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The Organizer is very grateful to Manja Krech, RCoA, who assisted in arranging the meeting, to Emma Wildsmith for help with the programme production, and to Fay Wildsmith for help at reception.

Proceedings of the History of Anaesthesia Society
**Hon Editor:** Dr Alistair McKenzie
9 Craiglockhart Avenue
Edinburgh EH14 1HN
E-mail: mckenzie_aлистair@hotmail.com

The Society acknowledges with thanks the photographs taken by Dr Geoff Hall-Davies.

The President, Professor Tony Wildsmith is warmly congratulated on the award of the Royal College of Anaesthetists Gold Medal in 2008.
### Council and Officers – March 2009

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We are saddened to report the deaths of the following members of the Society:  
Prof Jean Lassner, Dr Tony Bennett (past Honorary Secretary), Dr Carlos Parsloe, Prof Leslie Rendell-Baker.
EDITORIAL

The autumn meeting organised by our President, Prof Tony Wildsmith, gave many HAS members their first opportunity to visit the new premises of the Royal College of Anaesthetists: Churchill House at 35 Red Lion Square.

The morning began with a session on spinal anaesthesia comprising three presentations. The first described the origin and development of the technique and how it fell into decline, because of the Foster Kennedy report and the Woolley and Roe case. The second, by a trainee, traced the history of continuous spinal anaesthesia. Third was a detailed account of the Woolley and Roe case. Tony Wildsmith then summarised.

A coffee break then enabled refreshment before the guest lecture on the history of Churchill House by David Saunders. This was a fascinating account with details from maps spanning four and a half centuries, and census facts from inception. The burning question remained unanswered: “is the body of Oliver Cromwell under the building”?

After lunch there was a tour of the building for newcomers, guided by Prof David Hatch. The afternoon session followed, a miscellany of five papers: the first death attributed to ether in Colchester, anaesthetic inventions in Liverpool, history of pain measurement (another trainee paper), murders by curare in North America, and ether drinking in Ireland! All were most enjoyable with never a dull moment.

The meeting concluded with tea – all in all a great day!

Alistair G McKenzie
Hon Editor

FUTURE EVENTS

2009 1-3 October. 7th International Symposium on the History of Anaesthesia, Heraklion, Crete, Greece
Contact: Prof Helen Askitopoulou (www.isha2009.com)

For more information visit the website: www.histansoc.org.uk
Speakers in London

Prof JAW Wildsmith    Dr A Mohamed    Dr P Magee

Dr D Saunders    Dr F Casale    Dr Anne Florence

Dr S Rastogi    Dr Ann Ferguson    Dr D Zuck
Members and guests attending London meeting

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<td>Dr Patrick Magee</td>
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<td>Ditchling</td>
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<td>Dewsbury</td>
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<td>Prof David Hatch</td>
<td>Woodford Green</td>
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Guest Lecturer:
Dr David Saunders, Southampton
Spinal anaesthesia, like most of our specialty’s techniques, was the result of several developments coming together and to fruition: the basic concept; effective agents; systems for their delivery; and understanding of the effects so that the method can be used safely.

**Concept of local anaesthesia**

The concept of local anaesthesia was first proposed as early as 1848 by James Young Simpson, but his experiments were unsuccessful, although they seem to have played a part in stimulating others to develop refrigeration block for minor procedures. Another Edinburgh worker, Alexander Wood, played an important role in developing both concept and drug delivery system in his work to improve pain relief. He reasoned that morphine would be more effective if deposited close to the nerves supplying a painful lesion (he has been called the ‘Father-in-lore’ of regional anaesthesia) and he was the first to devise a syringe and needle assembly for such injections.

**1884: introduction of cocaine as a local anaesthetic**

Real progress had to await the identification of the local effects of cocaine by Carl Koller in 1884, there having been, as with general anaesthesia, a number of reports which might have led to earlier discovery if ‘minds’ had been prepared. Koller’s mind was prepared because, as a trainee ophthalmologist, he had sought an alternative to general anaesthesia for eye surgery. Postoperative vomiting associated with ether and chloroform often resulted in the contents of the eyeball being expressed through the surgical incision with such disastrous effects that surgeons had reverted to operating without anaesthesia. Koller had been asked by Sigmund Freud, a friend and colleague, to help with studies of the systemic effects of cocaine and it was in the course of that work that Koller realised that its topical application was the solution to the problem. Freud is sometimes given credit for the local anaesthetic discovery, but he always acknowledged Koller’s primary responsibility for the discovery. The effect on ophthalmology was immediate, leading to the lovely quote:

“The loneliest doctor in the world is the ophthalmologist who hasn’t written an article on cocaine”
Peripheral and central nerve blockade

However, once the potential of cocaine had been described the use of local anaestheisia in other areas of practice developed almost as rapidly, most peripheral blocks being described within a year or so. That it had an effect on peripheral nerves led Leonard Corning, a New York neurologist, to consider that it might be useful in ‘medication’ of diseases of the spinal cord. Having a false view of the blood supply of the cord he performed peri-spinal injections in both a dog and a patient in the hope that the drug would be carried centrally and have a useful action. Precisely where his injections were placed we will never know, but taking together the amounts injected and their effects (Table 1) it seems likely that that the canine injection was spinal and the human one epidural, although Corning was lucky that the patient did not develop systemic toxicity! In publishing his observations Corning suggested that the effect might have a surgical use, but this was not pursued at the time.

Table 1: Corning’s cocaine injections

<table>
<thead>
<tr>
<th>Subject</th>
<th>Dose (minims)</th>
<th>Conc (%)</th>
<th>Dose (mg)</th>
<th>Effects</th>
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<tbody>
<tr>
<td>Dog</td>
<td>20</td>
<td>2</td>
<td>25</td>
<td>Marked incoordination at 5 min. Later, marked weakness and no response to stimuli.</td>
</tr>
<tr>
<td>Man</td>
<td>30</td>
<td>3</td>
<td>55.5</td>
<td>No effect after 6-8 min Legs “felt sleepy” after 10 min and sensation very diminished. No incoordination or weakness.</td>
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* Calculations are based on the assumption that Corning used the US, not Imperial Minim.

Perhaps this was because knowledge of the anatomy and physiology of the vertebral canal was then still very limited, although CSF had been described some years before. Quincke, a neurologist in Kiel, Germany, developed a percutaneous method of lumbar puncture in the 1890s as a technique for treating the hydrocephalus associated with tuberculous meningitis. This stimulated one of the surgeons in the same hospital, August Bier, to attempt the first deliberate spinal anaesthetic in 1898. Practical problems with cocaine led Bier to limit his studies, although Tuffier in Paris persisted with some success. However, cocaine
Alternative local anaesthetics; spinals referred to the ‘specialist’ anaesthetist

In 1904, two new drugs, stovaine and procaine, became available and the former proved very popular for spinal anaesthesia, this being the drug with which Arthur Barker, a London surgeon, showed that glucose containing solutions were much more reliable in producing the desired extent and quality of block. However, stovaine was shown to be a tissue irritant, and although there seem to have been no overt problems with it after spinal anaesthesia, use of the technique deceased considerably. It was Gaston Labat, the ‘father’ of modern regional anaesthesia, who popularised the use of procaine and introduced the Trendelenburg position for hypotension in the 1920s and set the scene for its wider use again. Until Labat, spinal anaesthetics had been administered by surgeons, but his work started a major change, putting the technique into the hands of the ‘specialist’ anaesthetist. The same decade saw some pharmacological advances, with the introduction of ephedrine for hypotension, and the introduction of two new local anaesthetics, cinchocaine and tetracaine. Both are more toxic than procaine, but that is not an issue in spinal anaesthesia where the longer duration of both drugs made the method considerably more useful.

Safety of spinal anaesthesia questioned

Before and after World War 2, spinal anaesthesia was used widely, but its safety was challenged by a report of severe neurological sequelae written by a New York neurologist, Foster Kennedy, in 1950. The paper has much neurological detail, but little anaesthetic information, and is a classic case of condemnation by association that would be easy to dismiss out of hand. However, there is no doubt that the patients described show that spinal anaesthesia can go disastrously wrong if it is not performed properly and carefully. The US response to Kennedy’s argument that spinal anaesthesia was too dangerous was led by Dripps and Vandam who published a series of over 10,000 patients without a single major complication, and the technique continued to be used, although perhaps not as widely as before.
In the UK the response was not as logical, primarily because the publicity generated by the Woolley & Roe case made it clear that such disastrous outcomes could also occur in this country and could not be ignored. The concerns relating to such sequelae, taken together with the major advances in general anaesthesia introduced at around the same time, led to the virtual abandonment of spinal anaesthesia for nearly 20 years. Only through the determination of a few key individuals did it survive until the 1970s when advances in surgery (especially in Urology and Orthopaedics for the aging population) and the realisation that general anaesthesia did not provide all the answers led to a re-evaluation and then a major increase in use, particularly in Obstetrics.

**Spinal anaesthesia popularised and audited**

However, with the increase in use of spinal anaesthesia, there came an increase in reports of complications, especially when the technique spread to centres where it had not been used at all for many years. Many of these complications have, directly or indirectly, been related to the increasing use of pharmacological methods of thrombo-prophylaxis with new drugs presenting increasingly complex challenges. The ‘benefits’ of regional anaesthesia have frequently been advanced, but it is rare to see the complications put in the same context to enable a proper risk benefit assessment. Three years ago Council of the Royal College of Anaesthetists agreed to devote its third National Audit Project to trying to identify the incidence of permanent harm after all central nerve blocks. The results of the project were published recently (and subsequent to the meeting at which this paper was presented) and show that some major sequelae do occur, but at much lower rates than have been suggested by much smaller reviews. Avoidable factors are often involved so it is to be hoped that their incidence can be reduced even further, but what is still needed is a similar assessment of the incidence of major harm after general anaesthesia!

**References**


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**Further Reading**


HISTORY OF CONTINUOUS SPINAL ANAESTHESIA AND ANALGESIA (CSA)

Dr Ahmed Elashry Mohamed
SpR in Anaesthesia, Lisburn, Northern Ireland

- 1907: Dean, a British surgeon, described inserting a needle into the subarachnoid space and leaving it in situ to facilitate repeated intrathecal doses of local anaesthetic. This technique was not accepted into practice.

- 1940: Lemmon advocated that after inserting the spinal needle, it should be bent at the skin surface and attached to rubber tubing for dosage of local anaesthetic when required. Access to the needle was provided by a fenestration in the mattress and table, through which the needle protruded. He used a malleable needle (17G or 18 G nickel/silver alloy) with a sharp, medium-length, cutting bevel and a small opening in the long side of the bevel to allow free flow of CSF.

- 1944: Edward Tuohy introduced the catheter technique; used No.4 ureteral catheter inserted 4-5 cm into the subarachnoid space through a 15 gauge needle. Despite this innovation, the technique did not meet with widespread acceptance.

- 1950s: Dripps used a malleable needle and catheter techniques. He reported a high incidence of paraesthesia and low success rates with CSA. The procedure was further discouraged because of fears of higher incidence of Post Dural Puncture Headache (PDPH) and neurological complications, together with the development of the continuous epidural anaesthetic technique.

- 1960s: Bizzarri advocated the use of a 20/21G spinal needle through which a smaller catheter was passed into the subarachnoid space.

- Late 1980s and early 1990s: Hurley and Lambert used micro catheters of size 27 – 32 G through spinal needles of 25/27 G size to reduce the incidence of PDPH. CSA initially became popular. There were reports of cauda equina syndrome following the use of micro catheters. In 1992 the Food and Drug Administration (FDA) withdrew all micro catheters thinner than 24 G from use in USA and the manufacturers of local anaesthetics declared that their drugs were not indicated for use with CSA.

- Recently more studies have been done and anaesthetists have had more experience using CSA. The procedure has been established and proved to be
to be safe and effective.

- CSA has been used for intraoperative anaesthesia, postoperative analgesia, labour, chronic pain and patient controlled analgesia (PCA).

- There are two types of spinal catheters available now:
  1 – The micro catheters (through the needle variety).
  2 – The macro catheters (over the needle variety).
The catheter is open at the end and has a side eye 0.5 cm from its tip.

- The advantages of CSA are fast onset, long duration and reliability. The neurological blockade can be extended during surgery if needed. It works with small intermittent doses of local anaesthetics and opioid drugs.

- The disadvantages include possibility of higher incidence of PDPH, direct nerve injury by the catheter and potential for infection

References

- Denny NM, Selander DE. Continuous spinal anaesthesia. *British Journal of Anaesthesia* 1998; 81: 590-597
- Calthorpe N. The history of spinal needles: getting to the point. *Anaesthesia* 2004; 59: 1231-1241
THE WOOLLEY AND ROE CASE
How the reputation of spinal anaesthesia was damaged in the UK

Dr Patrick Magee
Consultant Anaesthetist, Royal United Hospital Bath

The case of Woolley and Roe, which was heard at the High Courts of Justice in October 1953, had a significantly damaging effect on the practice of spinal anaesthesia in the UK for several decades thereafter. As such it is worthy of periodic review to remind ourselves that spinal anaesthesia was not always as low risk as nowadays.

