indeed it had been practised for many years as a means of resuscitation. One of the first to experiment with tracheal intubation in 1878 was a Glaswegian surgeon, Sir William MacEwan. He used a number of flexo-metallic tubes; some still exist in the Wellcome collection in the Science Museum in London. Without short-acting muscle relaxants and without local anaesthesia, he managed to intubate a number of fairly stoical individuals for surgery of the upper airway, the mouth, and the tongue. The technique was difficult and for this reason didn’t catch on. A few years later in New York a physician, Joseph O’Dwyer, faced with the problem of diphtheritic croup, also designed an endolaryngeal tube, the bulbous swelling at the end of which actually fitted into the larynx. He used this tube successfully on a number of occasions but not for anaesthesia. It made the headlines however, and a number of others, for example, the Parisian surgeon Doyen, and Maydl of Prague, altered the tube for the administration of anaesthetics.

Kuhn wanted to operate on the upper part of the airway and with a tube of more modern design and the help of cocaine, he succeeded where others had failed.

His tubes came in a variety of sizes, roughly corresponding to those in use today. They were flexo-metallic, and consisted of a thin spiral of metal — which was ‘S’ shaped in cross section — wound so that the contiguous edges of the metal overlapped. At the distal end on the right hand side there was a fenestrated tip; this could be unscrewed, and is reminiscent of the Murphy eye found in some modern tubes. Above was a collar which sank to the level of the larynx and prevented the tube slipping too far into the bronchial tree. At the proximal end there was a protective shield which prevented damage to the tube by the patients’ teeth. The tube was secured by means of a stout rubber band which passed round the back of the patient’s head and was attached to a strong hook.

Kuhn developed an introducer to facilitate insertion of the tube, which locked into it with a bayonet type connection; enabling insertion by one hand. Intubation could be carried out under general anaesthesia, using ether or chloroform, or under topical anaesthesia, with cocaine.

In 1895 Kirstein invented his otoscope which was the forerunner of the Magill laryngoscope. This device had an electric light bulb in the handle, and a prism at the handle end, which reflected the light along the blade. Kuhn was familiar with this instrument, and used it on many occasions but he preferred his own simpler technique: intubation by palpation. The anaesthetist stands on the patient’s left hand side facing the head and his left hand is inserted into the patient’s mouth. It passes over the back of the tongue until the epiglottis is felt and then, with the right hand, the tube with the introducer is carefully inserted between the first and second finger and with a slight rotation is inserted through the cords. The position of the tube is then checked by listening for the characteristic breath sounds. For difficult intubations an assistant was sometimes necessary to pull the patient’s tongue forward.

After intubation, the patient was connected to the anaesthetic circuit by the Trendelenberg
cone. This was invented by Friedrich Trendelenberg, the Berlin surgeon, who used to attach it to a tracheostomy tube. The conventional method in the middle of the 19th century for performing operations in the mouth, was for the patient to have had previous tracheostomy.

Kuhn was also interested in the administration of accurate amounts of anaesthetic to the patient. In his day, the Schimmelbusch mask must have been the standard way of administration of anaesthesia and smooth maintenance of a constant level would have been difficult. Kuhn’s solution to this problem was ingenious, it was the so-called injector. This consisted basically of two concentric tubes one of which had a bulbous swelling at one end. High pressure gas was driven into the tube from one end, creating a vacuum by the Venturi effect. Chloroform was drawn in and vapourised. The amount of suction depended on the pressure of the gas and the relative diameter of the two tubes. The injector was a particularly successful device and was standard on most anaesthetic machines in Germany manufactured by Draeger. Their 1903 machine predates the Boyle apparatus by a number of years and had two injectors for chloroform and ether. In principle this is similar to the modern anaesthetic machine which has perhaps halothane and enflurane, giving the anaesthetist a choice of agent. Draeger sold approximately 1,500 of their machines between 1903 and 1913.

The circle system also received Kuhn’s attention although he wasn’t the first to experiment with this idea; John Snow had done this in 1850. Kuhn built a machine which was similar in many respects to the circle system used today. Unfortunately he didn’t appreciate the significance of dead space and there was a particularly large dead space between the circle and the patient. He was also aware of the chemical interaction between chloroform and soda lime and for these reasons – deadspace and chemical interaction – this apparatus was never a success.

Kuhn spent some time developing a number of machines for anaesthesia for thoracic surgery. At the turn of the century this branch of surgery hardly existed – there was no such thing as IPPV and as soon as the integrity of the chest wall was breached the lung collapsed. Due to the open pneumothorax the patient usually became extremely cyanosed and sometimes died; so no procedure was undertaken lightly. Basically, Kuhn’s machine consisted of a pressurised bellows, the pressure being transmitted to the airway and controlled by an underwater seal. The pressure in the airway could be regulated by altering the depth of the sidearm below the surface of the water.

In 1899, Kuhn was appointed as specialist to the new Elizabeth Hospital in Kassel – a particularly elegant and beautiful building. During the second world war the town was a target for Allied air bombardment and in October 1944 Kuhn’s hospital was totally demolished. Fortunately, it has been totally rebuilt – and a plaque was unveiled in 1974 outside the front entrance of the Elizabeth Hospital, as a tribute to Kuhn’s work. In translation it reads: ‘Franz Kuhn’s peroral intubation was a breakthrough for the anaesthesia of today – The German Association of Anaesthesia and Resuscitation’.
SURGERY AND ANAESTHESIA:
THE START OF A TANDEM ALLIANCE

Dr Barbara Duncum

John Snow was a professional anaesthetist from the last week of January 1847 until the 16th June 1858 – just three months after his 45th birthday – when he died of apoplexy. During those years Snow worked with most of the leading surgeons in London and kept a record of cases. The list of operations could have been matched at almost any time during the quarter of a century preceding the discovery of anaesthesia. The difference after the discovery was that whilst a surgeon was operating neither he, nor his patient, had pain to contend with.

William Fergusson, Professor of Surgery at King’s College, London, summed up the situation as it still was in 1864 “Although before the discovery of anaesthesia most if not all the great achievements of our art, had already been accomplished,” he said, “anaesthesia permits the surgeon to perform his duty with a security of thought and action quite unknown to his predecessors”.(1) All the same, a good many surgeons did not feel that security until docile-seeming chloroform had superceded obstreperous ether virtually from one day to the next in November, 1847.

