

The  
Scottish Society  
Of the  
History of Medicine

(Founded April, 1948)

**REPORT OF  
PROCEEDINGS**

SESSION 2008-2009 and 2009-2010

# The Scottish Society of the History of Medicine

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## *Report of Proceedings*

### CONTENTS

Papers	Page
a) The Edinburgh Apothecaries <i>Peter Worling</i>	3
b) The History of Cholera <i>Hannah Billet</i>	12
c) The Evolution of Artificial Ventilation <i>Rebekah Skeldon</i>	15
d) Healing by Water in Scotland <i>David Hamilton</i>	19
e) Alexander Collie RN and his Medical World <i>Gwen Chessel</i>	20
f) From Fife to America; the Life and Times of an 18 <sup>th</sup> C. Surgeon <i>Angela Montford</i>	28
g) Suffrage Surgery and SWH: Elsie Inglis 1864-1917 <i>Iain Macintyre</i>	41
h) Anaesthesia and other Treatments of Shellshock in World War I <i>Alistair Mackenzie</i>	47
i) Adam Brown Kelly's Chair <i>Roy Miller</i>	48
i) Listerism: its reception in Glasgow, Aberdeen, Copenhagen and Dorpat <i>Hugh Pennington</i>	51

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# **The Scottish Society of the History of Medicine**

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## **REPORT OF PROCEEDINGS SESSION 2008-2009**

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### **THE SIXTIETH ANNUAL GENERAL MEETING**

The Sixtieth Annual General Meeting was held at the Edinburgh Academy on 1<sup>st</sup> November 2008. The President, Mr Roy Miller was in the chair. 43 members or guests were present. The Secretary, Dr Nigel Malcolm-Smith, presented his report and the Treasurer, Dr Morrice McCrae, presented the Treasurer's report, which was accepted.

### **THE ONE HUNDRED AND EIGHTY SECOND ORDINARY MEETING**

The One Hundred and Eighty Second Ordinary meeting of the Society was held at the Edinburgh Academy on 1<sup>st</sup> November 2008, directly following the Sixtieth Annual General Meeting. The first speaker, Dr Peter Worling, gave a paper on the Edinburgh Apothecaries. This was followed by two short papers by Dundee University Medical students who had undertaken history of medicine modules, Hannah Billet talked on the History of Cholera and Rebekah Skeldon talked on the History of Artificial Ventilation.

### **THE EDINBURGH APOTHECARIES**

#### **Introduction**

The Worshipful Society of Apothecaries was one of the most powerful trade Guilds. It received a Royal Charter from King James I in December 1617. During the 17<sup>th</sup> and 18<sup>th</sup> Centuries the Apothecaries consolidated their position, to the extent that the Royal College of Physicians, founded in 1518, resented their power and success. The dispute between these two bodies came to a head with the "Rose Case". In 1701-1704 a case was brought by the College of Physicians as a test case against an apothecary William Rose who had usurped the physician's function of giving advice and dispensing medicines. The judgement by the House of Lords was that the apothecaries were entitled to give advice and treatment. As a result the apothecaries developed their business from compounding medicines into the field of medical practice and became medical practitioners. Their role in compounding was taken over by the growing numbers of Chemists and Druggists established from the 18<sup>th</sup> century onwards. This paper is intended to answer the question "What happened in Scotland?" Why was there no Incorporation formed in Scotland and why did the apothecaries appear to have little power and influence?

### **Early development of medicine in Edinburgh**

During the Middle Ages surgery was carried out by both the surgeons and the barbers. The barbers were established in 1092 as a result of the monks being forbidden to wear beards. As a result some of the monks trained in shaving and in bleeding. By the 13<sup>th</sup> century there were two groups clearly recognised. The surgeons of the long robe, the barber—surgeons and the surgeons of the short robe, the lay barbers.

There was a considerable overlap between these two crafts but a Royal decree was published which forbade the lay barbers from practicing surgery unless they had been examined by the brothers of the long robe. This separation of the crafts was further strengthened in 1368 when the master surgeons formed a separate guild, and in 1462, when the barbers were granted a charter by Edward IV which restricted them to blood letting and the healing of wounds. In Edinburgh the surgeons and the barbers continued their close relationship and in 1505 they jointly petitioned the Town Council of Edinburgh to be enrolled as an Incorporated Craft of the Burgh.

In their petition the members undertook to be responsible for the proper education of the craft members.

*“Thatt no maner of persoun occupie nor use any poyntis of oure saidis craftis of Surregerie or barbour craft within this burgh bott gif he be first frieman and burges of the samyn and that he be worthy and expert in all poyntis belangand the saidis craftis diligentlie and avysitlie examinitt and admittit be the maisteris of the said craft for the honorabil serung of oure Soverane Lord his lieges and nychtbouris of this burgh. And als That everie man that is to be maid frieman and maister amangis ws be examit and previt in thir poyntis following THATT IS TO SAY That he knaw anotamea nature and complexion of every member In manis bodie. And in lykewayes he knaw all the vaynis of the samyn that the mak flewbothomea in dew tyme. And als that he knaw in quhilk member the signe hes domination for the tyme for every man aucht to knaw the nature and substance of every thing that he wirkis or ellis he is negligent”*

The “Seal of Cause” was granted on the 1<sup>st</sup> July 1505. This united the surgeons and the barbers as one of the Crafts of the Burgh. Incorporation was an important step, not just because it established a monopoly for the members of the craft, but because it also gave the members, by an Act of Parliament of 1469, the right to take part in the election of magistrates and consequently influence local Government. Previously this had been the prerogative of the Guilds who were all merchants and thus kept out the craftsmen. After the Barber Surgeons were incorporated, they petitioned the Town Council to allow more representatives of the crafts to join the Council, but this does not appear to have been successful.

### **Barber-Surgeons.**

The Incorporation was made up of the two crafts, barbers and surgeons. All barbers were eligible to become surgeons after they had passed an examination in anatomy. In 1588 through the passing of an act, a second class of barbers was formed, the “simple

barbers", who were only permitted to cut hair. This regulation remained in force until 1650 when it was repealed. During this period only eight were admitted as simple barbers. There was little interest in being admitted as a barber when the more lucrative craft of barber surgeon was open to them.

A great deal of time and effort was expended in protecting the rights of the barber surgeons. One subject in constant dispute was the area over which they could exercise jurisdiction. The Incorporation controlled the craft in the city of Edinburgh, but this did not extend to the adjoining areas of Leith, Portsburgh, (now the Grassmarket) or the Canongate. In 1636 the Canongate became part of the city. This brought the barbers of the Canongate under the control of the barber-surgeons. Up to this time they were free traders and they could not see any point in paying fees to a Society from which they did not derive a benefit.

In 1641 the Town Council tried to regulate the position by passing an act which stated

*"that in the matter of Chirurgie the inhabitants of the suburbs should be provided with skilful and honest men and not left to the arbitrament and imposter of women and ignorant."*

Little was done, the Baillies of the Canongate were summoned in front of the Lord Provost and Council in 1650 and told to support the Deacon of the Surgeons in his efforts to regularise the position. The barbers were brought before the Court in Edinburgh and told they could not carry out their trade without a license. This was thought to have solved the problem, as a number of barbers agreed to join the Incorporation and pay their fees.

This respite was only temporary. After Cromwell's forces occupied the City in 1651 a Canongate Barber named Priest, who was known to the English garrison, decided without authority to open a shop within the City walls to attend to the garrison. The freemen barbers complained to the Incorporation and asked that he be removed. The dispute dragged on, with Robert Lilburne the Commander of the English forces petitioning the Provost on Priest's behalf and it was not settled until the Duke of Albemarle, one of Cromwell's lieutenants, ruled that Priest should go back to the Canongate.

The craft had some difficulty in maintaining its numbers, which had not exceeded eleven since 1640. By 1647 the number had reduced to eight and to boost the numbers, apprentice barbers were admitted and these all subsequently became surgeons, although none of them had been apprenticed to a surgeon as they should have been. This was brought to an end by an Act of 1648 and subsequently no barber could be admitted as a Surgeon unless he had qualified in surgery.