The spinal anaesthetics and aftermath

On Monday October 13th 1947, at Chesterfield Hospital, Dr JM Graham was the visiting anaesthetist for an operating list which included Cecil Roe and Albert Woolley. Roe was the first patient of the morning and was to have a semilunar cartilage removed. Woolley was the third patient and was to have a hydrocele repaired. A second unnamed patient, who died of his surgical illness postoperatively, was to have a laparotomy for gastrointestinal obstruction. All three patients were given spinal anaesthesia as 10 ml of 1/1500 cinchocaine into the subarachnoid space. Roe experienced headache and back pain as soon as the spinal needle was inserted, as well as a burning sensation at the operative site which suggested inadequate analgesia. Woolley suffered no immediate discomfort. By the next day, however, both patients had developed an acute myelopathy that involved the nerve roots of the cauda equina and the lower spinal cord. Clinically the condition presented as a flaccid paralysis and loss of sensation over the legs, the lower abdominal wall and the peri-anal area, as well as loss of bowel and bladder control. These symptoms were common to both patients; there were no signs of meningism and lumbar puncture the week after showed normal CSF. The second patient had died five days postoperatively from his surgical illness, but had shown some signs of neurological damage. Woolley and Roe were moved in November to the Wharncliffe Hospital in Sheffield under the care of Dr James Carson for their continued neurological care. After some initial improvement in the first month or so, their symptoms worsened to a painful spastic paraparesis which persisted for the remainder of their lives. In May 1948, a second lumbar puncture in both patients revealed a dry tap, which was an ominous result, indicating a blockage to CSF flow in the thoracic region. In December 1948 both patients were discharged home, but continued to deteriorate such that Roe was readmitted in May 1949. In May 1950 Roe had a laminectomy performed in Birmingham by Professor Brodie Hughes. At operation his findings included arachnoid cysts in the thoracic cord.
under pressure which were drained, and a mass of arachnoidal adhesions around the cauda equina. During this period Roe’s symptoms became very much worse, as did Woolley’s.

**The court case**

Woolley and Roe sued the Ministry of Health as trustees of the hospital, Dr Graham himself and Ciba, the manufacturer of the cinchocaine. In particular, Dr Graham was accused of having failed to prevent the introduction of infective material into the spinal, of having failed to prevent the introduction of carbolic acid, and of having failed to have supervised the sterilization process. When the case came to court in October 1953, the plaintiffs’ expert witness was Professor Robert MacIntosh. As an expert who had published a book in 1951, considered as a definitive contemporary text on spinal anaesthesia, he was closely questioned by counsel. In particular he was questioned on the method of sterilization of both needles and ampoules, and the value or otherwise of the dyed phenol solution used to sterilize ampoules. Although his recommendation in 1953 for sterilization was autoclaving, he recognized that not everybody would have used this method in 1947. The method of sterilizing needles and syringes in Chesterfield was by boiling for twenty minutes and rinsing in sterile water, and the method of sterilizing ampoules was by soaking in a phenol solution. The possibility of invisible cracks in the ampoule, through which phenol could leak inwards was unknown before MacIntosh’s publication. The plaintiffs’ case rested on the allegation of leakage of phenol from the sterilizing bath of dyed phenol, in which the ampoules were immersed, through invisible cracks in the ampoules to contaminate the cinchocaine. Other anaesthetic expert witnesses were called, as were a surgeon and two neurologists. The non-anaesthetic witnesses believed that the phenol was not at issue, rather the act of spinal anaesthesia itself or nupercaine itself were the cause of the problem. Despite evidence being presented in court, which raised the possibility of other causes, phenol contamination was accepted by the judge as the cause of the injuries. However, Dr Graham was not judged to have been negligent because although by 1953 the possibility of phenol leakage into ampoules was known about through MacIntosh’s book, in 1947 it was not. At an early stage of the trial, counsel for Ciba demonstrated to everyone’s satisfaction that the manufacturing and storage process of the ampoules was satisfactory and safe and Ciba were exonerated. The plaintiffs received no compensation, a decision which was upheld at the Appeal in April 1954.

**Review of the case**

In a review of the case by Hutter in 1990, it was pointed out that phenol had
been used to treat chronic pain from 1954, and that it had produced very different symptoms and neurological signs from those of Woolley and Roe; indeed phenol was used to treat spastic paraparesis rather than being a cause of it. Hutter also pointed out that invisible cracks were another unlikely cause, since there had been no previous injuries either at Chesterfield Hospital or anywhere else which could be attributed to this cause. It was also unlikely that, the cinchocaine labels having come off in the phenol soaking process, the ampoules were misidentified, since no other similar sized ampoules of different medicines were found, and all three patients received analgesia from the contents of the ampoules. Hutter concludes that the most likely cause is the water in the steriliser. The steriliser had been filled with descaling fluid, consisting of phosphoric and hydrochloric acid, in the days preceding the relevant Monday morning. The descaling process was not directly supervised by Dr Graham, the senior theatre nurse had gone off on holiday on the preceding Saturday, and her assistant had gone off sick at lunchtime on the Monday. Hutter discusses the possible mechanism of damage of the descaling fluid as a contaminant. There is no direct information about the damage that can be caused by phosphoric acid, but we know from the neurotoxicity caused by Chloroprocaine (pH 3.3) what can happen, and from the pulmonary damage caused by aspiration of gastric contents. Nupercaine binds avidly to tissue proteins and associated acidic contaminants will cause coagulation, vascular thrombosis and consequent ischaemia, protein destruction and intracellular enzyme destruction. Phosphoric acid is toxic at a pH of 5.5, and if we hypothesize that a 1 molar solution of the acid is diluted by a factor of 100 000, the resulting solution has a pH of 5. Clearly the tissue damage caused by the acid is attenuated by dilution, but factors aggravating local damage include the fact that cerebrospinal fluid is a poor buffer, there is no local metabolism in the CSF, and diffusion of the substance out of the CSF for metabolism elsewhere is hindered in the presence of local vascular thrombosis. Factors in favour of an acidic contaminant in the case of Roe were the presence of a large skin ulcer at the needle entry point and the headache and backache which he suffered at the time. Furthermore, as local anaesthetic agents are weak bases, they are more highly ionized in an acidic environment, which limits their ability to cross neural membranes and exert their action; Roe’s poor quality analgesia backs up this state of affairs. Although it does so slowly, neural tissue is capable of repair and regeneration, and this explains the partial recovery in neurological function by Woolley and Roe. However, this was followed by the development of fibrous tissue and a chronic adhesive arachnoiditis with arachnoid cyst formation and spinal cord compression. These were the pathological findings at Roe’s laminectomy in 1950 and at autopsy following his death.
There was a good deal of unease among medical opinion of the time at the decision of the judge based on the phenol explanation, and Dr Graham himself, when interviewed by Maltby some thirty years later, indicated that he had never believed that invisible cracks in the ampoule with phenol seepage were a likely cause of the disaster. It is probable that this case led directly to the demise of spinal anaesthesia in the UK for at least 25 years. It is worth pondering, that if a similar case were heard today, whether an anaesthetist would not be found negligent under similar circumstances. Indeed the summary by Lord Denning at the Appeal of the case in 1954, while expressing sympathy for the plight of the patients’ suffering, speaks volumes about the desire of the law of the time to protect the medical profession against spurious claims of negligence, where misadventure is the real explanation.

References

THE HISTORY OF CHURCHILL HOUSE

Dr David Saunders, Southampton
Hon Archivist, Royal College of Anaesthetists

16th Century

The first printed map of London of which copies exist is the Braun and Hogenberg map of 1572 made in the middle of the reign of Queen Elizabeth I and almost certainly a copy of the so-called Copperplate Map of 1555, no prints of which have survived. From this map it will be seen that the City of London had spread beyond its medieval walls to the north and west and that it was linked at this time to the growing centre of Westminster firstly by the river but also by the Strand. To the north, running parallel with the Strand, is ‘Holbourne’, linking with what is now Oxford Street to form the major road into the City from the west entering at Newgate; along this route Roman legions would have entered Londinium. Travelling westward the last habitation through which one would have passed is St Giles in the Fields, site of the leprosous hospital founded by Queen Matilda in 1101 (which closed in 1539) and the place where the Great Plague broke out in 1665. North of Holborn, between Chancery Lane and St Giles, was a single line of houses and businesses and then fields; in this part of London in Elizabethan times Holborn formed the northern boundary. These houses met with an outward sprawl coming westward from Newgate. One of the hostleries along this stretch of road was the Red Lyon Inn.

17th Century

In 1633 the ‘Agas’ map was published, named for Ralph Agas, a surveyor, showing that very little development had taken place north of Holborn and that the Red Lyon still looked out over open fields, which took the name of the inn. Over the subsequent twenty years, despite the advent of planning laws (easily overcome by bribery), the area between the Strand and Holborn filled with the large elegant houses of Covent Garden and Lincoln’s Inn; Red Lyon Fields however remained as a bosky recreational area.

Charles I was executed in January 1649. Oliver Cromwell died in 1658 of a tertian ague (or, as some believe, poison) and was buried, after a truly regal funeral service, in Westminster Abbey; he was succeeded by his son Richard who was effectively removed by the Army. Charles II was crowned on 23 April 1661. The 59 Commissioners who had signed the death warrant of the King were tried for treason, whether they were living or dead. Oliver Cromwell, Henry Ireton (Cromwell’s son-in-law) and John Bradshaw (all by now dead)
were attainted, exhumed and hung in chains at Tyburn in January 1661. Two days elapsed between the exhumation of Cromwell and his ‘execution’ at Tyburn. During this time his body was held at the Red Lyon Inn on Holborn. Some believe that his body was substituted at this time for another embalmed body which was vicariously dispatched to the gibbet, Cromwell’s remains being buried in Red Lyon Fields. The upstairs room of the current Red Lion on the corner of High Holborn and Red Lion Street is called the Cromwell Room.

Morgan’s 1682 map of London is available online and shows clearly that Red Lion Fields were still common land. The Great Fire of London in 1666 led to a great surge in building and previously undeveloped land was obtained by speculators whose practices might today be considered somewhat shady. The greatest and some might argue the shadiest, was Nicholas Barbon. It is generally accepted that he ignored the law and effectively seized land from its rightful owners, if necessary demolishing existing buildings. Barbon was English and was probably the son of the leather merchant, Anabaptist preacher and Parliamentarian, Praise-God Barebone (who opposed the Restoration of Charles II). His date of birth is variously reported as being between 1623 and 1640. He obtained medical training at the University of Leiden and was awarded an MD at Utrecht in 1661 being made an Honorary Fellow of the Royal College of Physicians in 1664. He is frequently considered the originator of the concept of fire insurance and in about 1680 he set up a business in London for that purpose. He is also highly regarded as an economist; some of Adam Smith’s later writings being remarkably similar to those of Barbon. In his will he directed that none of his debts be paid.

Barbon was the builder of Red Lion Square. Large, prestigious, buildings in terraced form surrounded a square. In the interests of creating the largest return on investment, behind these buildings were built high density dwellings of dubious quality; many fell down and had to be replaced early in the 18th Century. Besides providing revenue, these smaller buildings screened the sight and sound of the horse drawn traffic and drovers and their cattle on Holborn. Red Lion Fields were regarded as a recreational area by the lawyers of Gray’s Inn who did not take kindly to Barbon’s enterprise. Pitched battles were fought between the Gray’s Inn lawyers and their students and Barbon’s builders; building materials provided the weapons. It is reported that a major pitched battle took place on 11 June 1684, this account allows the date of the building works to be accurately placed. Despite further delays in building that were caused by surveyors’ legal claims that the builders’ carts were damaging the King’s route to New Market, the first leases were sold in 1686 and by 1688 all the properties had been sold. Despite the altercations with the lawyers it would appear that many of them bought the new houses, as did ‘well-to-do doctors’.
Most of Barbon’s houses were demolished in the 19th and 20th centuries but numbers 14 to 17 survive, having been re-fronted in the 19th century. The rear of the original buildings, however, can be clearly seen between the buildings of what are now Dane Street and Eagle Street.

18th Century

In his privately published work, TC Barker describes the progress of the Square throughout the 18th century by the examination of an intermittent series of rates books. In 1720 “rows of trees, gravel walks and grass plots” were reported. By the end of the 18th century (a remarkably short period of time, perhaps reflecting Barbon’s building standards) he notes that the place had become “a receptacle for rubbish, dirt and nastiness of all kinds and an encouragement to common beggars, vagabonds and other disorderly persons to resort thither for the exercise of their idle diversions and other unwarrantable purposes”. An Act of Parliament was necessary to levy a rate to improve the Square’s appearance. Railings were erected and forbidding watchtowers placed at each corner. At this time also, an obelisk was erected in the centre of the Square with an enigmatic inscription reading: Obtusum Obtusioris Ingenii Monumentum. Quid me respicis, viator? Vade. There have been many attempts to make sense of this inscription which, if translated literally (where the words are indeed recognised as Latin), reads: Gaze Obtusioris Cleverly Memorial What me to turn attention to, traveller? Vade (or perhaps Why do you stare at me traveller; be gone). Gallant attempts have been made to read into this that the stone marked the burial place of Oliver Cromwell; none is convincing. The monument suddenly disappeared sometime in 1789 or early 1790 along with the watchtowers; there exists no record of why this happened.