A week after Liston’s famous amputation at University College Hospital, Snow for the first time saw a patient with a clip on his nose struggling to draw air through ether-drenched sponges in a glass container and along narrow tubing to a mouthpiece. He realised at once that etherising needed a firm physiological and practical basis; the etherist must know the appropriate strength for the ether/air mixture entering the patient’s lungs and must be able to control it.(2) In starting to experiment Snow already had two key pieces of information. He knew that at different temperatures 100 cubic inches of air would take up different percentages of ether vapour and he knew of an inhaler invented by Julius Jeffreys FRS in 1836 which would serve as a model for a dosimetric vaporiser. Jeffreys had used his inhaler for treating bronchitis with moist air. It was a round tin box about 5 inches across and 4 inches deep and holding warm water in the bottom. The lid was fitted with an air inlet and an inhaling tube, and inside the box there was a spirally-coiled baffle plate which caused the air drawn in to pass over the liquid several times before reaching the mouthpiece.(3) And that essentially was what Snow’s portable regulating ether inhaler was like except that, in use, it stood in a basin of water at between 60° and 65° F which produced an ether/air mixture containing around 47% ether vapour.

Snow introduced his inhaler at a meeting of the Westminster Medical Society on the 23rd January, 1847 and it was discussed and well received.(4) He lost no time in offering his services as etherist to the surgeons at St. George’s. His first operating session there was on the 23rd January. Operating sessions in the London teaching hospitals were open occasions held weekly and they were normally attended by medical students and practitioners but, since the beginning of the year, they had been attracting crowds of casual spectators curious to see painless operating. After Snow’s second session at St. George’s, the senior surgeon, Mr Caesar Hawkins, publicly thanked him and added that Dr Snow’s instrument was very much superior to those he had previously used.(5) Snow later said he believed St. George’s was the first institution in which the vapour of ether was constantly applied with uniform success in surgical operations.(6)

During the spring of 1847 Snow improved his inhaler and tried out the facepiece invented and sent to him by Francis Sibson. Meanwhile, he was evolving a facepiece of his own based on Sibson’s prototype. It was nearly ready to go into production at the beginning of May when Snow began to work with Liston at University College Hospital and in Liston’s private practice. Soon Liston was recommending him to other surgeons in private practice and between that.
help and the grapevine, Snow's own practice was beginning to build up. By September when he published his little book on ether, much of the most important and interesting anaesthetic work in London was already being offered him.\(^{(7)}\)

Liston died unexpectedly in December, 1847. In the New Year, Snow began working with William Fergusson at King's College Hospital, and increasingly in Fergusson's very extensive private practice. Fergusson was only five years older than Snow and the two men evidently got on and worked well together since the association lasted until Snow's death ten years later. As far as I have been able to discover, however, Fergusson never once referred to Snow or mentioned his skill as an anaesthetist; indeed, from the way Fergusson wrote about anaesthesia in his published work one might have thought he gave all the anaesthetics himself.

Snow's interests covered the whole field of anaesthesia, but his main concern was always the safety and comfort of his patients, and their individual responses within the five stages of anaesthesia he had earlier identified. Whilst still at St. George's and afterwards at other hospitals, he occasionally took some preoperative responsibility for certain cases, notably when a leg about to be amputated could not be moved without intensive pain. Snow would then anaesthetise in the ward, and at St. George's at any rate, where the doorways and corridors were wide, he would accompany the patient still in his bed to the theatre, giving a last whiff of anaesthetic just before the transfer from the bed or perhaps the stretcher, to the table.\(^{(8)}\)

An account of Snow's postoperative care occurs in connection with piles, then treated by threading ligatures through the mucous membranes with a needle. A dose of opium was always given as soon as the patient came round from the anaesthetic, but postoperative pain was often severe. Many of these cases were Fergusson's private patients, operated on, of course, at home. Snow would remain at the bedside sometimes for an hour or two giving chloroform intermittently until the opium took full effect.

Snow had a theory about piles. He had noticed, he said, that they were much commoner in the upper classes of society than amongst working class and even middle class people, and had nothing to do with what they ate or drank. The disorder was purely related to when they had the main meal of the day. The lower classes had their dinner at midday while the upper classes took it in the evening which had the unfortunate effect of leaving their liver and bowels congested overnight.\(^{(9)}\)

Snow thought it would have been helpful if the opium could have been given three or four hours before the operation. Surgeons had used preoperative sedation before the discovery of anaesthesia but now thought it unnecessary.

Fergusson was very emphatic in believing that "all the horrors of our art", as he put it, "should be concealed from common observation as much as possible," and he was ironically scathing about surgeons who seemed to delight in a show of blood. "If the patient's clothes and bed coverings could be spotted all over or saturated," they thought that was good; and if the operator and assistants were spattered from head to foot, so much the better. "I have heard of a surgeon", he said, "who, not content with using towels for his hands, actually seized the white bed curtains and wiped his bloody paws! And I have seen a man of fame proceed from one operation to another with his hands still covered with the first patient's blood."

In Fergusson's opinion, a good surgeon not only dealt promptly with haemorrhage, he did his best to remove all traces of it. Before he started to operate a sufficient supply of sponges and hot and cold water had to be ready to hand.\(^{(10)}\)

In sharp contrast with the civilised practices of Mr Fergusson and Dr Snow, a macabre account of the search for a strangulated hernia in the abdomen of an unanesthetised patient appeared in the Lancet in July 1858, which was a month after Snow died. The patient, a youngish greengrocer, on the poorly side but usually in good health, became acutely ill after partaking
rather heavily of veal for his dinner. A private doctor was sent for; he in turn sent for Mr Tatum, from St.George's. The greengrocer’s surgeon, the Lancet reported, did not consider him a suitable patient for taking chloroform and Tatum without more ado, slit open the man’s belly and fished around first with one finger, then with three, until he could grasp the knot in the gut and pull it out to be dealt with. The real trouble started when Tatum tried to put the gut back; “this I found extremely difficult to do”, he said, “for as fast as I returned a portion a greater volume escaped”. At last all was once more confined. “Our patient”, the two surgeons blandly remarked, “felt very little fatigue or was the worse for the operation, though we considered him in great danger for a day or two”.