### **Apothecaries**

Generally the relationship between the Apothecaries and the other branches of medicine did not cause any problems, despite the fact that the medical profession

guarded their monopolies with vigour. No doubt there were differences; in 1575 the Surgeons made a general complaint that the apothecaries

*“dallie wsit and exercisit yt sayd craft (surgery) they nather being friemen their of nor previligt thr to”*

There were probably other complaints but the apothecaries seem to have lived peacefully with the other crafts. One reason was that they were few in number, possibly no more than eight.

A more serious dispute arose in 1643 concerning the division of responsibility between the surgeons and the apothecaries. The Town Council convened a meeting of the two parties at which they agreed that “while the application of sear cloths to dead bodies, all manual applications about dead or living bodies and the curing of diseases such as tumours, wounds, ulcers, luxations, (dislocations) fractures and the curing of virolls should be restricted to the surgeons while the administration of medicines inwardly was the only liberty of the apothecary”. This agreement was made an Act of the Town Council.

### **Surgeon-Apothecaries**

The political situation now took a hand. In early 1644, as a result of the signing of the “Solemn League and Covenant” by the rump of the English Parliament and the Scottish Covenanters, a Scottish force of 26,000 men under the leadership of David Leslie, invaded England and joined with Oliver Cromwell to defeat the Royalist forces at Marston Moor.

Accompanying the Scottish army were two apothecaries James Borthwick and Thomas Kincaid. In return for the assistance that they had given to the surgeons during the campaign, they were both admitted as members of the Incorporation of Surgeons, although neither of them had undergone an apprenticeship as surgeons.

Borthwick and Kincaid were held in high esteem and, because of their influence, pharmacy began to be taught alongside surgery. This proved to be a more acceptable combination for the apprentices and more chose this than the alternative combination of barber and surgeon. The result was the formation of the Surgeon - Apothecaries as a Fraternity, set up by a Town Council Act of 1675. This was subsequently ratified by Parliament in August 1670.

This did not settle the relationship of the apothecaries with the other medical professions and there followed a period of major disagreement between the professions. The physicians were particularly suspicious of the apothecaries and there were frequent disputes between them. The physicians accused the apothecaries of diagnosing and treating illness. The apothecaries on the other hand were very wary of the physicians supplying medicine to their patients. In order to improve their position the apothecaries applied to the Magistrates for the right to examine and test the ability of all who wished to practice the “arte of Apothecarie” within the burgh and to ensure that those not qualified were prevented from practising. They also asked that the

Council should elect two of their members to visit premises and report any faulty drugs. This petition had sixteen signatories, four of whom were surgeons including Borthwick and Kincaid.

Despite protestations, particularly from the physicians who claimed that they should have the right to examine the shops, the Magistrates granted this request. However they pointed out that the Act in favour of the Surgeon-Apothecaries did not elect them into a Corporation. It was only for the art and good of the people, so any hope the apothecaries had of forming a separate Incorporation was dashed.

As they were not recognised as an Incorporation in their own right, this had the effect of bringing the apothecaries under the protection of the surgeons. However they could not carry out any surgical procedure, (this included blood letting, which the apothecaries were doing from time to time, although they were careful not to call it such in any invoices).

Things rumbled on until the Incorporation of Surgeons brought a prosecution against Patrick Cunningham, an apothecary, for allegedly carrying out surgery including blood letting. He was not prepared to bow down to the surgeons and he brought a counter prosecution against the Surgeons and the Surgeon-Apothecaries. The substance of his case was that pharmacy and surgery were two distinct trades and employments, which should not be practised by the same person. This became a test case between the professions.

### **The Degree of Separation**

Despite pleadings on behalf of both parties, with the Surgeons claiming that they were always privileged to practice pharmacy, the Judges of the Court of Session agreed with the apothecaries' submission and in 1682 granted a Decree of Separation. This ruled that within the City of Edinburgh one and the same person could not be employed both in surgery and pharmacy. In an attempt to reach some compromise the Decree also said that the surgeons could continue to buy and sell simples and that it did not apply to the Surgeon-Apothecaries, although they had to chose whether to become members of the Incorporation of Surgeons or join the Fraternity of Apothecaries. At this time there were ten surgeons, ten surgeon-apothecaries and six surgeon-barbers, as well as the simple barbers. In the event, only one Surgeon-Apothecary chose to join the Apothecaries, which was in future known as the Fraternity of Apothecaries. The apothecaries were now on their own with both the surgeons and the physicians determined to exercise control over them. Each quoted the legislation which they thought was favourable to them irrespective of whether this was current legislation or not.

### **Physicians' Charter**

The physicians were granted a charter in 1681 to form a Royal College of Physicians, despite strong objections from the surgeons who felt it encroached on their privileges. In retaliation the surgeons then took steps to obtain a new charter for themselves but this did not succeed. A dispute now arose on who should be responsible for examining

the apothecaries' shops. In 1684 the Privy Council authorised the physicians' representatives together with one or two of the oldest apothecaries to inspect the apothecaries' shops. The apothecaries and the surgeon-apothecaries objected as they felt their rights to examine apothecaries given to them in the Act of 1657 were being infringed and they asked the physicians for an interpretation of this act.

The physicians gave a conciliatory reply in which they said they had no intention of interfering with the privileges of the other body. However, the Privy Council, by a further Act of November 1684, gave the President and others of the College of Physicians the right of inspection, on the grounds that the physicians should be convinced and satisfied that the apothecaries who dispensed were qualified to do so and the drugs were good and sufficient. This was an important privilege, drugs were often adulterated either by introducing another herb or adding an inactive substance. However there was also a suspicion that the inspectors had a commercial reason for condemning stock as the inspector could be in competition with the apothecary. The Act went on to state that no person who had not already been examined and admitted by the Fraternity of Apothecaries should be allowed to keep an apothecaries shop, except those tried and approved by the President and Censors of the College of Physicians. The College however undertook not to test apothecaries who had not previously been examined by the Fraternity.

### **Surgeons and Apothecaries combine**

The Surgeons were not prepared to let matters rest. In 1684 they gave notice that they intended to continue admitting apothecaries and they succeeded in getting the Town Council to agree to a surgeon being appointed as sole inspector of the apothecaries' shops. They then tried to obtain a new charter and this was granted by King James II in 1686. However Parliament refused to ratify this so it never became effective.

This situation continued until 1694 when King William and Queen Mary granted a patent in favour of the surgeons and surgeon-apothecaries which was ratified by Parliament in 1695. This William and Mary Patent overturned the original "Decree of Separation" and would have had the effect of combining surgery and pharmacy. The apothecaries felt that once again they were losing their rights. They approached Parliament and made their case once again for surgery and pharmacy being two separate disciplines. They quoted a number of cases where the surgeons had oppressed apothecaries. These were mostly in situations where there had not been a surgeon available and the apothecary had treated a wound or bled the patient.

It appeared to the surgeons that this was a controversy that was going to last for a long time. They were in a bad way financially. A dispute with the Barbers which lasted for four years with legal actions on both side had virtually bankrupted the Incorporation, so they were not in a position to have a long running legal wrangle with the apothecaries. The radical solution they proposed in 1721 was to offer membership to all the fifteen Edinburgh apothecaries to be admitted as free surgeons on payment of £50 each. All were admitted and the Edinburgh apothecaries returned to the surgeons' fold, but although Freemen they still practiced as apothecaries.

Despite the arguments over the standing and the responsibilities of the two bodies, they had in other ways continued to co-operate. From 1702 the apprentices of the apothecaries had received instruction in chemistry and the pharmaceutical processes at the College of Surgeons. With the increasing emphasis on formal education the Royal Public Dispensary was opened in 1776, largely through the efforts of Dr. Andrew Duncan, of the College of Physicians and classes in pharmacy were organised there. These classes eventually led to the formation of a School of Pharmacy which became part of Heriot-Watt College. Despite this a Diploma in surgery continued to be a route into pharmacy. In the 1842 Edinburgh Directory, under the heading "Apothecaries, Chemists and Druggists" there are 53 entries. Twenty of these are listed as surgeons. They include Thomas and Henry Smith of 21 Duke Street, Edinburgh. William Flockhart of Duncan and Flockhart, North Bridge, Edinburgh was also a surgeon although he did not practice as such.