There were several notable residents in the Square at this time. John Harrison, the inventor of the definitive marine chronometer died on 24 March 1776, in his house in Red Lion Square; it was his 83rd birthday. A Blue Plaque may be seen on the corner of Dane Street and the Square commemorating where his house once stood. Jonas Hanway, the philanthropist, renowned traveller in Russia and Persia and later a Governor of the Foundling Hospital also lived in the Square. He is possibly best known for being the first man in London to carry an umbrella. Many physicians have owned practices in Red Lion Square especially those dedicated to the treatment of children, perhaps not surprising considering the close proximity of the Foundling Hospital and the presence of Jonas Hanway. Indeed Alan Ross has written a paper, detailing a series of 18th century ‘paediatricians’ who set up in the Square. Probably the most distinguished of these was John Fothergill who published widely on the diseases of children; his best known work is An Account of the Sore Throat. Fothergill
also expounded on resuscitation, publishing in 1744-45 *Observations on a case of recovering a man dead in appearance, by distending the lungs with air*. The man who has been described as the father of modern paediatrics also practised in the Square; he was George Armstrong. Ross reports that he published in 1767 a 148 page book entitled *An Essay on the Diseases most Fatal to Infants*. He opened, in 1769, a ‘Dispensary for the Infant Poor’ at 7 Red Lion Square; the first paediatric clinic in the world. At number 1, surgeon Thomas Westlake opened ‘The London Infirmary for Diseases of the Legs, Ulcers and Varicose Veins etc.’

Towards the end of the 18th century the titled denizens of the Square began to move on and the houses were being sold as family residences and for professional and business purposes. The layout of the Square at this time can be seen from Horwood’s splendid 15 inches to the mile map of 1792 (Figure 1) and a contemporary etching (Figure 2).

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**Fig. 1** Red Lion Square shown on Horwood’s map, 1792
19th Century

Burton reports that in 1802 a house was sold comprising: “seven bedrooms with two dressing rooms, excellent dining parlour, breakfast room and study. A particularly good kitchen and pantry, scullery, back kitchen and larder, very large coal, ale, beer and wine cellars, the latter fitted with catacombs. WC, large garden and wash house”. Thus, although the great and the good may have departed, it would still require a sizable income to purchase and run such a property.

It is now possible, by using the published censuses to gain an impression of the type of people who inhabited the Square from 1841 onwards. In the first census with names and occupations (1841) there exists a mix of professional people, lawyers, architects, ecclesiastical men and surgeons but it is noticeable that many of the addresses are in multiple occupation often by skilled workers, tailors, milliners and wood turners. In 1851 one of the Square’s most distinguished residents made a brief appearance. For about six months the 23-year old Dante Gabriel Rossetti took rooms at number 17. Burton records that his rent was 20 shillings a week and that his landlord stipulated that “the models should be kept under some gentlemanly restraint as some artists sacrifice the
dignity of art to the baseness of passion”. Having met at Oxford, William Morris, poet, painter and designer and Edward Burne-Jones decided to follow in Rossetti’s footstep and also take lodgings at number 17 in Rossetti’s dusty and unused rooms; by this time Rossetti has moved on. This group formed the basis of the Pre-Raphaelite Brotherhood with Millais and Holman Hunt. Number 17 is one of the four Barbon Houses that have survived the ravages of time and war and the LCC plaque on the 19th century façade of the house reads: “In this house lived in 1851 Dante Gabriel Rossetti, poet and painter and from 1856 to 1859 William Morris, poet and artist and Sir Edward C. Burne-Jones, painter”.

Disappointingly the 1851 census, taken in April, misses Rossetti’s occupancy of the Square. Subsequent censuses show that more and more houses become business premises and houses in multiple occupation.

The major development occurring in the Square in the middle of the 19th century was the building of The Church of St John the Evangelist in 1878. This was a large edifice built on the south-west side of the Square on the corner of Fisher Street and what is now known as Proctor Street.

Charles Booth was a remarkable man. He was born in Liverpool in 1840, the son of a corn merchant. He was profoundly interested in social problems and having inherited a large sum of money and run a successful business he turned his attention to the study of poverty in London. Over the course of several years, accompanied by patrolling police officers, he visited all of the districts in central London. On 12 July 1898, accompanied by Police Constable Robert Turner of the E or Holborn police division he visited Red Lion Square and gives a detailed account of the area. He writes in his notebook: “Red tiled roofs – a few inhabited homes, rest are business premises. At the corner of Leigh Street are flats. There is a common lodging house on the north side of the square which is not registered as it takes a stipulated sum per week and does not put more than a given number in a room. This seems to be the difference between ‘Lodgings’ and a common lodging house”. Booth gives a colour coding to each street representing the degree of poverty or affluence. The Square is coded purple signifying “mixed, some comfortable, others poor” and pink which indicates ‘fairly comfortable, good ordinary earnings’ The streets to the south of the Square, today’s Eagle Street, are dark blue ‘very poor, chronic want’. Thus we are given a vivid picture of what our Square was like as the 20th century began.

20th Century

In the 1901 census, three years after Booth’s survey, the site where Churchill House now stands had become an apartment building, St George’s Mansions,
but there are still many professional families in residence e.g. a ‘vocalist’, a company accountant, an actress, an architect and several people ‘living on their own means’. Several of the families employed domestic servants. The Central Line opened in 1901, the Piccadilly in 1906. In 1907 the History of the Squares of London reports that the Square “can hardly be said to preserve many, if any of its original characteristics. Its houses, many of them rebuilt, are occupied almost wholly by professional and commercial buildings”. Reference is made to its generally untidy state.

Red Lion Square was very badly damaged during the London Blitz, the worst two raids being on 16 & 17 April 1941 and 10 & 11 May 1941. It has been estimated that in the borough of Holborn, 650 buildings (about a seventh) were destroyed, over 400 people were killed and over 600 seriously injured. Theobald’s Road, Red Lion Square, Red Lion Street and High Holborn suffered the worst of the damage. The Eastern and Western ends of the Square were virtually destroyed. The Church of St. John The Evangelist was irreparably damaged by a parachute mine on 17th April 1941. Over the years the eastern end has been largely replaced by somewhat brutal looking flats but the western end has never been rebuilt and so the secluded square became three-sided and major road works led to the development of Proctor Street and the widening of Drake Street causing large volumes of traffic to roar past the end of the Square. The site of St. John’s Church is now occupied by the slab-sided Central St. Martin’s College of Art and Design. The one-way system was opened in 1962 and joins Theobald’s Road with High Holborn.

It will be seen from Horwood’s Map that the house on the corner of Drake Street and Red Lion Square was Number 38. When, after the war, Drake Street was widened, St George’s Mansions were demolished together with Number 77 Theobald’s Road and a plot of land was released which would be given the postal address of 35 Red Lion Square (the sites of the other houses being lost to the widening of Drake Street). The site was bought by the House of Cassell, publishers. The purchase of the site was concluded on 13 December 1951 and architects were instructed. However, in 1953 after the production of the plans for the site there was “what may best be described as a touch of panic: the cost seemed so astronomical that the courage to give the green light was momentarily lacking.” The order to continue was not given until 10 January 1955 when the tender submitted by Sir James Miller and Partners was accepted. The foundations were laid with some difficulty during a hard winter and on St George’s Day, 23 April 1956 the foundation stone (brought by courtesy of the French Government from the Palace of Versailles) was laid by Sir Winston Churchill (at one time he held a card in Amalgamated Union of Building Trade Workers). A luncheon in celebration of the event was held in the nearby Royal
College of Surgeons. On completion a reclining figure of Pocahontas was placed by the front door; this was removed when Cassells vacated the building in 1982. The building was subsequently occupied by British Telecom and then by the public relations firm, Hill & Knowlton. When Hill and Knowlton purchased premises in Soho Square, 35 Red Lion Square was placed on the market.

21st Century

At this time the Royal College of Anaesthetists was actively looking to move from its cramped Georgian premises in Russell Square. After visiting many potential sites, a contract for the purchase of 35 Red Lion Square (originally on the market for an astronomical price but a figure was negotiated that was deemed to be reasonable) by the College was signed on 22 January 2004. Contract completion took place on 22 June 2004. The architects Tilney Shane were engaged to plan the conversion of what was a very basic 1950s office block into a building compatible with the aims of the College. The ‘topping-out’ ceremony was held on 4 August 2005. A discussion took place in College Council concerning the name of the new building; an obvious name would have been The Royal College of Anaesthetists. Council took the view that the name ‘Churchill House’ should be retained. This decision was taken to acknowledge the tradition inherent in the name but also to provide an address at which other organisations might feel welcome. The finished building was opened on 16 January 2006 by HRH the Princess Anne, the Patron of the Royal College of Anaesthetists.

References and further reading

Early history of Colchester

It was the Victorians who started the trend for achieving records: Colchester’s claim to fame rests on being Britain’s oldest recorded town mentioned in Roman annals as Camulodunum where in 43 AD the emperor Claudius came in person from Rome to accept the surrender of King Cunobelinus (Shakespeare’s Cymbeline) and thus claiming the title of Conqueror of Britain, naming his son Britannicus.

The town was renamed Colonia Claudia Victricensis - modern Colchester - and had the largest Roman temple in Britain built in his honour. The local ratepayers however were so incensed at the cost that they appointed a town planner by the name of Boudica, who promptly knocked it down (establishing the demolition tradition for all subsequent town planners). On this pile of rubble, the Normans built the Colchester Castle, recorded as the largest Norman Keep in Europe; all attempts to knock it down failed.

Hospital at Colchester

Colchester also held the record for the largest Garrison Hospital with 500 beds but it was knocked down at the end of the Napoleonic Wars. Its bricks were used to build the Colchester and Essex Hospital for the Poor, which opened in 1820, funded by donations from the more affluent citizens who could recommend patients in proportion to their subscription: half a guinea would permit two outpatients per year, two guineas would allow one admission as well. The Board of Governors ran the Hospital and vetted the patients selected for admission, who had to be: a) poor enough (no private patients); b) sick enough (to benefit from treatment); c) fit enough not to die whilst in hospital (not to land the hospital with the funeral expenses, people were expected to die at home and not in hospital). They also elected among the local GPs two honorary Physicians and three honorary Consulting Surgeons, who provided treatment free of charge to the patients. It was at this Hospital that the first death attributed to ether anaesthesia was recorded.

Discovery of ether anaesthesia

It was an American letter (fortunately not from France) that brought the news to London of the first ether anaesthetic administered by William Thomas Green.
Morton on the 16th October 1846. Professor Robert Liston, ‘the fastest scalpel in London’, performed the first operations under ether anaesthesia at the U.C.H. on 21st December 1846 and achieved instant notoriety in both the medical and lay press. Soon operations were being performed under ether anaesthesia throughout the country. These were being reported in the medical journals and were in turn reported in the lay press.

First death after ether anaesthesia

However, among enthusiastic accounts on the use of ether, the first note of alarm was sounded, barely two months after its introduction. The London Medical Gazette of the 26th February 1847 published a report entitled The Fatal Effects of Ether Vapour in a Case of Lithotomy by Roger Nunn Esq.: Surgeon to the Colchester and Essex Hospital in the patient operated upon on Friday 12th February 1847. This article was reprinted on 19th March by the Lancet and also by the Essex County Standard, the local newspaper.

The surgeon

The surgeon in question was Roger Sturley Nunn, son of Roger Nunn, one of the original honorary surgeons appointed in 1820 and twice Mayor of Colchester. When he retired, his son, Roger Sturley, was appointed Surgeon in his place at the age of 23. He was said to have been a ‘lady killer’, with his elegant foppish ways, with cane, button hole and top-hat, once caught in flagrante delicto and horsewhipped by the irate husband. He drank considerably and insisted on a drink at his patients’ houses However, there was no suggestion that he was anything but a good doctor to both the rich and poor. He died in 1883 at the age of 68 and his funeral was one of the most imposing that Colchester has ever witnessed. In 1847, he would have been 34 and obviously keen to try out this novel approach to surgery.

The anaesthetist

The anaesthetic was administered by Dr. Edward Williams, Honorary Physician. He was considered by his colleagues as something of a mystery-man but this was because he tried to hide the fact that he was the illegitimate son of a poor spinster and a well-to-do man from Lincoln, who put him through Cambridge University; he obtained the MB and an MD. He never married but lived with two well-to-do ladies who eventually became very poor! He got into trouble with the Colchester Medical Society (which, incidentally, is the oldest Provincial Medical Society in Britain, formed in 1774 and modelled on the Medical Society of London, founded the previous year). He was accused of
unprofessional conduct for contracting with a patient to treat him for an annual fee and in another instance for contracting with a pharmacist to do all of his prescriptions. It obviously did him no harm, as he became Mayor of Colchester four times.

The operation

The operation took place on Friday 12th February 1847 on Thomas Herbert, a 52 year old labourer “the subject of stone in the bladder, in the presence of most of the medical gentlemen of the town and neighbourhood”. It would appear that the operation had been planned for some time, possibly scheduled for a Friday afternoon, to enable Mr Bransby Cooper, Surgeon and Lithotomist at Guy’s Hospital with whom Roger Nunn had trained, to attend.