On the subject of operations without anaesthesia, Fergusson, lecturing at the Royal College of Surgeons in 1864, asserted that the question of giving chloroform in lithotrity was still a moot point in some quarters and he made a similar comment about excision of tumours of the upper jaw, though there he was probably behind the times. He dismissed the suggestion that chloroform should not be given in these operations, particularly in the jaw excision which he described as frightful to behold: He himself had always given chloroform, he said, and had never seen any ill effects. Snow, recording 11 excisions of the upper jaw he and Fergusson had done together, made some prefatory remarks. Mr Syme, Mr Lizars and some other surgeons expressed an opinion at one time that chloroform could not be safely used as the blood would be liable to flow into the lungs. “This is not the case” Snow said, “as the glottis retains its sensibility apparently unimpaired, if the influence of the chloroform is not too deep or long continued. It is only necessary to hold the head forward now and then, when the throat is very full of blood, in order to allow the patient the same opportunity of breathing that he would require if he were awake”.

Snow, in these cases, induced anaesthesia with his inhaler and then changed to a mixture of chloroform and alcohol on a hollow sponge, holding this as near as he could to the patient’s face without getting in anybody’s way, but he had to admit he couldn’t always keep the patient insensible.

He used a small sponge moistered with chloroform and alcohol when Fergusson was repairing hairlips in infants. Most of these babies were aged between three and six weeks, some were younger, the youngest was only 8 days old. The success of the operation depended on Fergusson’s dexterity and he was so quick that scarcely any blood was lost. A nurse sat opposite him supporting the baby with its head in his lap and between his thighs while an assistant compressed the labial artery. Twenty seconds from the start the pins were in and the cut edges of the lip were pressed together. Some of these babies were operated on at home, others at King’s College Hospital. “I have no doubt”, said Snow, “that many lives are saved by early operation especially amongst the poor, as a child with a bad hairlip cannot take the breast and there is a very great mortality amongst infants brought up by hand”.

Out of nearly 100 cases of lithotomy anaesthetised for Fergusson, 34 were children, some of them as young as 4 years old. For them Snow used his inhaler fitted with a small version of his ordinary facepiece. While two assistants held down the child’s legs it was the anaesthetist’s job to steady the head and shoulders to prevent a reflex jerk as the first cut was made. Older patients were restrained with bandages as they had been in the past, for “it would be an abuse of chloroform”, Snow said, “if merely to save the trouble of bandaging, its effects were carried so far that not the slightest contraction of the muscles could be excited by the use of the knife”.

Snow noted several cases in which ovaries were tapped but there were only three occasions when a cyst was actually removed. The first and third patients died from peritonitis three or four days postoperatively. On the second occasion, in August 1850, Snow gave chloroform whilst Fergusson and two other well known surgeons assisted the operating surgeon, E.W.
Duffin. The patient, a 38 year old unmarried dressmaker, whose cysts made her appear 8 months pregnant, had begged Duffin to operate, saying she was confident it would be a success. She proved to be right and was able to go back to her dressmaking.

Duffin later described her case at a meeting of the Royal Medical and Chirurgical Society. In the discussion, several surgeons claimed they were removing ovarian cysts with success, but Caesar Hawkins spoke out against the operation. He himself had removed an ovarian cyst on a single occasion and, although he had been successful, he now thought that except in an emergency, the procedure was too dangerous to be justified.(16)

Among Snow's most numerous, often distressing cases, were 222 mastectomies. The majority of them were for malignancy and in private practice, though I don't think many of them were Fergusson's cases.

Snow wrote in his book on chloroform, published after his death, that "there is no surgeon I am in the habit of assisting who does not occasionally have to remove a malignant, as well as a non-malignant tumour of the breast. I have not seen any case where the patient did not go through the operation and live, as far as I can remember, for two or three days; but the combination of a great haemorrhage and a great wound is apt to be fatal."(17)

An instance of what Fergusson meant by the security of thought and action conferred by anaesthesia, showed up as a trend in Snow's records of amputations before and after the introduction of chloroform. In nine months in 1847, 32 arms and legs were cut off; but in a three year period ending in March, 1858, the total number of all such cases was only 16. One of Fergusson's great interests was the excision of joints and he acknowledged the influence of James Syme who, in 1823 in Edinburgh, had excised his first elbow and left his patient with a still usable arm. It was an aphorism of Fergusson's that there had never been a time when conservative surgery -- a term he himself coined in 1852 -- had not been the true aim of all good surgeons.(18)

Among other kinds of surgery appearing in Snow's casebook, was a variety of eye operations, including the correction of squint in children. And there were a vast number of dental extractions by dentists working in Snow's own neighbourhood, which was mainly Soho. There were also obstetric cases. One of Snow's first administrations of chloroform, on the 25th November, 1847, was for Edward Murphy, the Professor of Midwifery at University College. Murphy, who had an exceptionally difficult delivery in prospect, wanted to try the powerful new agent, and there was nobody but Snow he would trust to give it for him. The occasion did indeed prove formidable; the baby, mercifully dead, had to be hooked out piecemeal. The mother survived. She had been in labour for 39 hours.(19)

Benjamin Ward Richardson, who piloted Snow's book on chloroform through the press soon after his friend's death, prefaced it with a memoir. In it he said that on average over the past decade, Snow had anaesthetised some 450 times a year, and latterly had been earning about £1,000 a year, but never more because so often Snow would not take a fee from the patient (20); £1,000 a year, was not a bad income in those days.

Today it seems strange to find that neither the British Medical Journal nor the Lancet marked Snow's death with an obituary. When they received a copy of Snow's book, however, both journals, particularly the BMJ, reviewed his work appreciatively and at some length, and each added a few comments on the kind of man they thought Snow had been. The BMJ said "Richardson's memoir was entertaining, and not uninstructive as exhibiting the struggles of a poor man of sterling integrity and merit, but destitute of the popular talents by which early success is sometimes attained". The editor of the Lancet first rebuked Richardson for not alluding to the active part taken by that journal in bringing Dr Snow's merits before the profession, at a time when such an encouragement was all important to him at the painful
commencement of what must always be an arduous career. We have nothing but good to say of Dr Snow, alive or dead" the editor went on. "He was a patient and earnest worker for the good of his fellow men, one of those practical philanthropists whose efforts were none the less meritorious because they were exerted for his own advancement, as well as for the benefit of others. It was from his hand that the sufferer, whether alone in the curtained bedroom or publicly on the hospital table, could best obtain the full advantage of this greatest and most beneficial discovery of modern medical science". (21) A little patronising, perhaps, those two journals.