Once the amalgamation of pharmacy and surgery was completed, the Incorporation applied to the Town Council for an Act to confine the practice of pharmacy to those entitled to the freedom of the Incorporation of Surgeon-Apothecaries. This was opposed by the physicians who quoted the earlier Acts giving them the power to examine the apothecaries. This smouldered on for some time and there does not seem to have been any final resolution.

### **The Royal College of Surgeons**

The surgeons were keen to improve their status in the community, although they wanted to retain their monopoly granted to members of the Guild in 1505. They saw how the physicians' status had grown through education and the founding of their Royal College. This enabled them to regulate their profession. In 1778 the Incorporation of Surgeons was granted a Royal Charter and they formed the Royal College of Surgeons of Edinburgh.

The surgeon's apprentice was both a source of income, with indenture fees around £50, and a cheap source of labour. Of course many were treated well and became part of the family. In Edinburgh, unlike other parts of the country, they were always allowed to attend medical lectures and these included anatomy, surgery and chemistry. With the formation of the College and the improved status of surgeons, the apprentices' position improved quickly. By 1820 they were recognised as students of medicine. Hospital training and attendance at lectures became the normal life of the student, although those who were apprenticed had the benefit of a reduced fee to become fellows. In 1816 this was £100 as opposed to £250 for those who had not followed an apprenticeship.

The Guild had introduced a diploma in 1770 with reduced fees which allowed practice in the surrounding country areas. This also had reduced fees for former army and navy surgeons. Up to 1804 there were no set requirements for the award of the diploma and the College had to control and regulate the position. The initial requirement was that candidates had to have attended lectures in anatomy, surgery and the practice of medicine. These were expanded and developed. By 1828 the requirements included

Chemistry and Materia Medica although there were no requirements for practical pharmacy or 'compounding' which they believed was best taught during the apprenticeship as a practical skill.

### **Physicians and Pharmacy**

The Royal College of Physicians in Edinburgh continued to debate their rights to examine apothecaries and to visit their shops to examine their stock. They also wanted to control their members and passed two Acts, the first in 1750 and the second in 1754 making it against the rules of the College to dispense medicines. Despite much discussion no real solution was proposed and the matter was finally concluded in 1823 by an amendment to the Act of 1754 which read:-

*"If any Fellow or Licentiate of the College shall, by himself, or co-partners, or servants, keep a public Apothecary, Druggists or Chemist shop, he shall ipso facto forfeit all the rights and privileges which he does or may enjoy as a Fellow or Licentiate of said College, and his name shall be expunged from the list."*

This only applied in Edinburgh and made little difference elsewhere in Scotland, many medical practitioners continued to dispense medicines and this was considered an essential part of their income particularly in country districts.

The controversy over the responsibilities and privileges of the apothecaries, surgeons and physicians was in the end, solved by the growing knowledge needed to be effective practitioners in one or other of the three disciplines with the need to specialise in one discipline or the other. This meant that an apprenticeship alone was not sufficient and there was a growing need for formal education. This was aided by the growing population with an increasing level of income so that there was a high standard of living to be had, once the medical practitioner or surgeon was established in practice, although the early days establishing a practice were still difficult.

### **The Chemist and Druggist**

From the middle of the 18<sup>th</sup> Century an alternative source of medicines and medical treatment started to emerge. These were the shops of the Chemists and Druggists. The services of the Surgeon, Physician and Apothecary had always been available to those who could afford it. The poorer section of the population, when they were ill, had to rely on the help they could get from neighbours, friends and sometimes the quack practitioner. With the movement of population into the cities, the local availability of herbs and the knowledge of their use, which was a skill retained by older members of the community, was no longer available. This was coupled with the growing wealth of the population, who were able to call on the chemist to get advice and purchase either his own counter prescribed remedies or the growing range of proprietary medicines which were being advertised to the public.

The growth of the chemist and druggist in the early part of the 20<sup>th</sup> century was due in part to the emphasis on free trade. The nation had benefited from the superior industry

and technology which was available, coupled with the ability to buy raw materials and then sell the finished goods in world markets without paying import and export duties. The power of the Guilds and, in Scotland, the Incorporations, to create a monopoly for their members was waning. In Edinburgh, one of the first chemist and druggist shops was opened by H. B. Wylie, Chemist and Druggist, 38-40 Grassmarket. There is no evidence of any objection to prevent this business trading. Possibly this is because it was in the old burgh of Portsburgh and therefore fell outside the jurisdiction of the City Guilds.

### **The 1868 Pharmacy Act.**

The 1868 Pharmacy Act introduced in Parliament by Jacob Bell was intended to regulate the practice of pharmacy in Great Britain. The strong support in the country for free trade made it impossible to achieve a monopoly for the supply of drugs by pharmaceutical chemists. However some progress was made. The restrictions first introduced in the Arsenic Act of 1851 were extended by introducing a list of additional poisonous substances. The restrictions on their sale were not burdensome but they had the effect of giving a monopoly on their sale to chemists and druggists who were members of the Pharmaceutical Society.

The term "apothecary" had been introduced during the Bill's passage through Parliament. It was quickly pointed out that this would restrict the right to carry out a business in pharmacy to chemists and to licentiates of the Society of Apothecaries. This was strongly opposed by general practitioners and the medical societies in the West of Scotland who were still supplying drugs to their patients. An amending act passed in August 1869 made it clear that all Medical Practitioners were able to supply and it went further by making it possible for registered medical practitioners to register as Chemists and Druggists.

The 1868 Pharmacy Act was intended to make sure that the sale of poisons and the dispensing of dangerous drugs was under the supervision of a qualified person. This was difficult to enforce, between 1897 and 1900 the Pharmaceutical Society instituted 46 prosecutions against medical practitioners in Great Britain for employing unqualified dispensers, all of whom were in the West of Scotland. Despite this action, doctors in the West of Scotland continued to dispense and in some cases to keep open shop, staffed by unqualified dispensers. The more stringent provisions of the Pharmacy and Medicines Act of 1908, requiring a qualified pharmacist to be present in every retail shop, also did not have much effect. The National Insurance Act of 1911 separated prescribing and dispensing but still made provision for the doctors to dispense in rural areas where there was no chemist or druggist. Even in Glasgow some doctors continued to augment their income by the sale of drugs, for many years.

During the 19<sup>th</sup> century the work of the apothecary and the chemist and druggist became synonymous in the city. With the establishment of the Pharmaceutical Society and particularly the establishment of an examining body for pharmacy in Edinburgh, the qualification of the Pharmaceutical Society became the route to follow to qualify in pharmacy. The surgeons and physicians had established their rightful roles and no

longer felt threatened by the chemist and druggist, although it was not until the introduction of the National Health Service that the physicians were prepared to give up their dispensing practices.

### **Conclusion**

In the South of England the apothecary was the forerunner of the general medical practitioner. In Edinburgh, despite attempts by the apothecaries to extend their role and to carry out other responsibilities as well as the supply of drugs, the power of the Incorporation of Surgeons and the physicians was sufficient to restrict the Apothecaries to the supply of medicines only.

Their one chance of breaking out was when they were granted a Decree of Separation in 1682. However the surgeons and the physicians were determined to ensure that the apothecaries were controlled by their Incorporation and, probably because of the small number of apothecaries, the opportunity was lost.

Finally, because of the pressures at the time, their independence was lost when the remaining fifteen apothecaries were admitted into the Incorporation of Surgeons in 1721. Although the route into pharmacy continued for a time to be by serving an apprenticeship with a surgeon, followed by membership of the College of Surgeons, the supply of medicines was passing into the hands of the Chemist and Druggist. With the formation of the Pharmaceutical Society of Great Britain and the establishment of an examination board in Edinburgh, the age of the apothecary came to an end.