Also present was Mr Alderman Partridge, Senior Surgeon at the Colchester Hospital having been appointed at the same time as Roger Sturley Nunn’s father in 1820, who had also worked at Guy’s and St Thomas’. He was a local farmer’s son, an ill-mannered and uncouth boor - but was reputed to be ‘a bold and successful operator especially in lithotomy and who probably enjoyed the largest practice as a Consultant Surgeon in Essex’. He had been a key witness in a famous medical trial in 1828, when Mr Bransby Cooper had sued Dr Thomas Wakley (the editor of The Lancet) for having published an account of an operation by Cooper, stating in no uncertain terms, that it was a ‘highly incompetent performance’. Partridge had given evidence for Wakley saying that ‘he had seen the operation and had no doubt that it was a thoroughly inefficient and inept operation’. The £2000 damages claimed by Bransby Cooper were assessed at only £100, largely on Partridge’s evidence, leaving Cooper’s reputation in tatters and the medical profession rather displeased with Alderman Partridge who could not have cared less.

The operating room at the Essex and Colchester Hospital had a special operating table bought in 1836 for the price of £4 19s 7d from the celebrated French lithotomist, Baron Harteloup who had been invited to the Hospital in 1835 at the instigation of Mr Alderman Partridge, to demonstrate his lithotrite. He performed the operation for the benefit of the Medical Practitioners and also for several of the Board of Governors who were duly impressed and acquired the table designed by the Baron.

The patient was bound in the position for lithotomy and “the ether was exhibited” by Dr Williams (using a Weiss apparatus, most likely a Squire’s vaporiser) “who considered the patient to be sufficiently under its influence after he had inhaled it seven or eight minutes”, at the end of which time Mr Nunn
commenced the operation. “There was neither difficulty nor loss of time in cutting into the bladder; but having done so, some little delay occurred in grasping the stone which was small, very flat, and lying in the posterior part of the bladder. The delay was also increased by the extremely relaxed state of the bladder itself, which seemed to fall in folds on the forceps, and to cover the stone. The time occupied, from the commencement of the operation to the period when the man was unbound, was ten minutes, during which the ether was administered at intervals.” The breathing was at first heavy and later became stertorous as the anaesthetic progressed and this was considered to be due to the relaxation of the uvula and compression of the nostrils to prevent respiration through them. The stertorous breathing was readily reversible and cyanosis was slight and pupils were not dilated.

The postoperative period
He recovered from the effects of the ether after a short time “and continued in a quiet, passive state, but without decided reaction, for twenty-four hours”, after which he had a chill lasting nearly 20 minutes. “Mr Taylor, the house surgeon, immediately gave him two ounces of brandy”, .... “after which the patient remained in a dozing state” until 8 p.m. when the house surgeon considered it necessary to send for Mr Nunn, “as a state of complete prostration or collapse had ensued”. Further small quantities of brandy and arrowroot were administered, he was wrapped in hot blankets and hot bottles were placed in the bed, but the patient remained incoherent throughout the night. At 9 a.m. on Sunday morning there was a consultation by all the medical staff and it was decided to administer a stimulating injection (turpentine) which slightly increased the pulse rate, “but without exciting his nervous energies”. The patient gradually sank to his death at 5 p.m. on Sunday, “being sensible to the last”.

The aftermath
A post mortem was carried out 67 hours after death but contributed nothing useful. The anaesthetist, Dr. Williams, did not express any view on the cause of death except that he did not think it due to syncope or compression of the brain, as one critic had suggested.

Roger Nunn’s comments were as follows.
“It is not my intention or inclination to attribute the loss of my patient wholly to the influence of ether, which was administered in this case, nor hastily to decry its use under all circumstances connected with surgical operations; but, still I feel called upon to bring before the notice of my medical brethren, the effects which resulted from its exhibition in this instance, that the profession may judge, from the recital of an unsuccessful case, how far it may be considered
safe to employ ether generally as a means of preventing the pain otherwise inseparable from physical lesion. .... Still, I felt myself justified in employing it, from the published accounts of many successful cases and the sanction of my colleagues and numerous friends around me.” ....

“I must not, however, omit to mention the fact that the patient expressed no signs of suffering during the operation. Thus far, therefore, it may be said the ether fulfilled its intended offices. But I think another question is involved – viz., whether the artificial means thus employed may not produce very serious depressing effects on the nervous system, depriving a patient of that reactive power so necessary to the reparative process?” ....

“I trust that the publication of this unsuccessful case may lead to the publicity of many others which have occurred, so that the profession may not be led away by the erroneous supposition that the prevention of pain is so vital a desideratum in operative surgery”.

**Conclusion**

From this account of this anaesthetic given at Colchester on the 12th February 1847, it would appear that the operation was successfully completed under the anaesthetic effects of ether with the patient recovering consciousness but then bacteraemia ensued and the patient died from septicaemia. While it is true that this is the first reported death attributed to ether anaesthesia, it cannot be strictly recorded as the first death due to anaesthesia. It can, however, be the first recorded death blamed on anaesthesia by the surgeon and the forerunner of many similar instances which have given rise to the great surgical dictum that “the operation was successful but the patient died from the anaesthetic” and which has proven to be such a useful smokescreen for our surgical colleagues ever since, that gives them an aura of infallibility in the eye of the general public.

**References**

Nunn RS. The Fatal Effects of Ether Vapour in a Case of Lithotomy. *London Medical Gazette* 1847; 4: 414
Nunn RS. Operation for stone in the bladder. *The Lancet* 1847; I: 343

**Editorial comment**

The quotations have been taken from *The Lancet* 1847; I: 343. This case was referred to in John Snow’s *On Chloroform and Other Anaesthetics* published in 1858 (page 365).

SOME MEDICAL ‘TOYS’ FROM LIVERPOOL

Dr Anne M Florence, Liverpool
Honorary Secretary, History of Anaesthesia Society

During the past two centuries many items of Medical Equipment have been developed in Liverpool.

Hugh Owen Thomas

Amongst the most well known is the simple, widely used splint designed by the rather eccentric Hugh Owen Thomas (1834-1891), a member of the fourth generation of a famous family of Bonesetters from the Island of Anglesey who was to become the undoubted father of Orthopaedic Surgery. On returning to Liverpool after medical study in Edinburgh, London and Paris, he found that treatment of fractures and joint disease was crude, and it inevitably resulted in limb shortening and gross deformity. Amputation for secondary infection was frequent. Feeling strongly that an improvement in management was essential he established himself at 11 Nelson Street, in close proximity to the impoverished ‘slum’ areas of the city. There he built a small workshop where a blacksmith and several leather workers could create the splints which he designed for the immobilisation of the injured or diseased limbs while permitting rehabilitation exercises. Prolonged rest was the hallmark of his therapy for the restoration of limb length and symmetry. Each case of disease and deformity was considered as an individual problem; the splints and frames were moulded to fit each individual with precision. Thomas also believed that fresh air was of utmost benefit in the management of chronic infections such as tuberculosis. In the slums and back alleys all over Liverpool, children immobilised in splints (Figure 1) which had been fitted meticulously, were nursed in the open air on beds which Thomas had improvised from soap boxes and then secured to railings by chains. Thomas worked tirelessly for these poor children, visiting regularly, often late at night – driving through the town in a scarlet painted phaeton of his own design.

Thomas splints, which completely revolutionised the management of bone and joint disease and, significantly reduced morbidity and mortality in the serious limb injuries during the First World War by facilitating safe transport and prolonged rest, are still in use today.

Alfred Higginson

The extrovert, Alfred Higginson (1808-1884), was a highly respected, skilful
Fig. 1 Thomas splint  (Photograph by A Florence)

Fig. 2 Higginson’s ‘Pneumatic Machine’
(Source: Liverpool Medical Institution – with permission)
surgeon with an experimental and mechanical mind. In the early 1840s he developed a stomach pump for which there is, alas, no known description. This was rapidly followed by the development of a rubber syringe for colonic enemas. The cylindrical, compressible reservoir described as an ‘elastic barrel’ had a complex system of valves almost analogous to those of the heart. Subsequently, in the *Liverpool Medico-Chirurigical Journal* of 1857, Higginson described the syringe which he had designed and used, without problems, in seven vein-to-vein transfusions of blood. A conical metal cup with a capacity of six fluid ounces was placed in a metal casing which held five fluid ounces of hot water fed through an aperture at the side of the cone. The blood was then fed through a ball-valve into a tubular-shaped elastic barrel composed of India-rubber, from which it exited through another ball-valve into a galvanised rubber tube of considerable length, which terminated in a lengthy needle-like metal tube with a narrowed end for insertion into the vein of the recipient. A small plug was provided at the level of the lower valve to control the aperture and rate of flow when necessary.

In 1843 Higginson demonstrated an ingenious apparatus for mechanical (artificial) ventilation of the lungs. He believed, that this ‘pneumatic chest’, a ‘coffin-like box’ (crude prototype of the 1929 Drinker respirator), allowed the alternative withdrawal and replacement of air by the use of a bellows to assist the elastic recoil of the lungs. In 1844 he read a ‘Medical Essay on Suspended Animation’ to the Liverpool Literary and Philosophical Society describing what he considered to be ‘the best means of restoring life as well as the best and most approved apparatus to be used for that purpose’.

The patient was placed in the box with his head supported by a leather bag and collar, positioned to enable him to breathe room air at atmospheric pressure. The action of the bellows resulted in intermittent expansion and contraction of the lungs (Figure 2). Alas, the son of the physician, James Carson, disputed the originality of this idea, claiming that his father had described similar equipment. This was, indeed, possible as James Carson (1779-1845) had arrived in Liverpool in 1799 following completion of his MD Thesis at Edinburgh University in which he defined the role of the lungs in the return of blood to the right side of the heart. Then in 1815, following a series of animal experiments, he had confirmed that the elastic recoil of the lungs was responsible for the return of venous blood to the heart. While, there is no record that he had designed a mechanical ventilator his son’s assertions cannot be ignored.

Higginson did, however, indisputably develop a respirometer, a simple gauge,
for measuring the vital capacity of the lungs, thereby, demonstrating his own understanding of respiratory function.

Later, Higginson became involved in the “Ether Scene”. Sulphuric ether had been synthesised in Liverpool in 1761 by the Chemist and Surgeon, Matthew Turner, who published *An Account of the Extraordinary Medicinal Fluid called Aether* and popularised dispensing of ether.6 The American dentist, Morton, was however the first to demonstrate its use in anaesthesia for the extraction of a molar tooth in Boston, Massachusetts on the 12th October 1846. News of this event almost certainly arrived in Liverpool on the 16th December, 1846 when the RMS Acadia docked in Liverpool bearing a letter from Dr Jacob Bigelow of Boston to Dr Boott of Gower Street, London, recounting Morton’s experience. Dr Fraser, the ship’s doctor, also knew of operations performed under ether in Boston. Immediately after disembarkation Dr Fraser set off to visit his mother in Dumfries, where he obviously imparted the information to his friends, Drs McLauchlan and Scott – whom he persuaded to use ether for one of their patients requiring surgery on December 19th. This was the same day on which Dr Boott arranged for Mr James Robinson to anaesthetise his niece with ether for a dental extraction, an event followed rapidly by its use for the amputation of a limb by Robert Liston at University College Hospital, London on the 21st December.7

Liverpool did not miss out. On the 28th December 1846 Felix Yaniewicz, a local dentist, Honorary Secretary of the Liverpool Literary and Philosophical Society, recorded in the Minutes of the Society that Frank Asher had performed a ‘surgical operation on a human subject during insensibility to pain caused by the inhalation of sulphuric ether’. Then, on the 11th January 1847, Yaniewicz demonstrated the use of ether for dental extraction to a group of ‘medical men’ including Higginson, whom he had invited to his dental practice. Unfortunately, no description of the apparatus used has been found.8 Shortly after this demonstration Higginson created his own equipment, which incorporated an ear trumpet as the mouthpiece attached to a lined leather bladder to contain the ether.

On the 29th January 1847, the *Liverpool Mercury*, the city’s daily newspaper, reported that both Higginson and Yaniewicz had used ether during a public demonstration at the Eye and Ear Hospital on the 22nd January 1847 when the surgeon, Hugh Neill, performed a ‘series of important and interesting eye operations with some of the patients in a state of unconsciousness to pain produced by the inhalation of ether’. The first patient was rendered pain free but not unconscious by Higginson who went on to administer ether to other patients with varying success before Yaniewicz, unsuccessfully gave ether to a ‘very
strong, 37 year old man’. Alas, it did not appear to “take proper effect upon him” causing him to feel pain. ‘So the demonstration ended’.  

**Robert J Minnitt**

Eighty six years later (1933) Robert J Minnitt (1889-1974), a local General Practitioner with a significant anaesthetic practice, made a major contribution to the evolving world of clinical anaesthesia with his work on the relief of pain in labour and the development of the ‘gas and air’ machine. Devised by Dr Minnitt with the assistance of Charles King, this was an adaptation of the McKesson oxygen therapy apparatus with a reduced pressure valve to allow nitrous oxide to be delivered at a lower pressure to a small rubber bag enclosed in a metal drum. An automatic valve shut off the flow of nitrous oxide when the patient was not breathing. This delivered a predetermined and safe mixture of nitrous oxygen and oxygen for the self-administration of analgesia by women in labour! There were two formats. One, a stand alone model, was for use in hospital and the other, for domiciliary use, was a slightly smaller, compact portable version enclosed in a carrying case (Figure 3).  