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5 Lancet 1847; i:184.
6 Snow J. On Ether, 16.
8 Snow J. On Chloroform. 276
10 Ferguson, op.cit. 283-5.
12 Ferguson, op.cit: 197, 237, 24.
19 Lancet 1847; ii: 653.
20 Richardson B.W. In Snow On Chloroform. xl.
THE ETHEROMETER, OR "HOW TO USE
THE PHILLIPS ETHER VAPORISER"

Dr Charles Foster

Bryn Thomas in his book (p.197) has an illustration of the Phillips Automatic Ether Vaporiser circa 1925, which was the date ascribed to it by Charles King.

Hugh Richard Phillips, MD, Edinburgh, (1874-1932), was chloroformist to the Italian Hospital in London from 1902 and on the staff of that hospital until 1931. He was also on the staff of Great Ormond Street Hospital for Sick Children for ten years.

His ether vaporising bottle of brown glass marked "Wellcome Chem Works" has a neck fitted with an elaborate metal collar into which screws a cap and dip tube. An inlet tube with a ball valve permits pressure from a hand bulb or oxygen cylinder to pass into the bottle via a tiny passage. Ether liquid is thus forced up the dip tube, the upper end of which is occluded by a metal pin fixed to an upper collar. If this is rotated on its screw thread, space is allowed for the liquid to pass through two small holes in the pin, up a curved hollow tube under a glass dome. On being released from this tube the ether presumably vaporises and passes again through minute passages onwards to the patient. A description of this piece ends: "The 'automatic element'... was no doubt given since it would be possible by rotating the upper collar, automatically to control within small limits the amount of ether liquid to be vaporised. However, it has proved impossible to make the apparatus perform in this way, liquid ether appears at the outlet tube!" In fact, this is what was meant to happen, because glancing through old books, looking for pictures of apparatus, I discovered a picture in Anaesthetics in Practice and Theory, A Textbook for Practitioners and Students, by J. Blomfield, OBE, MD, Senior Anaesthetist, St. George's Hospital and Lecturer on Anaesthetics to the Medical School, published by William Heinemann in 1922.

The relevant text in Blomfield's book says "The etherometer is a useful contrivance for supplying ether by drops in an automatic manner. When pressure within the bottle has been worked up by the handpump, the anaesthetist has merely to regulate the rate of flow of the drops by turning the screw top of the bottle". Thus, this apparatus was designed to deliver liquid ether to the mask to be vaporised.

It was the idea of being able to measure the flow rate of the ether that was of use instead of just having a bottle and dropping it on. It also freed one hand, which was a useful addition when giving anaesthetics in this way, which Magill used in his second endotracheal apparatus of 1927 and, again, in 1932. Bryn Thomas' book notes that "This piece is something of an oddity because it appears to have been an attempt to copy the vaporisers of Magill — see No. 43, p.194 in which the glass dome method was also used." In fact, this is not true — Magill's 1921 endotracheal apparatus does not have the glass dome. This was added by him to improve the apparatus so that the rate of drops of the ether 'can be easily seen from any angle' Lancet ii. 326. 1927.
THE DEVELOPMENT OF THE SYRINGE

Dr T.B. Boulton

All modern medical disciplines employ the syringe for one or more of its principal uses, aspiration, irrigation or administration of medication. Medical syringes today are of two types, those with compressed bulbs, which are mainly employed nowadays for neurosurgical wound and urological irrigation, and the familiar piston and barrel instruments, universally used in conjunction with the hollow needle for intravenous and parenteral medication. Animal bladders tied to metal pipes or feather shafts have certainly been used for the administration of enemas and for gynaecological and urological irrigation since the heyday of Greek medicine at the time of Hippocrates in the 5th century BC.¹

The pneumatic principle
The pneumatic principle of a piston running in a cylinder is said to have originated in the barber shops in the Greek colonial city of Alexandria on the coast of Egypt about 280 BC. Vitruvius, the Roman author and architect tells us that Ktesibios the inventive son of the barber, used the device with a weight running in a tube to enable a mirror to be adjusted to any desired height. Ktesibios noted that the compression of the air both slowed the descent of the weights and caused a hissing sound as it escaped from the joints between the segments.

Ktesibios went on to use the pneumatic principle of the piston and tube in several devices, these included a water pump for extinguishing fires. This latter was the first known use of valves – so important to the specialty of anaesthesia today. He also built a water flute, or organ, and from this originated the word “hydraulics” to join “pneumatics”. We do not know whether Ktesibios invented the first piston and barrel syringe, but one is described by Heron, also of Alexandria, about a century later. He cited this as an example of the application of pneumatics to surgery for the aspiration of pus from wounds; hence the Greek “πυλίκας” (the pus-puller) later latinised to pyulcus. (Fig. 1).

An early piston and barrel syringe. A pyūlkos or “pus-puller”.

¹
There is little reference to the piston and barrel syringes during the Dark Ages, the early medical functions of the syringe, such as the administration of enemas, being usually carried out by the more easily constructed bladder and tube devices. By Tudor times, they re-emerged as much prized instruments of the surgical armamentarium.2,3

The sixteenth and seventeenth centuries A.D.

Two small metal syringes were found in the surgeon's chest of Henry VIII's recently salvaged man-of-war, the Mary Rose, which sank in 1545. One is brass, and the other is pewter with a brass nozzle. Surgeon Vice Admiral Sir James Knott believes that the presence of such instruments at that time probably indicated that the surgeon of the Mary Rose was a Master Surgeon of the recently formed Barber Surgeons Company. He would have been temporarily recruited for the campaign on which the ship was about to set out. The works of Ambrose Parré suggest that besides the aspiration of pus, the syringes would be used for the irrigation of wounds, fistulae and of the urinary tract, and also in the treatment of bladder stones and of gonorrhoea which by that time had reached Europe from the New World.3

Syringes had become standard ship surgeons' equipment by Stuart times. Woodall, in his famous book, urges cautious use of the syringe for irrigation with mercury sublimate for the treatment of gonorrhoea and the need for great cleanliness in the use of the instrument.4 Sir Christopher Wren and Sir Robert Boyle used a syringe made of a dog's bladder and a goose quill to inject both wine and opium into the veins of dogs in 1656.5,6 They were not the first to experiment in this way, the Austrian, Lausitz, predated them; Major, Professor of Medicine at Kiel, was probably the first to make a deliberate intravenous administration of opium to man in 1662, as also did another German, Johann Sigmund Elsholtz in 1665.5 They were ahead of their time.