## **THE HISTORY OF CHOLERA**

Cholera was a devastating disease that swept through the United Kingdom during the 19<sup>th</sup> century leaving a path of destruction in its wake. There are accounts of cholera-like diseases that date back as far as Hippocrates in 400BC, but the modern history of the disease begins in 1817 from its 'home base' at the delta of the river Ganges in India.

In early 1818 rumours began to reach England of a "*dreadful epidemic that ravages in Calcutta and Southern Provinces*", and this first cholera pandemic swept quickly through India. By 1820 it had reached many countries in South East Asia such as Siam (Thailand) and Indonesia and by 1821 cholera was causing havoc in the Middle East.

Its destructive pathway continued as the rest of the world lay helpless. No one knew what was causing it, making it impossible to predict or prevent. It affected anyone and everyone. The watery diarrhoea and severe vomiting left patients extremely dehydrated, causing a previously healthy person to deteriorate very quickly. Fatalities were a regular occurrence.

At the end of October 1832 Dr. William Reid Clanny, head physician in the Sunderland Infirmary, felt the need to gather his colleagues to discuss a series of strange deaths that had occurred over the past few days. A diagnosis of Cholera was

made and London was informed. By Christmas of that year the epidemic was spreading quickly through Britain.

At the time there were many theories about the cause of cholera. Some believed in a 'cholera poison' that came from within the earth. Others thought electrical disturbances from the newly built railways were to blame, while it was also considered that patients who developed cholera had too much carbon in their bodies. However, it was the miasma theory that was the most widely believed and accepted, especially in medical circles. It was thought bad gases from rotting organic matter, were inhaled by the patient who thereafter became infected. This theory was adopted worldwide and it proved to be a difficult idea to shift. By the end of the UK's first epidemic 32,000 people had lost their lives.

Britain experienced its second cholera epidemic between 1848 and 1849. The reoccurrence of such a disastrous disease greatly concerned a young London doctor named John Snow, who believed that the cholera 'poison' must be acting directly on the mucus membrane of the alimentary canal. He came to this opinion from the primary symptoms: profuse watery diarrhoea and vomiting. This brought him to the conclusion that the cholera 'poison' must be taken directly into the mouth from water or other sources such as food. For Snow, the miasma theory was not compatible with his thinking because if it was a gas that was inhaled why was the respiratory system not affected?

To prove his theory he systematically collected data from all over London, putting himself at great risk in the process. By 1849 he had collected enough data to publish a pamphlet called *'The Mode of Communication of Cholera'*. In this first attempt Snow's ideas were all but ignored by the medical community.

During the UK's third epidemic in 1854 Snow collected more data which were included in republication of his original report.

This included person-to-person communication in crowded habitats and most importantly he gave extensive examples of cholera deaths in relation to where the water supplies for households came from.

In one particular section Snow focused on cholera fatalities in southern districts of London, including Wandsworth, Lambeth and Camberwell, areas where two companies supplied most of the water. The Southwark and Vauxhall Company supplied water from downstream of the river Thames, which was rife with sewage, while the Lambeth Company supplied cleaner water taken from much further up the same river. Snow provided extensive impressive maps and tables which concluded that the proportion of fatal cholera cases to each 10 000 houses in those areas supplied by Southwark and Vauxhall was 71 deaths, compared to 5 in those areas supplied by Lambeth.

Another example of Snow's work, which later became most famous, was a study of the deaths in and around Broad Street, which was close to his Soho home. The outbreak was brought to his attention in late August of 1854, and using his theories and knowledge he suggested that authorities remove the handle of the frequently used

street-pump, following which the incidence of cholera in the area dramatically reduced.

Snow died in June 1858, still unable to convince those who criticised his pioneering work. In London's final cholera outbreak in 1866, Dr William Farr, a believer in Snow's theories, became determined to trace an outbreak to contaminated water from the River Lea. He then went on to 'name and shame' the guilty officials. More and more influential people were questioning the miasma theory in relation to cholera and were now considering the waterborne theory. It was not until 1883 that the causative agent was identified, as *Vibrio cholera* by Robert Koch.

This triggered huge engineering projects in many cities to improve the collection and treatment of sewage to provide a clean water supply. This practically eliminated the disease in developed industrialised countries.

However their story of cholera included more stories of injustice, as 30 years earlier, an Italian microbiologist called Filippo Pacini had already seen the bacterium in 1854 during an outbreak of cholera in Florence. Like Snow, his discovery was ignored by the medical community in Italy as there was fierce belief in the miasma theory.

It is an unfortunate twist of fate that had more attention been paid to this early discovery Dr John Snow might have got the recognition he deserved for his work during his life time. It wasn't until the 1930's that an American epidemiologist, WH Frost, reviewed and revived Snow's work from the mid 1800's.

He noted Snow's "*Enjoyable clarity of thinking and reasoning, both epidemiologically and medically. His conclusions came very close to the bacteriologic paradigm of today.*" Today Snow's work continues to be very highly credited and is regarded as having set the standard of epidemiological studies.

The lack of knowledge about cholera and its causative agent in the 19<sup>th</sup> century meant it was very difficult to treat. Physicians were helpless, especially as patients could die within hours of first presenting with symptoms. Unfortunately, the public were well aware of this. Treatment depended on where you lived, for example those infected in Manchester were treated with tartar emetics, while in the Parish of St. Giles, London, patients were given calomel and powdered rhubarb.

During the second cholera pandemic, a German chemist, R Hermann suggested that "*Water should be injected into the victims' veins to replace lost fluids*". At the same time a young British doctor, William O'Shaughnessy, was also working with cholera victims. He observed its devastating clinical manifestations, which spurred him on to report in the *Lancet* in 1831 his belief in the need to replace water and electrolytes lost in the stool. He also analysed the blood from cholera patients and discovered it lacked water and many of its essential ingredients. By 1832 O'Shaughnessy published a report on the clinical pathology of malignant cholera. He recommended treating the disease with an injection into the veins of tepid water, stating that a solution of the normal salts of the blood was advisable.

However, this concept was not widely approved, and it was only practised by a few. One of these was a Scottish doctor, Thomas Latta. Initial reports state that Latta tried to inject tepid water into the large intestine of cholera victims. He observed that this

only made symptoms worse. Later he tried administering water and salt via a vein in the arm. One of the first patients he tried this on was an elderly woman. After giving one pint of solution he reported that she:

*“began to breathe less laboriously and soon the sharpened features, and sunken eyes, and fallen jaw, pale and cold, bearing the manifest imprint of death’s signet, began to glow with returning animation; the pulse returned to the wrist.”*

Latta went on to administer six pints in total and she sat upright in her bed and claimed she was “*free from all uneasiness*”. After handing her over to the care of the surgeons her symptoms returned and she later died. He later noted that a single injection of fluids considerably improved a patient’s condition, but that they would go on to relapse and die if further injections of the same nature were not administered. He also told of the extreme care required in such a procedure, as it was prone to fail for reasons such as insufficient fluid, delay in treatment or underlying disease. Once the first UK cholera epidemic had disappeared the interest in its treatment also declined. Latta sadly died in 1833, probably in his late thirties.

The use of intravenous saline did not become standard practice for the treatment of cholera, or any condition causing hypovolaemic shock, until the twentieth century. The development of Oral Rehydration therapy, in the latter part of the twentieth century, is a complex story, which is discussed in considerable detail in a paper by JN Ruxin in Medical History 1994, 38 (4) : 363-397 Magic bullet: the history of oral rehydration therapy.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1036912/?page=1>

Through the years cholera has remained a deadly and feared disease. It has been significant in the formation of certain concepts used in medicine today. In particular, it has had a major influence on public health and public health awareness thanks to the pioneering work of people such as John Snow, O’Shaughnessy and Latta. I believe we must give credit to the determination demonstrated by such figures and although they are now part of history, they remain essential role models for those in medicine now and in the future.