![Fig. 3 Minnitt gas-air analgesia apparatus: portable model of 1933 (Source: Department of Anaesthesia, Liverpool University)](image)
John Blease

John Blease (1906-1985) a remarkable man, erstwhile butcher’s boy, lorry driver, market-gardener, mechanical engineer, motor-bicycle enthusiast, inventor, dentist and sometime *anaesthetist*, deserves recognition as one of the great pioneers of modern anaesthetic practice.

Following a brief chat across the garden wall with his neighbour, Dr Roberts, a local GP who had a large practice in dental anaesthesia, Blease developed the Roberts dental anaesthetic machine (Figure 4). Manually controlled concentrations of both oxygen and nitrous oxide were bubbled through water for inhalation through a small nasal mask.

![Fig. 4 Roberts dental anaesthetic machine, c. 1935 (Source: the late John Blease)](image-url)
To become conversant with the requirements of safe practice in dental anaesthesia, Blease frequently accompanied Roberts and another colleague, John Halton, to dental surgeries. Consequently, following the premature death of Dr Roberts, Blease inherited a substantial dental anaesthetic practice which he conducted safely and with acclaim.

Following his introduction to anaesthesia in hospital practice by John Halton he was inspired to develop the fully portable Alfo-Blease anaesthetic machine (Figure 5). This incorporated several ingenious, unique features such as 3-inch rotameters with a simple bypass arrangement by which oxygen delivery could be augmented whenever necessary. Small one-way rubber valves were attached at the end of corrugated tubing to direct the flow of gases around the circle thus creating a minimal dead-space. A small carbon dioxide absorber was attached to remove the exhaust gases. When not in use the machine was stored in a compact box. The oxygen and nitrous oxide cylinders were small and detachable and the stand to which they were attached during use was collapsible.

![Fig. 5 Alfo-Blease anaesthetic machine (improved model, c.1948)](Source: the late John Blease)
Frequently present at thoracic surgical sessions with John Halton, Blease was able to observe the mechanics of pulmonary function and the accompanying clinical and physiological changes during one lung anaesthesia, a pre-requisite of thoracic surgery. These observations led to the development of a mechanical ventilator, a large cumbersome machine which became known as the Blease Pulmoflator. He produced numerous versions. The original prototype operated on a ‘bag in bottle’ principle with the driving air delivered by an electrically driven rotary vacuum pump. Adjustable spring loaded valves controlled the pressure so that the requisite respiratory pattern, rate and tidal volume was delivered at a safe, predetermined, pressure.

Despite having no medical qualification, Blease’s skills as an anaesthetist had become so widely acknowledged that he was recruited for emergency cover at Birkenhead General Hospital during the long night blitzes of World War II while trained anaesthetists were dealing with the seriously wounded. His identity badge declaring him to be an “Emergency Anaesthetist” remained one of his proudest possessions. Another was a letter, which he had received from the pioneer thoracic surgeon, Hugh Morriston-Davies, imploring him to anaesthetise for an extremely difficult thoracic surgical procedure during John Halton’s absence. The procedure was uneventful and the patient recovered fully (personal communication, John Blease, 1984).

As the advent of curare-induced respiratory paralysis increased the demand for mechanical ventilators Blease moved to London where he developed what was to become a very successful Anaesthetic Equipment Manufacturing Company. There, he perfected the Pulmoflator by replacing the ‘bag in bottle’ with a concertina bellows enclosed in a perspex box. The final Pulmoflators became widely used in cardio-pulmonary surgical practice.

**Joseph Esplen**

Joseph Esplen, a mechanical engineer who subsequently studied medicine, became a consultant anaesthetist to both the original Fazackerly Hospital for Infectious Diseases and Aintree Tuberculosis Hospital, which were sited in close proximity. Here he designed two mechanical ventilators, each for a specific purpose reflected in their design and registered names.

The Fazackerley ventilator was designed for use in the respiratory support of tetanus cases in whom curare-induced paralysis became routine treatment and subsequently, for victims of poliomyelitis. This ventilator was a simple ‘bag in bottle’ device which was easily adjusted to maintain adequate respiration in a paralysed patient. The Aintree ventilator designed for use during one lung
ventilation for pulmonary surgery was, in principle, not dissimilar to but, considerably more compact than the ultimate Pulmoflator designed by John Blease. The concertina bellows enclosed in a Perspex box was fitted as an integral feature of a Boyle’s anaesthetic machine.

Gordon Jackson Rees

Gordon Jackson Rees (1918-2001) was to become a pioneer of paediatric anaesthesia of international acclaim. In 1948, soon after he had joined the Department of Anaesthesia as a demonstrator, Cecil Gray suggested that, perhaps, Jackson might like to answer the plea from the paediatric surgeon, Isabella Forshaw, to develop anaesthesia for paediatric and, in particular, neonatal surgery. He rapidly established that the technique of intravenous induction, muscle relaxation and hyperventilation with nitrous oxide in oxygen which Gray and Halton had developed for adults could be readily and safely adapted for even the tiniest baby. Continuous respiratory support was essential. Consequently, he modified the Ayre’s T-piece by attaching a specially designed small double ended bag as a reservoir for the gas mixture. The bag was then gently squeezed manually to maintain ventilation (Figure 6). To create an expiratory valve by compression of the distal end of the bag and to maintain a regular pattern of ventilation was a feat of manual dexterity.

In the late 1950s under Dr Rees’s supervision, two enterprising, young registrars, Drs Nisbet and Wilson initiated Paediatric Intensive Care by adapting the technique of intra-operative manual ventilation for the respiratory support of critically ill babies in both the Neonatal Surgical Unit and on Medical Wards. They recruited and trained nurses and medical students to a high level of proficiency to participate in a 24 hour rota to instigate carefully controlled manual ventilation, using the Jackson Rees T-piece system whenever their tidal volume became inadequate. They demonstrated that, provided the procedure was performed with care, a previously normal lung was unlikely to be injured. It was essential that the bag was not allowed to fill completely and the inflation pressure was exerted by the thumb. The provision of fresh gas flow of 1.5–2.0 x the minute volume prevented re-breathing. They confirmed Dr Rees’s belief that prolonged positive pressure ventilation of infants was well tolerated. Further astute observation by Dr Rees confirmed that positive end-expiratory pressure was not only well tolerated but, positively beneficial for sick children with abnormal lungs.11

Dr Rees and his Theatre Technician, Ray Morgan then designed an endotracheal tube (Figure 7) which could be carefully secured and kept in situ when prolonged Intermittent Positive Pressure Ventilation was required. To form the
Fig. 6  Jackson Rees modification of Ayre’s T-piece
(Photograph from A Florence)

Fig. 7  Jackson Rees paediatric endotracheal tube
(Drawing by A Florence)
tube two pieces of polyvinyl tubing were glued together at right angles. A hole was cut in the area of contact with the trachea to prevent build up of pressure. To make it secure the top of the tube and connections were laid on a gauze pad and then strapped in place by a contraption created from broad elastoplast which encircled the child’s forehead. This endotracheal tube was the last of a series of ingenious prototypes which, alas, were lost to posterity.

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THE HISTORICAL BASIS OF PAIN ASSESSMENT

Dr S Rastogi
Specialist Registrar in Anaesthesia and Pain Medicine, Manchester

“Divinum Sedare Dolorem”¹

The motto of the Royal College of Anaesthetists is translated from the Latin as “it is divine to alleviate pain”. Our remit as anaesthetists is to treat pain and in order to do so it is necessary to understand and therefore measure it. In this paper I intend to outline how pain has been measured, how assessment has developed and why it has proved so difficult and problematic.

History of Pain Concepts

For centuries pain has been a difficult concept to understand and measure. Concrete and consistent definitions have proved elusive. Pain is a complex phenomenon, hard to express in words; a personal experience that by its very nature is subjective and not readily amenable to objective quantification. The problem arises from various dichotomies and paradoxes that exist and conflict when trying to understand pain. Is it the domain of the mind or the body? Does it exist within the realm of philosophy or science, physiology or psychology? Does it depend on people’s culture or background? These questions have baffled thinkers over time and in reality it incorporates any and all these things. In order to measure pain effectively it needs to be understood what it is that we are measuring, and therein lies the problem.

Pain concepts range from as early as primitive man, and can be traced to notions such as belief in Gods, magical fluids, sorcery and witchcraft. The Chinese ascribed pain to a flow of chi (energy), and an imbalance in yin and yang. It was Ancient Greece that first postulated an emotional response as part of pain perception. Ancient Rome introduced the idea of nerves being a natural conduit for pain to be transmitted, with the brain interpreting pain. René Descartes later came up with a dualistic vision of mind and brain as separate entities registering and experiencing pain.²

The 18th century saw the advancement of clinical medicine with a focus on physiology in the following century. Sherrington in 1900 described pain as both sensory and affective, and it was in the early 20th century that the first pain measurement tools started to appear.³
The gate control theory of pain was first proposed in 1965 by Melzack and Wall. Pain was recognised as being psychophysiological, with a distinction being made between acute and chronic pain. This formed the basis for multidimensional pain assessment tools that were to follow.

Today’s modern definitions of pain include a deliberately vague definition firstly, and secondly, one which includes sensory and emotional components according to the patient’s own descriptive words. These are far more subjective than being based on objective, scientific behavioural descriptors:

1. “Pain is what the patient says it is” (McCaffery M 1968)⁵
2. “Pain is an unpleasant physical and emotional sensation associated with actual or potential tissue damage” (IASP 1979)⁶

**Development of Pain Assessment Tools**

During the 19th century pain assessment was elicited via the patient history and clinical observation. In the 1920s single dimension scales appeared, some of which were based on psychometric testing. These were quantitative assessments which ironically were borrowed from psychology at a time when psychology and pain were thought of as being mutually exclusive. The 1930s and 40s saw the introduction of verbal rating scales which were adapted from Likert scales, which I shall expand upon below. The McGill pain questionnaire was introduced by Melzack and Wall in 1975.⁴ This multi-dimensional tool took into account the divergence between acute and chronic pain. This millennium has seen the extrapolation of human pain scales to veterinary practice.

**Visual Analogue Scale**

A rudimentary version of the Visual Analogue Scale (VAS) was first introduced in 1923 by Freyd as the Graphic Rating Scale.⁷ It has a reliance on subjective evaluation of pain as opposed to behavioural or physical parameters of pain. It is a continuous linear scale whereby respondents specify their pain level between two extremes. This unidimensional scale has a significant variability between users and is more useful in assessing pain relief than pain *per se*.

**Rensis Likert and Likert Scales**

Rensis Likert (1903-1981) was an American social psychologist and economist. He was an important pioneer of attitude scales and the creator of the Likert
scale. He wrote his seminal work “A technique for the measurement of attitudes” in 1932. It included an attitude scale on a 5 or 7 point scale, with responses ranging from strongly agree to strongly disagree. The original work was based on white American attitudes to black Americans, as well as American attitudes to imperialism and religion. These scales were later borrowed and used in pain scales using discrete data. It formed the basis of various verbal and numerical pain rating scales that were to come in the next decade.

He also went on to publish important theories related to business management and successful human organisations. Below is a quotation typifying his later work, which an organisation such as the NHS would do well to adhere to:

“The greater the loyalty of a group toward the group, the greater is the motivation among the members to achieve the goals of the group, and the greater the probability that the group will achieve its goals” (Likert 1967).

Verbal and Numerical Rating Scales

In the light of Likert scales, a verbal rating scale appeared in 1948, published by Keele in the Lancet. This was followed by numerical rating scales, whereby a quantitative assessment device would use a pre-selected observer pain lexicon. This is shown below.

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McGill Pain Questionnaire

This landmark multidimensional tool understood the distinction between acute and chronic pain, by incorporating sensory, afferent and evaluative aspects to pain assessment. This keystone evaluation instrument paved the way for
psychosocial assessments and pain diaries allowing sufferers to incorporate their own language to communicate their pain. This pain index was far more thorough, reflecting increasing knowledge and distinctions within the spectrum of pain.

*Children’s Pain Scales*

Formal pain assessment in children came later. Children’s pain was thought of as being more difficult to assess. Neonatal pain was ignored in the early 20th century as it was erroneously thought that neonates did not feel pain due to immature nervous systems. However, there now exist neonatal pain inventories based on behavioural and physiological parameters. Other examples of pain scales include Wong-Baker’s smiling faces and poker chip tools which appeared in the 1980s.

*Animal Pain Scales*

Studies on animals in the 19th and 20th centuries have shaped and developed our understanding of human pain. In the last 20 years veterinary pain tools have appeared via anthropomorphic projections. An example of this is the Glasgow Composite Pain scale for dogs which comprises behavioural information, quality of life and function. There are now specific studies in pain in animals for animals. The research in animals that furthered our understanding of human pain is now being used for the benefit of those animals that provided it.

*Indirect Measures of Pain*

I have focussed on attempts to measure pain directly but this was not the only approach in which researchers attempted to measure pain. With the difficulty encountered by trying to measure pain directly via interviewing the patient, during the 20th century there was a range of attempts to measure pain indirectly. The aim was to remove patient and doctor subjectivity and replace it with an objective pain measurement. These all proved largely unsuccessful and inaccurate.