The world had to wait until 1872, thirty years after inhalation anaesthesia had been introduced, for Pierre-Ciprion Oré of Bordeaux, to inject chloral intravenously, both in the treatment of tetanus and for the induction of anaesthesia.7 As we shall see, by this time the familiar piston and barrel syringe was already well established both for intramuscular and subcutaneous injection.8

Early blood transfusion

James Blundell, the Professor of Physiology and of Obstetrics at the Southwark United Hospitals of St. Thomas' and Guy's, used a glass-barreled syringe with a metal piston and an intravenous cannula to withdraw blood from a donor and inject it into a recipient in his pioneer blood transfusions of 1818, and later incorporated a barrel and piston syringe and valves into his "blood impellor" which he described in 1824.9

Subcutaneous medication

The danger of absorption of centrally acting poisons from snake bites and remote soft tissue wounds had, of course, been known from time immemorial. Did not Achilles die from the central effects of a poison arrow in his vulnerable heel? Interest in this method of administration through the skin developed at the beginning of the 19th century, in parallel with the chemical preparation of various alkaloids, including morphia. Vessicants, such as cantharides, which denuded the epidermis, were first used and then barbs and lancets. Sir Robert Christison recommended a phial of cyanide fixed to a harpoon to kill whales; history does not relate whether this was ever actually done. Lafargue of Paris reported in 1838 on the effects of innoculating morphia subcutaneously by means of a vaccination lance dipped in powdered morphine paste mixed with a little water.6,8,10
The first use of the syringe for subcutaneous medication was probably by two New York physicians, Drs Taylor and Washington. They are reported to have made an incision and used a syringe and blunt lacrimal duct cannula to administer morphine subcutaneously in 1839.6 In 1845, Dr Rynd of Dublin used an eye dropper and an elaborate spring-loaded trochar and cannula to introduce morphia mixed with creosote subcutaneously. He placed this in the vicinity of the branches of the trigeminal nerve in an effort to treat neuralgia. Rynd’s retrospective description of this use of his trochar and cannula had led to him being erroneously credited with the invention of the piston syringe and hollow needle for hypodermic medication.6,8,11

Mr Ferguson and Dr Alexander Wood in 1853.
Metal syringes are listed intermittently in early 19th century catalogues and later on, glass and metal instruments were offered for various purposes including syringing the lacrimal duct; but we are concerned with a certain glass syringe which the Edinburgh physician, Dr Alexander Wood, described as “one of the elegant little syringes constructed by Mr Ferguson of Giltspur Street, London.” This was designed for the purpose of injecting acid solutions of perchloride of iron through a hollow needle to sclerose naevae. It was Dr Wood who was inspired to use this syringe with its hollow needle to inject morphia subcutaneously in 1853 and this act made parenteral medication a practical and universally applicable technique.10

No catalogue picture of Mr Ferguson’s elegant little syringe survives, but a broken syringe said to have been used by Wood is preserved at the Royal College of Surgeons of Edinburgh. This, from Wood’s description, could well be the original. The syringe is not graduated, it has a glass barrel and a glass piston which is wrapped around with cottonwool to give it a better fit. It has a metal cone with a male screw for mounting a hollow needle which has not survived.6,8

Wood’s original purpose in injecting morphine through the skin into the cellular tissues with this syringe was to place the drug in the vicinity of the nerves responsible for chronic neuralgia, in other words, he was aiming at local anaesthesia. He published his successful results of 9 cases in 1855 in the Edinburgh Medical and Surgical Journal.10 This paper was well received locally and a coterie of enthusiastic practitioners of the new technique of subcutaneous injection was rapidly established in Edinburgh. This group included James Young Simpson who, besides introducing chloroform as an inhalation anaesthetic, had also experimented with the topical application of chloroform in an attempt to produce local anaesthesia. Several eminent visitors, notably Bertrand from Germany and Fordyce-Barker from the USA, were also initiated into the technique.6

It was Wood’s second paper in the British Medical Journal in 1858, which triggered worldwide acceptance of subcutaneous medication.12 Wood, like Lafargue, Rynd and others, was initially interested in the local effects of the drugs which he injected. He was, in fact, aiming at local analgesia of peripheral nerves. He was, however, well aware of the remote effects due to the absorption of morphia from the cellular tissues into the blood stream, and his papers reveal a detailed knowledge of work done by Magendi, Brodie, Christison and others on this subject. Wood seemed, however, to have at first regarded such central actions as tiresome side effects. He records, for example, that he was, as he put it, “a little annoyed” to find that his first patient, an old lady suffering from cervical brachial neuralgia, was still sleeping 12 hours after the subcutaneous injection of what can be calculated to have been 25mg morphine!10,12
After the publication of Wood’s second paper in 1858, Charles Hunter, house surgeon at St. George's Hospital, London, was rapidly in print. He wrote at first in support of Wood’s local injections but then, two weeks later, correctly stressed the overriding importance of the central action of the injection of morphine. Hunter coined the word “hypodermic” in contrast to Wood’s “subcutaneous” and claimed priority for a different technique. Wood at least partially accepted Hunter’s hypothesis of the primary importance of central action, but pointed out that he had already considered the possibility in his article. A most unseemly and wordy public argument over priority ensued between Wood and Hunter, with Ryan and others, including Claude Bernard himself, claiming priority. It is of interest that Wood never corrected the printer’s error in his second paper in 1858, in which the date of his first subcutaneous injection is given as 1843 instead of 1853. Whether this was an oversight, or intentional, we do not know, but such a date would have given him undisputed priority over everybody else. The controversy of local versus central action persisted for many years. As late as 1895 the eminent pharmacologist, Karl Binz, advised injection as close as possible to the site of the pain.