## THE EVOLUTION OF ARTIFICIAL VENTILATION

The evolution of artificial ventilation closely mirrors advances in our understanding of human anatomy and physiology. Influenced by the teachings of Hippocrates and Aristotle before him, Galen undertook many experiments in his search for knowledge. In 177 AD he used a set of bellows on a dead animal in an effort to understand the structure and function of the thoracic organs. He determined that the nose, mouth and trachea were all part of the upper airway and that movement of the lungs was essential to cool the heart.

It was not possible, however, to refute his findings, as human dissection was not permitted at that time and with the backing of the very influential Christian Church,

his teachings were unquestionably accepted for almost 1500 years. The fall of Constantinople in 1453, the subsequent flight of Greek scholars to Italy and the invention of the printing press in 1454 all helped the spread of knowledge and ideas.

One idea at this time was the resuscitation of individuals who were dying or had recently died. Paracelsus is credited as being one of the first to have used mechanical ventilation in a 'clinical' setting. Although not recorded in his own written work, it is claimed that in 1530 he attempted to resuscitate 'apnoeic' patients by inserting bellows into the nostrils to inflate the lungs. Following the sanctioning of human dissection by Pope Sixtus IV in 1482, new insights into anatomy and physiology began to be made with the work of Andreas Vesalius. As a medical student in Paris, Vesalius performed many dissections, becoming accomplished in anatomy, and he began to doubt the still revered teachings of Galen. In 1543 Vesalius published *De Humani Corporis Fabrica*, a seven volume text comprising both descriptions and drawings of the human body. Although his book corrected many of Galen's inaccuracies, Vesalius was severely criticized by the mainstream scientific and medical communities.

One of Vesalius's experiments involved inserting a reed into the trachea of a pig and intermittently blowing into the reed, by which means he was able to keep the animal alive and examine its beating heart. This work led to the conclusion that movement of the lungs did not cool the heart, but aided circulation of the blood.

Over a century later, in 1667, the British scientist, Robert Hooke, curator of the Royal Society of London, repeated Vesalius' experiment by successfully attaching a set of bellows to the trachea of a dog, and keeping the animal alive by applying a continuous flow of air into its lungs. This was the first clear demonstration that it was the supply of fresh air to the lungs, not their movements, that maintained cardiac function.

By the turn of the eighteenth century, the application of artificial ventilation was well established in experimental research but now its use in resuscitation was set to flourish. With the advent of the Industrial Revolution and the resultant increase in shipbuilding and canals, drowning became a major public health concern. Beginning in Amsterdam, then spreading across Europe and eventually reaching the United States of America, Humane Societies were established to investigate appropriate techniques for resuscitation.

Despite the discovery of carbon dioxide and oxygen over 10 years earlier and the belief that expired air was less useful, even poisonous, mouth-to-mouth respiration was the recommended technique for artificial respiration. It was only following a demonstration by John Hunter to the Royal Humane Society in London in 1776 that the use of bellows to inflate the lungs gained popularity and eclipsed mouth-to-mouth as the preferred method of ventilation. This positive pressure ventilation by means of bellows, and/or pistons, remained in vogue until approximately 1827 when doubt was cast over its safety. Although this claim was not universally accepted, interest subsequently waned.

1840 saw a dramatic new innovation in the invention of Dr John Dalziel's negative pressure ventilator. Its box design enclosed the body of the patient, whilst a piston

attached to a syringe on the box created the negative pressure necessary to lift the thorax and suck air into the lungs. It is known to have been used, unsuccessfully, in at least one resuscitation attempt. Possibly due to its size, cost, reliance on manual power and questionable efficacy, it failed to catch on.

Various manual and mechanical techniques of artificial ventilation were proposed throughout the 1800s, with varying degrees of success. Possibly based on Dalziel's original idea of negative pressure ventilation, smaller cuirass respirators emerged in the latter part of the 19<sup>th</sup> century. However the application of these techniques was still very much in the realms of resuscitation.

Progress was not wholly confined to modes of negative pressure ventilation. Interest in positive pressure ventilation did resurface again in 1887 with a report of a successful resuscitation in a patient following an opium overdose. This was closely followed by other successes. Around the same time surgeons were searching for a solution to the problem of pneumothorax during attempts at thoracic surgery. Tuberculosis was a major cause of mortality and morbidity. In the pre-antibiotic era, surgery appeared to be the only hope of a cure.

Although the concept of a negative pressure chamber was explored and successfully utilised in thoracic surgery, it was the more simple application of positive pressure that was to develop and become the mainstay. The early part of the 20<sup>th</sup> century saw several epidemics of polio in both Europe and the United States. Stimulated by the respiratory paralysis observed in some polio patients, the need to provide a means of artificial ventilation over a more prolonged period influenced further developments.

The most significant advance came in 1929 with the development of the Drinker respirator. Being electrically powered and commercially available, this original 'iron lung' and its many successors were to enjoy great success in the following decades.

Thus by the time polio struck Copenhagen in 1952, positive pressure ventilation was the accepted mode of ventilation during surgery, whilst negative pressure ventilation had become the medical treatment of choice in the management of respiratory failure. The Copenhagen polio epidemic brought about challenges never before seen at the Blegdam Hospital for communicable diseases. Between late July and early December 1952, over 2,700 patients were admitted with poliomyelitis. About a third of the patients were suffering from paralysis and of these, almost 40% required specific intervention due to respiratory difficulties.

The standard treatment of the time was intermittent negative pressure ventilation via the iron lung or cuirass respirator. In the first month of the epidemic 31 patients required respiratory support. However 27 died. With only 7 available respirators and up to 70 patients requiring ventilation, the chief physician, Dr Lassen, decided to contact Dr Bjorn Ibsen, an anaesthetist colleague for advice.

Nowadays, the decision to contact an anaesthetist for advice in the management of a critically ill patient is viewed as standard practice. However in Denmark in 1952 it was extremely unusual. In the 1950s anaesthesia was not recognised as a discipline in its own right and anaesthetists were seen merely as surgeons' assistants. Advances in

respiratory physiology research had not yet bridged the gap between the laboratory and clinical practice.

Aspects of respiratory mechanics and gas exchange had been elucidated, yet conventional wisdom amongst clinicians was that the cyanosis present in the polio patients was due to levels of virus in their brains. Although it is common practice today to monitor acid-base balance and ventilatory function by means of arterial blood gases, in 1952 this was almost unheard of.

Ibsen was quick to recognise that the uncuffed tracheostomy tubes were failing to protect the patients' airways from secretions and that the physical signs observed in patients were due to inadequate ventilation. He therefore recommended the insertion of cuffed tracheotomy tubes and the instigation of manual intermittent positive pressure ventilation – techniques long associated with the operating theatre.

Although there were reservations amongst his colleagues, it was agreed to trial this new approach on a single patient. It was immediately successful and the technique was adopted for all the polio patients with respiratory failure. The overall mortality rate was reduced from 90% to approx 25%.

Thus in the relatively short space of 19 weeks, the approach to the management of patients with respiratory failure was changed forever. Although the manual IPPV employed in Copenhagen was by no means new, the large scale in which it was applied was unique. Over 165,000 hours were spent by over 1500 staff and medical students providing artificial ventilation around the clock.

Positive pressure ventilation had the advantage over the iron lung in that it avoided the under-ventilation sometimes seen with the latter. It also did not require large, cumbersome apparatus and allowed easy access to the patient for nursing care, physical examination, investigations, etc. Due to a fear of further epidemics and an acknowledgement that manual ventilation on such a scale again would be impractical, research pushed ahead to develop powered mechanical ventilators.

During the Second World War a flow-sensitive breathing valve had been developed by Dr Forrest Bird for the United States Air Force for use in high altitude flying. Following the war this valve was incorporated into the circuit of an intermittent positive pressure oxygen machine, the Bennett Resuscitator unit, and successfully employed in the treatment of a patient with pulmonary complications following surgery. It was from this device that powered mechanical ventilators emerged and replaced both the iron lung and manual means of ventilation in Europe, and later the United States.