In 1953, the ability to squeeze a bag manually was related to the degree of pain. In other words, the amount of pain was proportional to the amount that the bag was squeezed by the patient. This clearly was prone to huge inaccuracies and inter-patient variability.

Bradykinin, a known nociceptive substance has been infused into peritoneal cavities to stimulate pain. In 1968 this was done experimentally in patients and
Bradykinin, a known nociceptive substance has been infused into peritoneal cavities to stimulate pain. In 1968 this was done experimentally in patients and the amount of bradykinin infused was proportional to the pain experienced. Another biochemical method showed a drop in serum beta-lipoproteins and cholesterol with pain.

Vital capacity was found to increase after morphine in patients with pain after upper-abdominal surgery. The less pain the patient suffered the greater the vital capacity performed by the patient. This could be taken as an indirect measure of pain and relief.15

None of these methods could be classified as practical nor entirely useful, however they are interesting and provide insight into novel ways in which the problem of measuring pain has been tackled in the past.

**Conclusions**

Our greater understanding of the physiology and psychological nature of pain has ultimately enhanced our ability to measure pain. The dichotomies of pain mentioned at the beginning, rather than contradictions, encompass all facets of pain. It is the fact that pain encompasses all of these things that makes it such a complex entity and therefore so difficult to assess and measure. This is reflected in the pain inventories now available and the broad pain definitions that abound today.

Pain is like any subjective phenomenon, and trying to measure outward reflections or involuntary actions and emotions is difficult. Even by marrying physiology, psychology and behaviour, blending it all together it still remains enigmatic due to such vast person to person variation. This is also apparent in the problems encountered in research into pain medicine.

These various elements of pain such as psychology, emotion and physiology have been known about since antiquity but only regarded as equally important since the 20th century, so only recently measured and incorporated into modern multi-modal pain assessment tools. There does not yet exist a perfect pain measurement device but our greater understanding has made measuring the immeasurable all the more possible.

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MULTIPLE MURDERS? USING CURARE?

Dr Ann Ferguson
Retired Consultant Anaesthetist, Broadstairs

This is a horrifying story. It took place at Riverdell hospital, Oradell, New Jersey in 1965-6. Dr Mario Jascalevich, an Argentinean, who had invented a surgical stapler that bears his name, was chief surgeon.¹ The other surgeons were Dr Briski and Dr Harris. Patients started to die unexpectedly.

The deaths

In December 1965 a man aged seventy three was admitted for repair of a ventral hernia. He was seen by the anaesthetist and premedicated, but was then seen by his surgeon, Dr Jascalevich who said he was not fit for surgery because of mild congestive cardiac failure, and he put up an intravenous infusion. A few minutes later the patient was dead. At autopsy he was found to have atheroma in his left coronary artery.²

In March 1966 a four year old girl was operated on by Dr Harris for an appendicectomy, and two days postoperatively she told the nurse she wanted to go home, but a few minutes later was found dead. The autopsy was inconclusive.³

In April a twenty six year old woman was operated on by Dr Harris for abdominal pain. She was seen the next day by Dr Jascalevich who put up more fluid, following which she complained of weakness and being unable to swallow. She died soon after. At autopsy, the pathologist, found a fatty liver, but stated “There is nothing in the microscopic findings which is clearly indicative of a cause of death”. He remarked that it was the second unusual death.⁴

There were then several other deaths of elderly and sick patients, but in August a man of fifty nine developed acute cyanosis five days after a partial gastrectomy by Dr Briski. The intern asked Dr Jascalevich, who was in the hospital at the time, to see him. He died and again at autopsy there was no obvious cause of death except that the bladder contained a lot of urine, to which he could have had a reaction.⁵

In September Dr Harris removed the gallbladder of a seventy year old woman, who had a respiratory arrest the following day, and died a few hours later.
There was no autopsy; death was attributed to coronary thrombosis and myocardial infarction.6

In October Dr Harris lost two more patients, and then a seventy four year old man suffered a respiratory arrest following a hernia repair, but survived. Another lady died two days after a repeat caesarian section. They expected to find a pulmonary embolus at autopsy, but none was found.7

After the autopsy on the last patient, Dr Harris drove home very unhappily. He was thinking about all the unexpected deaths there had been. He thought also of the man who had had a respiratory arrest, but not died. He could remember all the calls from the hospital

“Dr Harris, your patient is not doing well. Dr Jascalevich is attending your patient”.

The first investigation

Dr Harris phoned Dr Lans, an osteopath who worked at the hospital; he was also unhappy. Doctors Harris and Lans reviewed the cases together, and noted that there were several similarities:
- all patients had an intravenous line
- all deaths were sudden and wholly unexpected
- a large number had taken place at 8 a.m.
- respiratory arrests stood out
- Dr Jascalevich seemed to have been near all the patients.8 9

The initial investigation

Dr Harris met with the Board of Directors at the home of one of them; they were astounded by his presentation. There were several more meetings that week. The possibility that succinylcholine chloride had been used to kill the patients was considered, as an anesthesiologist, Dr Carl Coppolino had recently been convicted of using it to kill his wife.10 The directors decided to take no action for the present. Dr Harris was so unhappy with this that he decided to open Dr Jascalevich’s locker, and did so (on his own) that evening. He found it was in a mess, and contained boxes and half used vials and syringes of curare. He shut it and phoned Allan Lans. Dr Lans phoned the directors and Dr Frieman came and looked, and later all the directors came to see.11

Dr Lans recalled that Dr Jascalevich had told him that Harris had left a sponge in a patient, a story that was found to be untrue, and that he was worried about Dr Harris’ mortality rates and so had contacted a hospital where he had worked
previously, which was also untrue. Dr Lans believed that Dr Jascalevich was trying to discredit Dr Harris.\textsuperscript{12}

The directors all barged into the office of Guy Calissi, Bergen County prosecutor, who got a search warrant and emptied the locker of all its contents, including eighteen 10 ml vials of curare. The directors called a meeting at the home of one of them the following day to discuss this with Dr Jascalevich, and this meeting was monitored by a detective concealed in a cupboard (personal communication from daughter of the administrator).\textsuperscript{13} Jascalevich claimed to be using curare (manufactured by Lily, and which he had purchased in 1965)\textsuperscript{14} as an anaesthetic in his dog experiments at Seton Hall, where he was working on a posterior approach to liver biopsy. After he was told curare had been found in his locker, he rushes over to Seton Hall and did at least one dog experiment. Dog blood and dog hairs which were subsequently found to contaminate his locker, could have been due to this or, if he was telling the truth, to previous work he had done.

Calissi asked if curare was used at Riverdell and all the doctors said “no”, but when he asked the pharmacist to search for it, Burrows Wellcome curare was found in the pharmacy and in theatre, and half of the supply in Dr Jascalevich’s locker was from Burrows Wellcome. The order numbers on the boxes showed that the Burrows Wellcome curare in Jascalevich’s locker had been bought by the hospital pharmacy.\textsuperscript{15} This raised the possibility that someone was trying to frame Jascalevich, and so Calissi dropped the case, but remarked “Somebody is lying”.

Early the following year, 1967 Dr Jascalevich left Riverdell, and the mortality rate dropped.

\textbf{A journalist investigates}

Nothing further happened until late June 1975, when the New York Times editor handed Myron Farber, one of the reporters, a letter. He later wrote

\begin{quote}
I scanned the letter on the way back to my desk, where, filling my pipe, I read it again. A hospital was sited, but not identified. Doctors were referred to, but not by name…… But the charge animating the letter was clear and chilling: the chief surgeon of a hospital had, a decade earlier, murdered thirty to forty patients. Not simple malpractice, according to the letter; not some errors in judgment, not some unfortunate slips of the knife. But murder… Right away, I was curious to know the name of the hospital. The letter offered no clue,
\end{quote}
but it indicated that drugs or chemicals might have been involved in the deaths. I picked up the phone…."

The identity of the author of this letter has never been divulged. Farber did nothing about it for a few weeks, as he was busy with another case, but then in August the paper ran a story on the deaths at Ann Arbor caused by misuse of pancuronium, and Farber realized he had to start on this story soon. He contacted Joe Woodcock, the Bergen County Prosecutor, and asked to see the file. As Woodcock had seen the report from Ann Arbor, he had already found the file to ensure that no doctor had moved there from Riverdell.

Farber amassed a great deal of evidence, he spent several months asking questions of all the doctors, nurses, administrators, relatives of the deceased, staff at Seton Hall, and toxicologists etc. He obtained hospital notes and the original files. His papers filled an office. On January 7th and 8th 1976, he wrote two long articles on his findings in the New York Times.

The second investigation

In December 1975 Woodcock, knowing what Farber was finding, asked Dr Michael Baden, Deputy Medical Examiner for New York, to review the charts of the patients. Of the twenty five deaths, thirteen seemed more suspicious than the rest. Jascalevich had visited each patient shortly before he or she died. Baden said

“It is my professional opinion that the majority of the cases reviewed are not explainable on the basis of natural causes and are consistent with having been caused by a respiratory depressant”. As a result of this, Sybil Moses, Assistant Prosecutor for Bergen County filed an affidavit from Dr Baden and another from the prosecutor’s office reopening the investigation, as a result of the Ann Arbor cases and the questioning of a journalist.

Baden knew there was not enough evidence to force exhumation of any of these patients but five of the patient’s families agreed to it. These were re-autopsied by Dr Baden, extensive tissue samples were taken, and divided among toxicology laboratories. The bodies were reburied. Tissue samples were later passed to the defence Medical Examiner, Dr Henry Siegel.

Baden’s toxicologists found curare in several of the bodies exhumed, and so Jascalevich was arraigned for the murder of these patients.
The court case

Two years later it came to trial, the first in which a doctor was tried for intentionally killing patients who were also strangers. It lasted thirty five weeks, the second longest criminal trial in the country at that time. The Judge was William Arnold. He had difficulty remembering the lawyers’ names, and he had his eyes closed and appeared to be asleep several times. The prosecutor tried to have him disqualified, but he refused.

The Prosecutor was Sybil Moses aged 39 and this was her first murder case that had come to trial. She was and is highly thought of, and has since become the first woman Assignment Judge in Bergen County in 1997. She retired in July 2008. It is obvious from reading the account of the trial, that she was a woman working in what was still a man’s world, and that both the judge and the defence used this to their own ends.

Jascalevich’s lawyer was Raymond Brown, born in 1915 and called to the New Jersey Bar in 1949. He loved the courtroom, was quick witted and, if he could not argue, he would wear people down with objections. His claim was “I can go out there and whip the Hell out of every white lawyer they put against me. When I die, I hope they put on my tombstone that I was angry, nasty and competent”.

He started every cross examination by throwing his witness off balance, discredited the hospital notes, described the raid on Jascalevich’s locker as larcenous and made remarks about Sybil Moses that were sexist. Jascalevich behaved impeccably in court, saying good morning to the jury, thanking people for their testimony, and kissing some of the ladies. The trial was described by the Miami Herald as a “debating society gone berserk”.

Two anesthesiologists were called as expert witnesses. Dr Francis Foldes, who wrote extensively on the effects of curare, gave as his opinion that these deaths could be due to the administration of curare. Brown called him a quack. Dr Valentino Mazzia, who later became an expert in deaths in the operating theatre, and created the specialty of forensic anesthesiology, said the deaths were all due to natural causes.

The problem facing the toxicologists and the court were
- What happens to human tissue embalmed and interred for a decade?
- Assuming that curare had been administered,
  - would it have changed chemically or have been destroyed over a ten year period?
  - What analytical techniques could be employed to trace small amounts of it?
Could components of embalming fluid or bacteria in the earth react chemically forming substances giving a false positive reading in the analytical procedures used?  

Using radioimmunoassay, high pressure liquid chromatography, thin layer chromatography and ultraviolet spectrophotometry and mass spectrometry, curare was found by the prosecution team in all the bodies exhumed. The defence team found it only in the four year old child’s liver. This may not be so surprising, as the small child was probably given the same dose as any of the adults.

Dr Rieders for the defence mixed embalming fluid and curare, and showed that in vitro, the curare was destroyed. He said this meant that the curare could not have been in the liver for ten years, especially as they had failed to find any in the muscle. However, it could have been argued at the time, but was not, that as she had had an autopsy before being embalmed, the liver would have been disconnected from the circulatory system and therefore the embalming fluid would not have penetrated the liver.

Brown alleged that it had been put there mischievously by one of the prosecution team. Dr Baden could prove that this was impossible. Handling of all the bodies and organs had been witnessed by several people. Brown made allegations about corrupt practice, but the fact remained that unexplained curare was found by both prosecution and defence toxicologists in the little girl’s liver.

Brown changed tack. Myron Farber, the journalist was brought to court and his papers and sources, which he had had the good sense to hide, were demanded from him. A journalist’s sources are protected in the USA as in Britain, and he refused. He was sent to prison, and was told to pay a daily fine. The New York Times was also fined. Most of the later articles in the ‘NYT’ are more than the actual trial. It was called a Trial within a trial.

Verdict and aftermath

The jury got very fed up with the whole thing, and after thirty four weeks were eventually sent out to consider their verdict on Jascalevich, which after two hours they gave as Not Guilty.