Many texts attribute the invention of the syringe and hollow needle and the introduction of subcutaneous medication to Charles Gabriel Pravaz of Lyon, and there is a statue of him with an inscription to that effect. This is a fallacy and, to do him justice, Pravaz never made any such claim. He was interested in the possibility of coagulation of blood in arterial aneurysms by the injection of perchloride of mercury. He conducted experiments in sheep to that end, using a silver syringe screwed to a cannula, which was first introduced into an artery with the aid of a trocar. The confusion many have arisen because Behier, another Frenchman, reported the use of the same equipment for subcutaneous medication with acknowledgements to Pravaz in 1859, the year after publication of Wood’s second paper. The syringe used by Pravaz and Behier had a screw mechanism for advancing the plunger, which was cumbersome but useful in estimating dosage when the barrel was made of opaque metal. It is of less practical value when the plunger is visible through glass. Hunter used a similar mechanism in the syringe which he devised, perhaps in an effect to emphasise that his technique was different from Wood’s.

Wood continued to use the simple sliding piston and he and the instrument makers made many improvements including adding graduations and reducing the size of the needle. These syringes were widely advertised as the subcutaneous technique increased in popularity.

Luer and Record fittings
The push fitting for the needle was introduced by Luer of Paris in 1869, and a similar but smaller Record fitting by a Berlin instrument maker in 1906.

Older anaesthetists will remember the confusion which the existence of these two sizes caused right up to the 1960’s when disposables with the standard Luer mounts were introduced. Adaptors were much prized and often lost. There were few more frustrating experiences than when having successfully obtained cerebro-spinal fluid, the anaesthetist found the syringe did not fit the needle and no adaptor was available.

Local anaesthesia
Koller introduced reversible pharmacological anaesthesia by the topical application of cocaine to the eye in 1884, but its rapid exploitation by injection by Halsted and others in the same year depended on the syringe and hollow needle, and incidentally brought with it the scourge of syringe-drug abuse. It is an interesting coincidence that Alexander Wood died in 1884, the same year that a drug capable of producing local analgesia was introduced, the effect he was originally attempting to obtain.
Intravenous anaesthesia
Intravenous anaesthesia was slow to develop, chiefly because no very suitable agents were discovered until the barbiturates became available in the nineteen-twenties.20

Antisepsis and asepsis
It is difficult to appreciate that subcutaneous medication predated Lister’s antiseptic technique by a decade, but references to local iatrogenic abscesses are surprisingly rare, and there does not seem to have been much hazard so long as a reasonable social cleanliness was employed.6

A major revolution in the history of the syringe has occurred in the author’s professional lifetime; when he was a student and a house surgeon in the 1940’s, morphia injections were prepared by dissolving a tablet in a heated spoon while solutions of procaine were made by dropping tablets into boiling water.21 Syringes were decontaminated with alcohol and those for spinal anaesthesia were sterilised by boiling. The battles, first for the establishment of sterile syringe services, and then for the introduction of disposable syringes, are early examples of the unfortunate struggles which the professionals have had with administrators and politicians since the establishment of the National Health Service.

Mechanical syringes
Finally, mechanically operated syringes were introduced. The 1947 Pye’s Surgical Handicraft illustrates one which was designed for the continuous intramuscular injection of penicillin21 and they are now, of course, familiar pieces of equipment in the intensive care unit, in the operating theatre and for pain control.

Conclusion
This paper has covered twentythree centuries and mentioned a number of characters in the history of the development of the syringe and its uses. No-one knows exactly who invented the piston and barrel syringe, nor who joined it to the hollow needle, but anaesthetists should surely pay tribute to Dr Alexander Wood of Edinburgh for his new use for Mr Ferguson’s “elegant little syringe” which was produced in the street adjacent to St. Bartholomew’s Hospital, and which led to parenteral medication, intravenous general anaesthesia and to local anaesthesia.10

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Dr. G. Jackson-Rees

In 1850 a young woman in Philadelphia called Sarah Dooley, wrote a delightful little letter to her cousin. Mary at this time was a medical student, and she wrote: “Yesterday, we had at the clinic a surgical operation, a boy 5 or 6 years old, with a harelip. It was bad case, and hurt the little fellow very much. We tied his hands and feet and two held him. It looked very much like butchering and it was unpleasant to see a child have to be hurt so bad.” This demonstrates that in Philadelphia, there was no anaesthesia for cleft palate at that time, and there was good evidence that the same sort of feelings were held by some in London. For the middle years of the last century the Lancet carried a series of pieces under the general title of ‘A mirror of practice in medicine and surgery in the hospitals of London’ consisting of accounts of visits to the hospitals and the attendance at operations by a representative of the journal. He wrote weekly reports and in one of the 1850 issues he described a visit to Mr Gay at the Royal Free Hospital.

Mr Gay, they say, had under his care a family who obviously had a genetically determined cleft palate deformity. There was a mother and two children, and of the mother they said she had a countenance rendered replusive by virtue of a double and gaping hare lip. The older girl had a unilateral hare lip which had been repaired by Gay before the visit, but they saw the younger boy, who had a deformity very similar to the mother’s, being operated on by Mr Gay. The account ended by saying that this boy was given chloroform and that “there can now be no overwhelming reason for withholding the benefits of chloroform in operations on the mouth. The insensibility may even be kept up for a pretty long period by now and then placing under the patient’s nose, as we have seen Dr Snow do very frequently, a piece of sponge upon which more chloroform has been poured”.

Now, we know exactly what Dr. Snow did and we know why he did it, because he tells us this with rather engaging candour. He had by 1858, anaesthetised 184 children with hare lip, some as young as 8 days old, and he administered chloroform from the sponge. The operation was carried out during recovery from the chloroform anaesthesia and he tells us that the operation, up to the insertion of the pins for holding the edges together, took only 20 seconds.

So it would appear that at this time the surgery for the repair of cleft lip, although it might have been done under anaesthesia, had not made any use of anaesthesia for producing a more leisurely procedure with a better cosmetic result. Snow tells us that sometimes he kept the anaesthesia going a little bit longer by applying a little chloroform on a sponge in the course of the operation when it is required to prevent the child from crying.