## **THE ONE HUNDRED AND EIGHTY THIRD ORDINARY MEETING**

The One Hundred and Eighty Third Ordinary Meeting of the Society was held in the Royal College of Physicians and Surgeons in Glasgow on March 7<sup>th</sup> 2009. Thirty two members or guests were present and there were two speakers. Dawn Kemp, the Director of Heritage at the Royal College of Surgeons in Edinburgh, gave a talk on

Medical Museums in the 21<sup>st</sup> century and Mr David Hamilton gave a talk entitled Healing by Water in Scotland. A brief summary of Mr Hamilton's talk follows.

### HEALING BY WATER IN SCOTLAND

There is still a wide belief in the healing power of water, a belief that can be seen as a PAP, a Particularly Attractive Proposal, (a persistent belief lacking rational support). The pagan use of wells, streams and lochs included Brae Mou' (or the Physic) Well, of Hopeman, Moray, Tobar Biaal na Buaidh, (the Well of the tree and virtuous water) of Benderloch and the Loch Siant Well of Skye described by Martin Martin. These pagan water sources typically had a neutral name and were often associated with visits at certain defined times, rituals and votive offerings. With the coming of Christianity, many of the wells changed their emphasis and became known by the names of saints. Some 38 wells associated with Christian saints were noted. Their healing effects were ascribed not to the water but to God through the saint. The wells came to have specific cures associated with them and also with relics washed in their water. With the coming of the Reformation, there was a campaign against idolatry, such as the worship of holy wells and the emphasis changed again, with wells increasingly being found to have chemical properties to explain their use. Gilbert Skene described the Well of Woman Hill near Aberdeen and Dr Patrick Anderson described the Colde Spring of Kinghorne Craig, at Kinghorn in Fife.

More recent times have seen the development of Spas, where the water has usually been of two kinds, those with some iron content (chalybeate) and those with some sulphur content. Examples of these have included Bridge of Allan, Pannanich (both chalybeate) Letham (sulphur) and Moffat (chalybeate and sulphur).

At Pannanich, in 1760, a local woman was said to be cured of scrofula and an inn was built nearby by an enterprising laird. With medical input from an Aberdeen surgeon, who supported it and offered consultation, it became well known and was visited at various times by Walter Scott, Byron and Queen Victoria. By the middle of the nineteenth century, however, these spas were becoming discredited because of the unhealthy nature of the water, which led to cholera and other similar diseases. They were succeeded by the hydropathics, which included Crieff and the Glenburn Hydropathic in Rothesay, Bute. In due course the time of the hydropathics passed, though modern equivalents such as Stobo Castle still offer luxury, with elements of water never far away.

Clearly, there's something in the water. As beliefs are dismissed on a regular basis, they are replaced by new variations. The particularly attractive proposal persists. Is it irrational and is it harmless?

## THE EIGHTEENTH HALDANE TAIT LECTURE

The Eighteenth Haldane Tait Lecture was held in the Craighouse Campus of Napier University in Edinburgh on 6<sup>th</sup> May 2009. The speaker was Mr John Chalmers and his subject was Disputes among Edinburgh Doctors in the 19<sup>th</sup> Century. Mr Chalmers gave a most entertaining talk on this subject, which featured, amongst other arguments and quarrels, much about Andrew Duncan. Members of the Society will be interested to note the recent publication of the book on Andrew Duncan, edited by Mr Chalmers, *Andrew Duncan Senior, Physician of the Enlightenment*, (published in 2010 by National Museums of Scotland, ISBN 978 1 905267 309).

## THE ONE HUNDRED AND EIGHTY FOURTH ORDINARY MEETING

The One Hundred and Eighty Fourth Ordinary Meeting of the Society was held in the Cottrell Building of the University of Stirling on 13<sup>th</sup> June 2009. There were two speakers, Gwen Chessell spoke on Alexander Collie RN and his Medical World and Angela Montford's title was From Fife to America : the Life and Times of an Eighteenth Century Surgeon.

### ALEXANDER COLLIE RN AND HIS MEDICAL WORLD

Alexander Collie was born in 1793 and died in 1835 at the age of 42. His relatively short life, by today's standards, was lived in a variety of different environments and was dominated by medicine and the Royal Navy. But throughout his life there was also another constant, and that was the north-east of Scotland. He never forgot his origins and it was Scotland he reached back to towards the end of his life.

Alexander was born at Wantonwells Farm in Inch, Aberdeenshire, towards the end of May 1793. His baptismal certificate is dated the 2<sup>nd</sup> June. He was born during a decade that had resonance for the world of medicine; this was the decade in which Edward Jenner discovered a vaccine for smallpox, in which Gilbert Blane persuaded the Admiralty to supply naval vessels with lemon juice, and in the year that saw Alexander's birth, the anatomist John Hunter died of a ruptured aortic aneurysm.

Alexander was the youngest of three sons. His brothers were James and George and he wrote to George, a successful textile merchant in Aberdeen, throughout his career. Much of this correspondence has survived and the letters were given to Australia by Alexander's great nephew, Professor J Norman Collie, early in the 20<sup>th</sup> century.

Alexander was a bright and intelligent lad and in 1808, he won a Bursary to study for a Master of Arts degree at King's College, Aberdeen. By 1810, he had decided on a career as a surgeon and was apprenticed to Dr William Dyce of Marischal Street, Aberdeen. Studying for an M.A. and becoming apprenticed to a practising surgeon was the usual route for one who wanted to be a surgeon rather than

a physician. Physicians gained MDs and were the masters of theoretical knowledge; they would rarely be found treating patients and certainly not learning from experience. Such empirical medicine was regarded then as 'quackery'.

Alexander's mentor, Dr Dyce, had a practice at the public dispensary in Broad Street in Aberdeen. The dispensary had been set up in 1781, funded by Aberdeen Royal Infirmary (opened in 1742) and which received its royal charter in 1773. From 1803, there was also another dispensary and vaccination centre in Aberdeen. These centres and Aberdeen Royal Infirmary probably would not have been able to function without unpaid apprentice labour that allowed the students to gain necessary practical experience. Despite Aberdeen University being distinguished by having appointed what was then known as a Mediciner in 1495, Medicine was not taught at either King's College or the younger establishment of Marischal College. Indeed, while Alexander was at Aberdeen University, there were two Mediciners, Sir Alexander Burnett Bannerman and his son, James. These two gentlemen were in post for forty-five years, during which time neither gave a lecture nor did any teaching! This lack of teaching was a serious deficiency and in 1789, a Medical Society along the lines of the one established in Edinburgh some fifty years earlier was set up by a group of students. The Society, now the Medical-Chirurgical Society, met each week in Marischal College to give presentations and critical reviews. In April 1810, Alexander was accepted as a student member. The Society Minutes record that he had been studying for four months, that he translated some Latin and was examined by Mr Gerard and gave 'tolerably correct' answers to 'surgical' questions. He was admitted and 'signed the usual obligations'. He gave three further presentations as a student member, one in July 1810 on pneumonia, the second, in December 1810 perhaps gives a hint of his interest towards having a military career. The subject was Bilious Intermitting Fever and its prevalence between the tropics on troops stationed there. His final presentation as a student was in May 1811 and this was on the health of children and the duties of parents and nurses. In February 1812, he was elected president of the student members and the following month he graduated M.A.

By the end of the summer, Alexander was in London, studying at Guy's and St Thomas's Hospitals under the foremost practitioners of the day. Here he was fortunate to study Anatomy under Sir Astley Cooper and Henry Cline, both of whom had studied under John Hunter, hailed as the father of modern surgery, who had died the year Alexander was born. Astley Cooper regarded Hunter as the most industrious man who had ever lived, and described him as 'an immortal genius'; he admired him so greatly that he turned the sitting room at his lodgings into a dissecting room so that he could follow Hunter's experimental operations on stray dogs. Sir Astley Cooper himself was a renowned surgeon and the first to tie the abdominal aorta in treating an aneurysm. This was technically successful but the patient died later. In 1820, he removed a cyst from the head of George IV, and for doing this successfully, Cooper was made a baronet.