After his acquittal, Jascalevich’s licence to practice was revoked and he was charged by the New Jersey Medical Licensing Board for seven other counts of malpractice, so he skipped the country, leaving his attorney, Raymond Brown,
unpaid.\textsuperscript{34} Jascalevich died in 1984. Riverdell changed its name, but never recovered from the scandal and closed.

Because of the \textit{not guilty} verdict, this horrific case does not appear in later articles on murder by healthcare professionals.

\textbf{Acknowledgement}

The author would like to acknowledge assistance received from Prof Roger Maltby.

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ETHER DRINKING IN IRELAND

Dr D Zuck
Past President HAS, London

Who first discovered diethyl ether is disputable, but it was certainly described as ‘sweet oil of vitriol’ in the works of Valerius Cordus, published in Strasbourg in 1561. He obtained it, in modern nomenclature, by reacting ethyl alcohol with sulphuric acid, so for a long time it was known as sulphuric ether.

Ether per os prior to 1846

Ether, when taken by mouth in small dilute quantities, was found to have several useful medicinal properties. It was sedative, antispasmodic, and thought to be a febrifuge and anthelmintic, so it was a component of a number of medicinal preparations. In the Universal Pharmacopoeia of 1839 it was a constituent of medicines such as Hoffman’s drops, and of antispasmodic or antihysterical preparations, an adult dose being six to ten drops in sugar¹; so it was not unknown for it to be taken by mouth before 1846. However its regular use in substantial volumes as a substitute for alcohol, starting some time in the early 1840s, was quite new.

Accounts of the drinking of ether as an intoxicant

Recent

The drinking of ether as an intoxicant is a subject that has been studied in the recent past by a sociologist ², and by those concerned with alcohol abuse, but with one exception it seems to have been overlooked by historians of anaesthesia ³, although the first people to draw attention to the phenomenon were medical practitioners.

Dr H Draper

First paper

The earliest account appears to be that published in the British Medical Journal in 1870, by Dr Harry Draper.⁴ He started by pointing out that while the very
occasional case of ether habituation had been reported, usually initiated by medicinal prescription, nothing prepares one ‘for the discovery that there is in the northern part of Ireland a number of people who, forsaking alcohol, supply its place with ether, people to whom ether is what absinthe is to a certain class of Frenchman, or gin and whiskey to their immediate neighbours.’ He had collected information from a number of physicians, druggists, clergymen, and ether manufacturers, and from different parts of the North of Ireland, and had concluded that the practice was confined to the counties of Londonderry, Antrim, and Tyrone (see Figure 1).

‘I am credibly informed that at the fair at Draperstown – which appears to be the paradise of ether drinkers – the prevalent smell is not, as at country fairs, of pigs, tobacco smoke, or unwashed human beings, but of ether.’ The usual dose was from two to four drachms, one fluid drachm being about 3.5 ml, repeated up to six times a day. He went on to consider the manufacture of ether, and its price, which we will come to later, and concluded with this very liberal thought: ‘It is impossible not to be struck with the forceful illustration of the fact that if men are deprived of any one form of nervous stimulant they will sooner or later replace it by another. And, in the words of Liebig, I would ask those who may be hastily disposed to look upon this practice of ether drinking as utterly vicious and harmful, first to enquire “whether it depend upon sensual and sinful inclinations merely, that every people of the globe has appropriated some such means of acting on the nervous life; from the shore of the Pacific, where the (S.A.) Indian retires from life for days, in order to enjoy the bliss of intoxication with coca; to the Arctic region, where the natives prepare an intoxicating beverage from a poisonous mushroom.”’

SECOND PAPER

Seven years later Dr Draper published a further report. To him, the most remarkable outcome of the first one had been ‘the almost total absence of any apparent interest in the matter’, though as he had pointed out, it involved not only a social factor of great gravity, but seriously affected the Revenue and the interests of the Fire Insurance Companies. He had collected more information from a very reliable observer resident in the area, which included a novel feature, the possibility of the ignition of the breath of the ether drinker, and he appealed for any well authenticated cases where the ether drinker has ‘took fire inside.’

He now dated the origin of the practice from about 1842, when the ‘wondrous new drink’ was greatly spoken about. It was not sold by publicans, but by petty grocers, who obtained it from local druggists, who, it was said, sold it at a large profit. Ether drinking was not without danger. Towards the end of 1875 a death was reported, the circumstances of which were described as follows:
Fig. 1 Northern Ireland: Draperstown, the centre of the ether drinking ‘epidemic’, which extended for a radius of some twenty miles, is about ten miles north of Cookstown

‘He dhrank a big Dhraft uv it, and he wint out é the house and did’nt crass the crib-stone t’ll he dhropped an never spoke.’
Q. ‘Had he been drinking much of it latterly?’
A. ‘Oh! aye, he was dictated (addicted) to the ayther, and jist went on t’ll it killed him.’

Another hazard was internal combustion.
‘I knew of a man that wuz always dhrinkin it, an wan day afther a dose uv it he wint to light his pipe, an the fire cot his breath, an he tuk fire inside, an only fur a man that was carryin’ a jug é wather wud some whisky to the kitchen, he’d a lost his life. He jist held him down at wanst as quick as he could, and poured down the wather down his throat.’
Q. ‘Well, did he recover?’
A. Oh! aye, he recovered, but the inside uv him wuz on fire, and only fur the wather he’d a burned away.’

The informant, himself a publican, condemned the ether as a dangerous drink, and boasted that he had never kept it in his shop.
Draper’s second paper brought supporting correspondence from Dr William Parke, who from 1867 to 1872 was medical officer to the dispensary and workhouse in County Tyrone. His notice was attracted to the matter by the distinct odour of ether in the village on fair and market days, and he found to his great surprise that sulphuric ether was the favourite beverage of the district. It was especially popular with old women, on account of its carminative qualities, and the immense quantities of wind belched from the stomach after its use was a process by no means agreeable to the bystander, although, he had no doubt, grateful to the person concerned. Many people had become habituated to drinking large quantities. He had no reason to doubt the claim of one young man to take as much as half a pint at night. But the use had declined in recent years, as a result of opposition from the Catholic clergy.

**Society for the Study and Cure of Inebriety – investigation of ether drinking**

During the late 1870s medical attention became focussed on the problems of addiction, mainly to alcohol, and in 1884, under the influence of Norman Kerr (1834-1899), Medical Officer of Health for Marylebone, the Society for the Study and Cure of Inebriety was founded. Kerr (see Figure 2) was elected President, and among its distinguished medical members were Spencer Wells, Benjamin Ward Richardson, and the Editor of the *British Medical Journal*, Ernest Hart (see Figure 3).

*D r E Hart*

Ernest Hart was educated at City of London School, qualified at St. George’s, and became an ophthalmologist on the staff of St Mary’s, and Dean of the Medical School. While still engaged in clinical practice he joined the editorial staff of *The Lancet*. In 1866 he was appointed Editor of the British Medical Journal, a post that he held until his death thirty two years later. He filled this post with great distinction, raising the status of the *BMJ* to that of a world class journal, and elevating the BMA with it. He was a very active reformer, and in 1871 he was elected Chairman of the BMA’s Parliamentary Bills Committee. Through this he was responsible for several important pieces of sanitary and social legislation, including the establishment of the Metropolitan Asylums Board, and the Infant Life Preservation Act.

In 1890 Ernest Hart delivered a lengthy and comprehensive lecture on the subject of Ether Drinking to the Society for the Study and Cure of Inebriety. This was, of course, published in the British Medical Journal. He had sent a
Fig. 2 Norman Kerr (1834 – 1899)

Fig. 3 Ernest Hart (1836 – 1898)
questionnaire to doctors and Catholic priests in the most affected areas, with a view to ascertaining the origins, prevalence, localities and effects of the practice, and the sources of supply. He accepted Draper’s starting date of about 1842, though opinions varied somewhat. Ether drinking was commonest in the southern parts of Londonderry, and was virtually unknown farther afield. It was a fairly localised activity. As regards origins, or cause, Hart identified three possibilities, each of which probably was contributory. Some of the detail below comes from other sources.

1. The first reason was the increase in the price of the Irishman’s normal beverage, which was not ale, but whiskey. In 1661, following the Cromwellian invasion, an excise duty was imposed on Irish spirit of 4d. a gallon. By 1785 it has increased gradually to 1s.2d. a gallon, and by the end of the Napoleonic Wars in 1815 it had reached the enormous sum of 6s.1½d. a gallon. The effect of this was a great increase in illicit distillation, the product being known as poteen. ‘Poteen-making,’ in the words of one social scientist, ‘provides a striking example of the proverbial reluctance of the Irish to accept the law’s definition of an offence.’ Great ingenuity was used to convey the precious liquid to the consumer, coffins, and metal flasks manufactured by itinerant tinsmiths in the shape of ample female breasts that were worn under the clothing, being only two. The result of this illicit activity was a serious fall in revenue, and pitched battles resulting in fatalities were frequent between the Revenue men and the locals. These came to a head in the 1830s, when a great augmentation of the number of Customs Officials and Police allowed a major crackdown. There were as many as 5000 prosecutions and confiscations of stills a year, and poteen became more expensive and difficult to obtain.

2. The second was the spread from Scotland of the use of ether as a therapeutic agent.

3. Thirdly, there was the activity of Father Theobald Mathew (Figure 4), a Capuchin friar from Cork, who in the late 1830s embarked on a temperance campaign of astonishing effectiveness.

**Influence of Father Mathew**

In April 1838 he founded the Cork Total Abstinence Society, and within five months 130,000 people had taken the pledge. He widened his activities, and by March 1840 he had administered the pledge to more than half a million. Eventually it was claimed that half the eight million population of Ireland had sworn to abstain from alcohol.
He travelled through Scotland with equal success, and down through the industrial towns of Lancashire, Yorkshire, and finally to London. There is a remarkable account in the *Illustrated London News* of a two-day outdoor meeting in East London in August 1843. This was on a large area of ground on Commercial Road recently consecrated by the Roman Catholic Bishop of London, where he is said to have recruited tens of thousands.

The site of this great meeting, which was enlivened by the collapse of the platform, can still be identified. It was described as opposite the George Inn. This is now the George Tavern, Commercial Road. Opposite it is the Victorian
The Catholic Church of St. Mary and St. Michael, and the adjacent rebuilt school, which stand on the consecrated ground. At the end of the 1840s Father Mathew spent some time in the United States, and signed up half a million people. His life and efforts are commemorated by a statue and a memorial hall in Dublin, and a statue, a memorial hall, and a church, in Cork.

In Ireland the effects of Father Mathew’s campaign were wide-reaching. ‘A taste for music replaced the taste for tippling; the spirit revenue fell from £1,500,000 in 1839 to £800,000 in 1844; 20,000 bankrupt publicans left the country; and the police idled for want of crime.’ What was to be done?

**Investigation by Sociologists**

Sociologists do not agree that there was any single cause for the rise in ether drinking in the early 1840s, but accept that it is plausible that the activities of Father Mathew were at least in part responsible. The hardened drinker, the man who sincerely but rashly had taken the pledge, being deprived of his whiskey, was driven to consult his doctor; and any knowledgeable doctor, so the story goes, would have pointed out to the desperate supplicant that he could in all conscience, without breaking his pledge, find consolation in ether, since ether, chemically, is not an alcohol.

Well, it’s a good story, but the truth is that organic chemistry was in turmoil during the 1830s and ‘40s, and of the conflicting formulae for alcohol and ether proposed by three leading chemists, Dumas, Berzelius and Liebig, only Berzelius got the proportions right. The chemistry of alcohol and ether and their structural formulae were not sorted out until the work of A.W. Williamson, who followed Thomas Graham in the chair of chemistry at University College, London. In his celebrated study in 1850, Williamson, reacting ethyl iodide and potassium ethylate, and using the nomenclature of the time, showed that both ethyl alcohol and diethyl ether belonged to what was then called the water type.

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  Alcohol is therefore water in which half the hydrogen is replaced by carburetted hydrogen, and ether is water in which both atoms of hydrogen are replaced by carburetted hydrogen: thus

  \[ \text{H}_2\text{O} \quad \text{C}_2\text{H}_5\text{O} \quad \text{C}_2\text{H}_5\text{O} \].
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Here, first one, then both hydrogen atoms have been replaced. There was also the ammonia type, where three hydrogen atoms are linked to one nitrogen atom,
and replacement of one, two, or all three hydrogens is possible, resulting in primary, secondary, and tertiary amines\textsuperscript{10}; but even after Williamson’s demonstration, it is not likely that his results would have become known immediately to doctors in small-town general practices in Ireland.

**Further causes of ether drinking**

*Mr Kelly*

There is an alternative attribution, to a Mr. Kelly, an unqualified medical practitioner in Draperstown, who kept a drug store, and drank more whiskey than was good for him. Having been persuaded to give it up, he switched to ether, and taught his customers to use it also. Hart said that this story ‘seemed to bear the stamp of intrinsic probability, and might commend itself to historical critics in combining the two theories mentioned above,’ of abstinence, and medical recommendation. Be all that as it may, ether was sufficiently different from spirits for the substitution to be taken up with a good conscience, and the usage spread, perhaps slowly at first, then more rapidly, by word of mouth, until the practice became rife.