At this period, Snow and Ferguson, with whom he did most of this work, shared the view which I think was universal at that time, that cleft palate repair could not be undertaken during anaesthesia. In 1852 one of the Mirror of Practice series in the Lancet, described a visit to King’s College Hospital to see Sir William Ferguson, repairing a cleft palate. Having devoted two or three columns to the surgery the writer said that this operation was one of the few where chloroform could not be used. However, Ferguson had various ways of preparing the patient for its rigours. In order to school the patient to tolerate without gagging the stimulation of his pharynx, he made a practice of frequent use of a feather, slightly to irritate the back of the mouth, so that the irritability natural to that region should be, as far as possible, gradually diminished.
As late as 1857, Mason Warren, at the Massachusetts General Hospital, (the son, I think, of the Warren we know better) wrote a book entitled Surgical Observations with Cases and Operations. He said very firmly that cleft palate repair is one of the very few operation for which the use of anaesthetics is inadmissible. Under very peculiar circumstances, ether could be used, but not without some risk to the patient and much embarrassment to the surgeon from the constant flow of blood down the throat. This book of Warren's was reviewed in the Dublin Quarterly Journal in 1868 in very complimentary terms and they quoted large sections including that paragraph about the inadmissibility of anaesthesia for the repair of cleft palate. It said “To this last paragraph we must demur, inasmuch as it is now fully established that chloroform can be given in these cases. Mr Collis of the Neave Hospital, gives it habitually and has thus been able to operate with success on very young children”. At the time of this review no paper had been published by Collis, but he had delivered a lecture to the Obstetrical Society, in Dublin in December 1866, and in February 1868 he published in the Quarterly Journal an article which he described as largely the substance of a lecture to the Obstetrical Society.

This paper described remarkable advances in the cosmetic results of the repair of hair lip, showing that he had capitalised on the leisurely way in which operations could be performed under anaesthesia and he coined the name for his particular operative procedure 'The aesthetic operation'. He also tells us that he had used chloroform anaesthesia for at least three years on all cleft palate operations, and it gave the operator great facility and enabled him to operate on the palates of very young children. So here we have an example of a man who, so many years after the introduction of anaesthesia, only now seems to be modifying surgery to capitalise on the benefits which anaesthesia provided.

Collis was an energetic and ingenious man; he used a camera and took clinical photographs in 1865. Wet collodion plates were used and were probably printed on albumin paper.

Whilst excising an upper jaw for malignant disease, Collis slightly wounded his hand with a spicule of bone and died seven days later of pyaemia on the 28th March, 1869.
In October 1896 a slim, 160-page volume was published by Oliphant, Anderson and Ferrier of Edinburgh and London which marked the achievements of James Young Simpson Bart, written by one of his daughters, Eve Blantyre Simpson. The volume was inscribed and presented by E. B. Simpson to ‘Hugo Haig & Co of Ramornie’ and carries the author’s signature as a colophon.

The book was in the ‘Famous Scots’ series and outlines Simpson’s achievements in a moderately eulogistic light. Normally found unillustrated in a modest red canvas binding, this particular volume has been especially bound in 1/4 calf, initialled in gold and embellished by the addition of 14 sepia photographs tipped in during binding. Additionally eight blank leaves were bound into that copy. The photographs, each titled in the author’s hand, illustrate Simpson’s various residences and include family photographs.

On 7th June 1811, in a small house on the main street of Bathgate, Linlithgowshire, the seventh son of Mary Jervay and David Simpson, the village baker, was born and named James Young Simpson. (Oddly his great-niece Myrtle in her biography gives the date 7 July.) The house, in plain Scottish granite, is shown in a photograph opening on to a narrow, irregular, cobbled pavement. In some accounts it has been suggested that the house opposite was the bakery but an arrow added in the author’s pen clearly indicated where Simpson’s daughter believed the birthplace to be.

A brief account is given of his alertness and industry during school and in his early move to Edinburgh University at 14 years of age where he shared his rooms with John Reid and Mr McArthur, now a medical student, but who had been one of Simpson’s teachers in Bathgate. The narrative continues describing Simpson’s MD graduation in 1832 and his foreign tour which included a month in London. Certainly a colleague, Robert Christison, visited Barts at that time, but it is not clear whether Simpson and his travelling companion, Douglas MacLagan, came too. On his return to Edinburgh he stopped at Liverpool to spend the evening with Mr. Grindlay and his family at which time his attention was caught by one of the daughters, Jessie and he began corresponding with her. Four years later came his hospital appointment and he then felt that it was time to take a house for himself. Number 1 Dean Terrace, he explained to Miss Grindlay in May 1839, was only £28 per year, “front door, self contained oil-painted and papered”. He does not seem to have drawn her attention to the funeral parlour beneath which is seen clearly in a photograph.

Shortly afterwards the midwifery chair became vacant and Simpson campaigned vigorously to be awarded the post. He rushed off to marry Jessie Grindlay on 26 December 1839 and successfully took the chair five weeks later. The arrival of his first child, Margaret, in October 1840 necessitated a move up the hill – nearer the centre of town but it was not until 1845 that he moved to his permanent home at 52, Queen Street.

At the end of the next year news arrived from America of the new-fangled ether anaesthesia and Robert Liston, a fellow Scot from Linlithgowshire, had written to Simpson’s neighbour, James Miller, of the experience of this new technique at University College Hospital. Simpson made the trip to London and on his return began to use ether in his midwifery practice in January 1847. He also began to experiment with other compounds to look for a better volatile agent with the help of Dr George Keith, Dr Keith’s young apprentice.
brother, John, and 20 year old Dr James Matthews Duncan. Although a Liverpool chemist, David Waldie, had suggested the use of chloroform, it was never sent as his laboratory subsequently went up in smoke. Simpson had a supply made and sent round from Duncan & Flockhart in Edinburgh which subsequently caused Simpson, Miller and Keith to slide beneath the dining room table in Queen Street.

On 8th November he first used chloroform on Jane Carstairs, (or Elizabeth Mackay if we are to believe Alastair Gunn's account), a doctor's wife living in Fife but who had moved to Albany Street, Edinburgh as she was expecting a difficult labour; in her previous labour she had struggled for several days and ended up having the child delivered still-born. The baby daughter, christened Wilhelmina on December 25th 1847 kept in touch with Simpson and on her seventeenth birthday sent a photograph taken by John Adamson, a pioneer in photography. Eve Blantyre Simpson suggests that the child was christened Anaesthesia (in the same tradition as the first child in All the Russias to be vaccinated was named Vaccinoff,) but it seems that this appellation was of Simpson's making and as he thought the photographic pose was so saintly, on occasions he referred to her as St. Anaesthesia. It seems that Simpson was not the only member of the household given to experimentation: Clarke the butler decided to try the effect of "a richt gude willy-waught" of a draught of chloroform and champagne on the cook who promptly fell insensible to the ground.