Alexander's other surgical mentor, Henry Cline, admired John Hunter equally. He said of Hunter 'when I heard this man, I said to myself this is all daylight. I felt

that what I had previously been taught was comparatively nothing ... [I] thought, I might, like Mr Hunter, venture to Think for myself.'

The environment in which Alexander studied anatomy and dissection must have been pretty unpleasant. These were the days before the Anatomy Act of 1832. The supply of bodies that could legally be dissected for anatomical practice was very restricted and students practised on increasingly decomposing body parts. Alexander mentions to his brother that his hands were 'hacked from the dissecting'. Sir Astley Cooper, however, was adept in acquiring bodies. He is said to have declared before the Anatomy Act was passed 'The law does not prevent our obtaining the body of an individual if we think proper; for there is no person, let his situation in life be what it may, whom if I were disposed to dissect, I could not obtain'. This was the age of the body-snatchers—no wonder the practice was so lucrative. A body could cost as much as sixteen guineas, even more if it had an unusual condition and children, known as 'smalls', were priced by the inch.

In January 1813 Alexander passed the membership exam of the Royal College of Surgeons. This lasted about fifteen minutes and he told his brother that it had been quite easy, a comment echoed also by Sir John Richardson, later Sir John Franklin's surgeon in the Arctic. The MRCS exam cost him £22 and he got in just before the examination fee was raised to £50.

What prompted Alexander to seek a career afloat and away from the shores of Britain is not known. His preference was to be aboard an East Indian Company vessel. But despite having arrived in London with a fistful of letters of introduction, he was unsuccessful in getting a post on one of the relatively few E I C ships and opted instead for the Royal Navy. In February 1813, he presented himself at the Navy Transport Board and passed the much stiffer examination. He recalls that the examination was much more severe than at Surgeon's Hall and 'the doctor reprobated for my passing the Diploma very much'. Three days later he received his appointment as an assistant surgeon; his world was governed now by two spheres—medicine and the Navy.

His first ship was HMS *Doris*, and her commission would last for three years. The *Doris* had 36 guns and was classed as a 5<sup>th</sup> rate ship. Her ship's company when fully manned would probably have been something over 200 men. The rating of the ship governed the amount of medical cover provided for the men—the *Doris* had a surgeon and assistant surgeon—and the ship's rating also governed the amount of pharmaceutical and other therapeutic provision. The *Doris* therefore was allocated two Number 2 Medicine Chests which each provided for the possible medical requirements of 150 men over the course of 12 months. The largest naval vessel afloat would get three Number 1 chests which each catered for the possible medical requirements of 300 men over twelve months. The medicine chests were laid out very specifically and methodically; everything was labelled and numbered according to plan and a surgeon joining a new ship would know exactly where everything should be. The chest allocated to the *Doris* was arranged thus; the top layer of the chest had three horizontal trays fitted out with jars containing various preparations. Under each

of the trays were drawers containing corks, spatulas, scales and weights, a pestle, various gallipots. The bottom layer of the chests contained larger jars with further medicaments and under some of the jars were fibres of fine tow, a pewter funnel and a measure, and a mortar to go with the pestle in the drawer above. Seventy-five medicines were provided for each ship, in specified amounts of pounds, ounces and drams, according to the size of ship. One of the chests was to be opened immediately and its contents stored in the ship's dispensary and the empty chest returned to the naval storehouse onshore and the other chest was to be kept securely in the cockpit.

Each newly commissioned naval surgeon received a copy of the Medical Instructions. This ran to 92 pages and contained all the regulations that were expected of the three ranks of naval medical staff; first, the physicians of the fleet, (there were not many of these and they rarely went to sea anyway), next, the surgeons and finally, the assistant surgeons.

The instructions to assistant surgeons were the shortest in the book but an assistant surgeon would have been expected to be fully conversant with all the forty instructions outlined for the surgeons.

Each assistant surgeon had to provide themselves with surgical instruments. There were thirty-three listed ranging from amputating knives, catheters, various forceps including tooth and bullet forceps, a Fahrenheit thermometer, scalpels, trephines, trocars, to needles and syringes. A stethoscope was not mentioned. The stethoscope was invented by Laennec in 1816 and introduced to the Navy by Dr William Burnett, the first Physician General of the Royal Navy. Perhaps it was unnecessary to include a stethoscope in the list of equipment because by the time the regulations were published in 1825, every naval surgeon would automatically have possessed one.

The Regulations bristled with proformas. There were examples of the nosological returns, forms for listing those wounded and hurt, and certificates to cover each man and any problems, wounds, conditions suffered. There were vouchers for any purchases that had to be made, forms for bills of exchange, a form for listing the men who were issued with trusses (probably there were many of these men with 'bursten bellies') and returns covering the use of any of the medicines and instruments. Alexander drew up his own returns under the required headings. Each surgeon also had to keep a journal that was sent at the end of the year to the Physician-General.

Patronage then was vitally important and it was difficult for a man to get anywhere in a profession without someone influential looking after his interests. Alexander had two patrons during the course of his career. The first was Admiral Sir James Alexander Gordon and the second was Gordon's close friend, Dr, later Sir, William Burnett.

Both these men were powerful influences in the Navy, James Gordon had a distinguished career fighting the French and later the Americans, was knighted and became an Admiral and Freeman of the City of Aberdeen. William Burnett's career was also distinguished. He became a baronet and Physician-General of the Royal

Navy, Physician to William IV and a member of the Royal Society. Sir James Gordon introduced Alexander to Dr William Burnett who was also assiduous in looking after Alexander's interests.

After HMS *Doris*, Alexander took the examination for competence as a full surgeon at the Navy Board in London. Having passed, he took leave on half-pay from the navy and matriculated for the winter session of 1816/1817 at Edinburgh University to study military surgery, the practice of medicine, chemistry and obstetrics. This was the only chair in military surgery in Britain and was to last for 50 years. Alexander was back in the north-east for a short time after that before going to Paris to study under Guillaume Dupuytren and others. The leading centres for surgical training in the early nineteenth century were Edinburgh, London and Paris, so it is probable that Alexander mapped out the training for his career very carefully. In Paris, he worked at La Pitié and Hotel-Dieu hospitals. He never says too much about his clinical work although in a letter to brother, George in Aberdeen, he mentions 'fagging among the putrid guts'. In Paris, cadavers were much more readily available but the problems of decomposition still prevailed.

In Edinburgh and Paris, he fell into the orbit of Andrew Combe who, with his brother, George, became the leading British enthusiasts for the pseudo-science of Phrenology. There is no evidence that Alexander was particularly taken in by this craze although in Paris he studied Anatomy, Physiology and Pathology of the brain under Dr Johann Spurzheim, the disciple of Franz Gall who started the cult. While in Paris, he also undertook further studies in Botany and also in French.

After Paris, Alexander and Andrew Combe set off on tours of Switzerland and Italy. This was an influential experience for both of them and after their return to Britain, so imbued with their memories were they that they corresponded with each other in French and Italian. It was about this time too, that Andrew Combe wrote a series of letters to Alexander outlining the increasing severity of his symptoms of a pulmonary complaint that he, like Alexander was eventually to die from. This was probably tuberculosis.

Alexander appears to have suffered from this from before 1815, when he mentions to George that he had had 'a little affection of the lungs ... a little severer attack of what I was liable to in Scotland'. Throughout his life, he usually spoke about this condition as asthma or possibly phthisis, although he wrote that as p—s. Phthisis was greatly feared and was regarded then as potentially fatal and stigmatising in much the same way as cancer or HIV/AIDS these days.