**Fall in the price of ether**

An additional factor was the availability from 1856 of a much cheaper brand of ether, due to the introduction for industrial purposes of duty-free alcohol deliberately made unfit for consumption by the addition of naphtha and a dye, commonly known as methylated spirits. It was soon found that ether manufactured from methylated spirits was clinically indistinguishable from that produced from pure, dutiable, rectified alcohol, and it was a third the price.

Very little ether was manufactured in Ireland. The larger part was imported, mostly from England, some from Scotland, and it was big business. Hart interviewed a number of manufacturers, all of whom wished to be anonymous, and found that one English firm supplied 75 gallons of ether annually to one druggist in Belfast alone, and another sent 50 ten gallon drums a year to retailers in the North of Ireland. A firm in Gateshead sent large quantities also, and a Dublin manufacturer supplied 4000 gallons (containing 2,400,00 ‘doses’) annually to Belfast wholesalers. All agreed that the volume had fallen off in recent years, and at the time of Hart’s enquiry, 1899, it was about a tenth less than in 1876. The great increase in sales from the 1860s was universally attributed to the availability of duty-free methylated spirits. The retail price of ether, which was often diluted, was about two drachms for a penny, so it was
possible to get drunk rapidly for very few pence. The profit was great, one hundred per cent or more.

**Features of ether drinking**

Ether drinking had its own ritual. First a little cold water was swallowed to cool the mouth and throat. Then the draught of ether was tossed down, followed by more cold water to stop the vapour from rising. This became quite a macho performance, the habitué scorning the water. The quantity drunk increased with habituation, two drachms (7ml) being the common dose, repeated up to five or six times a day.

The effects were similar to those of alcohol, but came on much more quickly. ‘The stages of excitement, mental confusion, loss of muscular control and loss of consciousness follow each other so quickly that they cannot be clearly separated from each other; and the effect wears off almost as speedily as it comes on.’ It is said that the police did not bother to arrest those drunk on ether, because they would invariably be sober by the time they reached the police station.

Little was known about long-term effects. It was said that there were no gross lesions of the brain or liver such as accompanied alcohol addiction. Ether was described as ‘a thief that steals away the brains without leaving any visible mark of his presence.’ However some observers described wasting, skin discoloration, chronic gastritis, and a profound degeneration of the moral character.

Hart concluded that ‘The sale of ether as an intoxicant must be stamped out by the law.’ But this must be done without interfering with its legitimate use as a surgical anaesthetic or for various manufacturing purposes. It was suggested that its sale should be confined to qualified pharmaceutical chemists, or licenced retailers.

**Medical and public interest**

*Dr E Hart*

Hart’s paper, which appeared on 18th October 1890, aroused much public interest. There was correspondence and editorials in the *BMJ* and *The Times*, and questions were asked in the House of Commons. The upshot was a statement in the House on 1st December, announcing that on the advice of the Royal College of Physicians of Ireland, an order of the Lord Lieutenant in Council had been passed scheduling ether as a poison in the Province. In future
it could be sold in Ireland only by qualified chemists, and as a poison. It was hoped that this measure would effectually stop the supply of ether to the public as an intoxicant.  

Dr N Kerr

Shortly after Hart’s lecture, an address was delivered by Norman Kerr to the Section of Jurisprudence and Neurology at the meeting of the American Medical Association in Washington in 1891. Kerr had worked as a journalist on the Glasgow Mail before entering medical school. He must have been a man of some quality, because he is recorded as having organized the first total abstinence society among Glasgow students. He qualified in 1861. Additional to being President of the Inebriety Society he was Chairman of the BMA’s Inebriates Legislation Committee.

He attributed the outbreak of ether drinking mainly to Father Mathew, ‘a simple-minded Roman Catholic priest’ who administered the pledge to more than 5,000,000 people in Ireland, and to large numbers in England, Scotland, and America. In 1840, according to its Chief Secretary, ‘the duties of the military and police in Ireland are now almost entirely confined to keeping the ground clear for the activities of Father Mathew.’ He was quite specific about the precise origin. ‘Between 1842 and 1845 a local medical practitioner, in response to a request from a few newly-pledged abstaining converts for something the taking of which would not violate their vow, gave them a drachm of ether in water. So far as I can ascertain, this was the fons et origo mali. A desire for more frequent doses grew up on the other drinkers, and the practice spread in and around Draperstown until there was a shop for the sale of ether, in one town, to every twenty-three of the population.’

He described the compounding influence of cheap methylated ether, and the stamping out of illicit stills, and contrasted the Irish with other ether drinkers. He had seen ether drinkers in England, generally persons of education and refinement, nearly all females, who had started as alcoholic inebriates, the only males having been members of the medical profession. ‘In Ireland, women assert the equality of the sexes by taking their fair share of the forms of intemperance. The ether tipplers are mainly small farmers, agricultural labourers, and workmen – but the learned professions too have their representatives.’ There were sturdy Irish lads, and beautiful Irish lasses, and schoolmasters have detected ether on the breaths of children from 10 to 14, or even younger.
Regarding quantities, ‘In Ireland, many persons keep themselves intoxicated pretty well during the day for the sum of sixpence … What a paradise for drunkards!’ The universal method was drinking, as opposed to England, where the ether was usually inhaled. The effect was very similar to that of alcohol, but ‘in rapidity of manifestation, alcohol is nowhere.’ With alcohol the shortest cycle from sobriety to sobriety that he had seen was six hours; with ether, two hours. It was too recent to say what the long-term effects might be. ‘What are the forty years of ether consumption by a hundred thousand persons, to the thousands of years of alcohol consumptions by at least as many millions of human beings?’

**Scheduling of ether as a poison**

What was the remedy? Adulteration of pure ether by methylated spirits was not the answer. He had known patients who had drunk methylated spirits ‘(some from jars with anatomical preparations … )’ But scheduling as a poison in Ireland recently had reduced it by 75%.

In fact the longer term effect of scheduling was patchy. Ether drinking appears to have died out in some areas, but Caldwell, writing in 1910, still found evidence of the habit. A woman charged with ill-treating her children was reported by her husband to spend 2s.6p. on ether every week for her own consumption. The magistrates said that this was the second consecutive petty session at which such a sad case had come before them. Equally disturbing was the growing prevalence of the habit of drinking methylated spirits.

**Conclusion**

In conclusion, in view of the current popularity of binge drinking, where the object is to get drunk as quickly as possible, and of the rapid effect of ether taken by mouth, one wonders whether the introduction of ether saloons or bars might not serve a valuable social purpose, both by getting lager louts off the streets, and providing employment for retired anaesthetists.

**References**

   *Medical Press and Circular* 1870; 9: 117-118
10. *ibid.*; 209
Crucial to the trial of Dr Jascalevich was the analytical evidence used to identify the presence of curare in the tissues of the five exhumed patients. The prosecution used a team of experts to conduct its analyses and also provided the defence team with similar samples to conduct its own “duplicate” analyses.

- The prosecution claimed to have found curare in four of the five patients
- The defence found curare in only one of the samples, that from Nancy Savino, an analysis with which the prosecution was in agreement.

The fact that one set of experts could find curare in three of the corpses, and another set of experts could not, would immediately put doubts in the jurors’ minds as to the credibility of the scientific evidence. When it came to the prosecution case they had to consider some “weak” techniques that today would be open to all sorts of challenges and at least one “strong” forensic technique that is currently the mainstay of many prosecutions. Typical of the former was thin layer chromatography (tlc). Here a solution extracted from the tissues is placed at the lower end of a glass plate coated with an absorbent powder, typically silica gel. When the bottom edge of the plate is placed in an appropriate solvent, the chemical components of the spot creep up the plate at different rates, thus achieving separation. If one of the components marches up the plate at the same rate as a sample of curare, then there is a measure of evidence that the two chemicals are identical. But matching one (often ill-defined) smudge against another is one thing. Saying that the two chemicals are the same is another, and probably a step too far: many thousands of substances may have the same “marching characteristics” as curare. One of the “strong” techniques advanced by the prosecution was that of mass spectrometry. The substance believed to be curare is bombarded by electron beams and is thus broken down into a multitude of fragments, each with its own “molecular weight”. This dispersal of molecular weights, together with the abundance of each fragment relative to the others constitutes the mass spectrum and is a fingerprint for the substance in question - not a perfect one, but a far stronger identification that the tlc method described above. Today, we would combine the mass spectroscopic technique with some form of column chromatography. The extract from the tissues would enter the column in the form of a single “slug” and the components would travel down the column (under the influence of a solvent or gas) at different rates, each eluting at its own, characteristic, retention time. The combination of retention time and a near-identical mass
spectrum has caused many of today’s criminals much grief. From the reports of the trial it seems that mass spectrometry was used without the benefit of allied chromatography, but no matter - it is a powerful stand-alone means of identification. The prosecution’s expert was Dr David Beggs of Hewlett Packard, at the time one of America’s leading companies for the marketing of mass spectrometers, and developing their applications. However Beggs appears not to have acquitted himself very well in the witness box. Under cross-examination he admitted that “mass spectroscopy is not an absolute test for curare, and just probably indicates that is probably there” - just the (doubtful) assertion that the defence would have been looking for.

Essentially in coming to its verdict, the jurors must have been persuaded that the scientific evidence, at least in the disputed cases, was unreliable and certainly not strong enough to convict the defendant.

What of the undisputed case – the identification of curare, by both the prosecution and the defence, in the exhumed remains of Nancy Savino? Here the defence would have two options open to it, apart from the one upon which the whole trial was based – that she had been murdered by an injection of curare administered by Mario Jascalevich some 10 years previously.

- That the tissue samples had been deliberately “spiked” with pure curare by the prosecution to enhance its case
- Or that, at some stage in the handing of the specimens some inadvertent contamination had occurred. Perhaps the glassware used for storage had, at some earlier time, been used to hold the curare used for comparison purposes.

Support from these suggestions was advanced by the defence. It was able to produce an expert who would allege that the curare he found “was highly pure and could not have been present in the ground for ten years. Furthermore, if curare was in the liver, it should have also been found in the child’s muscle tissue. That it was not detected in the latter was a tremendous inconsistency”. It was further suggested, by another expert witness, that curare could not survive in embalmed bodies for 10 years, especially because of the effects of bacteria and repeated fluctuations in temperature of the bodies”.

The jury was unconvinced by the prosecution’s assertions of Jascalevich’s guilt and the scientific evidence that it had used to underpin its case: “after just over two hours of deliberations, the jury returned a unanimous verdict of not guilty on all three remaining counts of murder. Two years and five months after the indictments against him had been returned, Dr Mario Jascalevich was free”.

BOOK REVIEW


Henry Beecher has, in spite of his obvious eminence, always been a shadowy figure to me and, I suspect, to many of my generation in comparison to others of his time so the invitation to review this monograph was one which I accepted readily. However, with the editor’s deadline looming I had to turn my thoughts into text and found it an extremely difficult task, with several reasons vying for pre-eminence. First, this book is written primarily in ‘American’ English, which I can normally cope with, but I found it more difficult than usual. Perhaps this is due to a wide range of writing styles with, I suspect, a decision by the editors not to impose any consistency, even in regard to grammar (that, or there was a problem with the proof reading). Second, the structure of the volume is rather unusual, starting with reprints of four of Beecher’s most important papers, each accompanied by a commentary on the significance of each, and then progressing to contributions which are nominally biographical to start with, and then are in the form of personal reminiscence. Third, there is the difficulty of trying to understand, from this unusual structure, the man, his work, and his achievements, even after reading the book three times!.. The text is very definitely not sequential, and attempts to tie components together are not helped by an index which is kindly described a ‘minimalist’.

The Beecher story is a classical example of the poor American boy who, by his own efforts alone, rose to great eminence, and certainly without financial or intellectual support from his family. After a basic degree in chemistry, he entered the Harvard Medical School where, even as an undergraduate, he was performing key research on the respiratory complications of anaesthesia/surgery under the supervision of surgical academic. After qualification he started surgical training, and then went to Copenhagen for a year before returning to Boston and being appointed to a Chair in Anaesthesia not long after. Thereafter he went on to explore, through some highly original research programmes, a number of very different aspects of our specialty, much of his work having impact across the broader aspects of medicine. However, there is no more than passing reference to the time in Copenhagen, although the rest of his life is described in some detail, and no explanation for the “knight’s move” in career from one specialty to the other, nor any indication whether or not the two were related. There are hints that the man was “too great” for such considerations to
matter, but this time must have been one of great relevance, yet I could find no attempt to give the reader insight.

To be fair to the editors, they state at the outset that this is not an attempt at a definitive biography, but a volume published to mark the establishment of the Henry K Beecher Professorship in Anaesthesia at the Harvard Medical School. One has to wonder why, over 30 years after his death, there has not been a definitive biography of someone who merited such a posthumous honour. Does Copenhagen hold the answer?

J A W Wildsmith

CORRIGENDA

HAS York Proceedings (Vol. 39)
A TRIBUTE TO PROFESSOR THOMAS CECIL GRAY
by Dr Anne M Florence: page 11, final paragraph.
“Meanwhile Gray and Gregory had studied the effects of Intocostrin on the heart-lung preparation of a dog” should read:
“Meanwhile Gray and Gregory had studied the effects of powdered d-tubocurarine on the heart-lung preparation of a dog.”