This pioneering work with ether and then chloroform brought public acclaim and hostility too, but sufficient was thought of Simpson for a bust to be commissioned in 1846 illustrated in the book.

These distinctions had led to his being approached by Prothero Smith to take charge of the midwifery wards at St. Bartholomew's but Simpson was not moved even by a letter from the entire staff of St. Bartholomew's inviting him south. In fact Simpson was not all that impressed by Barts then nor later when, in May 1869 twelve months before he died, he wrote in the BMJ "On the Relative Danger to Life from Limb-amputations in St. Bartholomew's Hospital, London, and in Country Practice," pointing out that Mr Holmes Coote had, in modern parlance, massaged his statistics regarding amputations at Barts. Closer examination of the operative figures by Simpson revealed a 37.8% mortality at Barts and a 10.8% mortality in the country practice and he continued to propound his ideas on the value of hospital design in preventing nosocomial infection. Although not a great believer in Listerism he did have ideas on cross-infection. Incidentally it is of note that Simpson refers to Barts as a "rich palatial hospital".

The family ever grew but five of his children predeceased him; in a painting reproduced in the work, beneath which E. B. Simpson has written, "Three hostages to Fortune" are named Magnus (who survived), Jessie (who died aged 17 in 1866) and Willie - otherwise Wattie or Walter who succeeded to the baronetcy in 1870. The children grew up well used to the streams of visitors, not only doctors and patients, but also writers, architects, German counts, Russian princes and all sorts who came through the door of 52, Queen Street, "so frequent upon its hinge."

Photography, introduced as the Daguerrotype in 1836, was becoming more popular and readily available in the 1850's and 60's with the introduction of collodion plates and positives, albumen paper prints and then Ambrotypes. Simpson, it seems, enjoyed making use of this new medium. His sense of humour is captured in a curious pair of photographs showing himself, his eldest son David and a character labelled Capt. Jervey. There was indeed a sea Captain in the family, Simpson's brother-in-law, Captain Petrie, and it was he who
led Simpson to invest both in ships and in plantations in the West Indies. However, Alastair Gunn who shows a similar pair of pictures in an article published in 1968 in the Journal of Obstetrics and Gynaecology of the British Commonwealth, labels the third person Dr Berriman. Dr Berriman was one of Simpson’s assistants in practice but also a close family friend and companion of James, the third son who was dying, aged fifteen, in 1861. Or could it possibly be not Jervay but Jarvis who was the faithful retainer to the household at that time and until Simpson’s death? He certainly looks ill at ease compared to Simpson and his son but it seems unlikely that the butler could afford the fine Albert (watch chain) this individual is sporting.

A little while before this, in December 1856, Simpson’s youngest child was born and christened Evelyn Blantyre after her godmother, Lady Blantyre. Shortly after the birth Simpson made the godmother also the girl’s legal guardian. This was possibly because the child had been born soon after a recuperative trip Simpson had made to Paris having been troubled by frequent headaches and chest pain.

Lady Evelyn Blantyre was the second daughter of the Duke of Sutherland and in 1843 married Charles Stuart 12th Baron Blantyre who gave his occupation in “Who was who” as owning some 14,000 acres in Scotland. In fact Lady Blantyre died a year before Simpson. Simpson himself died when Eve Blantyre was only fourteen but she grew up in the care of another guardian and became a close friend of Robert Louis Stevenson. She went on to have published three books relating to Stevenson but otherwise her writing seems undistinguished: six small volumes penned by her between 1882 and 1912 are listed in the British Library catalogue and a seventh title is found in the Edinburgh City Reference Library. Her account of Stevenson’s Edinburgh days did, however, run to three editions. It seems she may well have made a habit of giving away her works. The copy of the book
in question, we have already heard, is dedicated to Hugo Haig & Co; The Edinburgh City
Library copy of “On Bewick Borders” was presented with “Season’s Greetings from the
Author Xmas 1900.”; The Royal College of Obstetricians and Gynaecologists’ copy of the
Simpson memoir was sent to “The Bonarclub, Colchingham(?)” marked “With best wishes
from” on her bookplate.

She lived at 15, Inverlieth Row and it would seem wrote on a postage stamp table in the
garden with her lap dog. Her book ends with an account of his hectic last years as honours
and obligations were heaped upon him which seemingly aggravated his deteriorating health.
He died on 6 May 1870 aged 58, was given a great public funeral and buried at Warriston,
his family having declined the offer of a last resting place in Westminster Abbey. Instead
the great public admiration of Simpson led to a memorial in the Abbey and a splendid
statue in Edinburgh. The final illustration in the book opposite the author’s signature
is that of Simpson’s tombstone in Warriston.

I have described the book and attempted to weave the text to the photographs but a few
questions remain. Why was a special copy made? Perhaps simply as a Christmas gift but
such a binding implies more. After all the RCOG copy simply has greetings and E. B.
Simpson’s Bookplate. Are there other similar copies? It would seem that there may well
be others and indeed some may have more or different pictures – why else would there
be the eight blank pages bound in? One comment (on p. 140) suggests that there may
have been the intention to include photographs in most copies: “Sir David Brewster (whose
portrait is in this album)”. Brewster was made principal of the University in Simpson’s
time. In fact in this copy Sir David is conspicuous by his absence.

One question we can settle however. It has been possible to establish, with the kind help
of Mrs M. Suslak of Edinburgh, the recipient of this elegant Christmas gift in 1896 from
the inscription “Hugo Haig & Co of Ramornie”: Hugo Veitch Haig was the second son,
born 10 Feb 1845, to Rachel Mackerras and John Haig J. P. of Cameron Bridge, Fife.
He was descended from the Laird of Bernersyde (Bernersyde, St Boswells is the seat of
Earl Haig). His mother was co-heir to Hugh Veitch of Stewartfield near Edinburgh and
related through this family to Swintons of that ilk and thus from King Robert III. Hugo’s
younger brother George married the daughter of William Astor of New York. Hugo Haig
& Co presumably refers to him, his wife (Archie Ann Lindsay) and their four children
Oliver, John, Ruth and Althea.

Ramornie was the family mansion in Kettle parish, Fife and the tiny hamlet of Ramornie
lies just off the A92 east of Ladybank and northeast of Edinburgh. What this latter family
has to do with Simpson or with anaesthesia I have no idea and in the traditional manner
of a surgeon in a tight spot I turn to the anaesthetists to ask if they can fill in the missing
links.
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