On 16 June 1821, Alexander joined HMS *Gannet*, another three-year appointment, as her surgeon. It was during this voyage that his interest in botany developed into a passion. After the *Gannet* was paid off in 1824, Alexander wanted a break from going to sea and he is on record as having told the phrenologist, Dr Spurzheim, that he disliked the Navy. Alexander's fervent hope was that he would become a lecturer at Haslar, a position he was to be promised later by Dr William Burnett. Sadly, he was never to achieve this ambition.

In January 1825, he joined HMS *Blossom* fitting out in the Thames for what is described as 'a Voyage of Discovery'. This voyage would make Alexander's name as a naturalist and the voyage itself and the collections made then were seminal in the context of the early nineteenth century. The expedition was part of a three-pronged attempt to find the North-West Passage. *Blossom's* orders were firstly to rendezvous with Captain John Franklin on his second attempt to find the passage and, on the way, to survey the west coasts of North and South America. Before he embarked on the voyage, Alexander applied for membership of the Linnean Society and he was sponsored for this by luminaries who were all connected in some way with Sir Joseph Banks. His sponsors were Archibald Menzies, surgeon and naturalist, William Jackson Hooker, botanist, Robert Brown, botanist and one-time student at Marischal College, Aberdeen, and the discoverer of Brownian motion, and James Bichenor.

Alexander was in the *Blossom* as her surgeon and there was also a naturalist, George Tradescant Lay, whom Alexander described as a 'great pedant'. Lay hadn't a clue about geology that was supposed to be part of his remit and during a large part of the voyage, he was ill and was left behind in Hawaii. Alexander took over his role and received credit for his work when William Jackson Hooker wrote up the botanical collections. It was entirely appropriate that Alexander was involved in this way. Therapeutics during the eighteenth and early nineteenth centuries required a thorough knowledge of plant properties in order to distinguish between medicinal and harmful plants. The tradition of surgeon-naturalists at sea was established during Captain Cook's voyages and encouraged actively by Sir Joseph Banks. Robert Brown, Archibald Menzies, Sir John Richardson, these three distinguished surgeon-naturalists all knew Alexander and Sir John Richardson (who was a member of the Franklin expedition intended to rendezvous with the *Blossom*) was to write up Alexander's zoological notes from the expedition.

The *Blossom* was paid off at Woolwich in October 1828. Her voyage had covered over 73,000 nautical miles, and added substantial knowledge about the coasts, inhabitants, natural history, geology, geography from Cape Horn to the Arctic. During it Alexander examined many of the people whose lands they fetched up on. He noted their physical appearances, states of health, parturition, remarked on deformities such as hare-lips and other disabilities and diseases, and wounds, fresh and healing. He mentions discovering the mildly narcotic substance kava, *Piper methysticum*, and how it had helped to heal a seaman who had oedematous legs, chronic superficial ulceration of his toes and the anterior part of the soles of his feet. The ulcers were thick and glutinous with a dark discharge. The man couldn't sleep or even lie down or bring his legs horizontal to his body. Alexander treated the man with kava three times a day and he got better.

Alexander's obstetric knowledge helped women in Mexico; he carried out the amputation of an American seaman's leg in San Francisco and had a difficult and fruitless two-week land expedition in Mexico trying to find medicines for his depleted stock of medicaments.

Unfortunately, loss of life during the voyage was relatively high; seventeen men died, eight of them from sickness. No-one died of scurvy although they were close to it at times when supplies of fresh food ran low.

The *Blossom* may not have been the happiest of ships. Alexander had fallen out with the captain of the ship, Frederick Beechey, of whom he said before they even set out 'He is not the free jolly and merry fellow that ought to be in command of such a vessel and on such a service'. They fell out over his journals. Alexander had not only written up his service journal as required under the Regulations but had also kept a personal journal. Beechey was writing an account of the voyage that would be published in two volumes and he used much from Alexander's personal journal in his work. He took umbrage at some of Alexander's comments. Alexander wanted his journals back and was not too bothered by Beechey's threats of reporting him to the Admiralty because he had Sir James Gordon and Dr William Burnett on his side. However, he never saw those journals again. It is fair to say that Alexander had a very dry sense of humour and at times could be quite flippant. Judging from his book, Beechey does not appear to possess much of a sense of humour and takes himself very seriously.

Alexander's botanical work during the voyage was written up by William Jackson Hooker, his zoological work by Sir John Richardson and the ornithological work by Nicholas Vigors. During the voyage Alexander had corresponded with the Zoological Society of London, thus becoming one of their earliest correspondents and also with the Linnean Society. He was also collecting specimens for Dr William Burnett at Haslar, Portsmouth and Stonehouse, Plymouth hospitals; a lectureship at one of these establishments was what he wanted above all. Dr Burnett told him that he needed to serve another three years afloat and then he would only be called upon to go to sea in times of real necessity.

At the end of November 1828, Alexander was offered the chance of going to Western Australia with the founding party which would set up the new colony. He was appointed surgeon on HMS *Sulphur* and thought also that he would be colonial surgeon. Unfortunately, the lieutenant governor of the new colony, Captain James Stirling, gave this appointment to somebody else. The Admiralty departments had obviously not liaised with each other and perhaps Captain Frederick Beechey, late of HMS *Blossom* had stuck in his oar. Alexander was bitterly disappointed but remained philosophical and said it would give him more time for collecting and botanising. Dr Burnett told him he would be given a grant of land and that he was 'to be collector of all objects of natural history and be provided by government with the requisite articles for collecting'.

The *Sulphur* sailed from Plymouth on 8 February 1829 in company with the *Parmelia*, the vessel carrying the founding officials, and arrived at the Swan River (now Perth) in Western Australia on 8 June.

For the next six years, Alexander had an eventful and challenging time in the new colony. On arrival, he had no medical responsibilities other than those of surgeon to his ship at anchor offshore. A tented hospital was set up immediately on arrival but

it is unlikely that Alexander had any responsibilities connected with this. He had an assistant surgeon on board HMS *Sulphur* to whom he could delegate many of his duties. This gave him time for exploration and for botanising, interests which he greatly enjoyed and which helped his health. He never regarded himself as an invalid however and indeed, made light of his increasingly deteriorating condition. He had an acute awareness of natural history and his training in anatomy gave him the edge over other less well informed observers. In January 1830, he wrote to the Zoological Society of London describing the 'mode of generation in the kangaroo'. This is the first recorded observation of the transference of the kangaroo embryo to its mother's pouch. Unfortunately, his observations were not believed by the influential Professor Richard Owen, Edinburgh graduate, doctor, zoologist and curator of the Museum of Royal College of Surgeons of London. It was not until 1882 that a second definitive observation was made. Alexander quickly impressed the governor and in July 1830, he was sent to examine and report on the health of a group of settlers who had been let down by their employer. Alexander's report makes sad reading, recounting as it does deaths from what is described as dysentery, deaths of mothers from uterine haemorrhage and puerperal fever, stillbirths and neonatal deaths, and alcoholism, and great suffering from ophthalmia and scurvy. His report is low-key and un-dramatic but this emphasises rather than underplays the tragedies.

Early in 1831, Alexander was appointed government resident, justice of the peace and medical officer to the town of Albany, 300 miles southwest of Perth. There he met an Aborigine who became his great friend, his interpreter and mentor of Aboriginal life.

This friendship between European and Aborigine was unusual but then Mokkare, the Aborigine, was an exceptional and charismatic man who impressed all the European officials with whom he came into contact. Alexander was unable, however, to learn much of what he called the Aborigines' 'ars medica'.

The friendship was short-lived because Mokkare died from what was probably pneumonia a few months after he and Alexander met. But his influence on Alexander was sufficient for George, Alexander's brother, to name his new house and estate in Aberdeen, Morkeu, a mis-reading of Alexander's rather difficult writing. The name still stands.

Alexander continued his explorations in Albany, and his collecting and sending back plant specimens to Britain. Then came the news he yearned for. The colonial surgeon had died and Alexander was appointed in his place. He immediately sent long lists of requirements to George and the list of what he needed gives us some idea of the treatments meted out to patients in a colony struggling to survive and what they may have been suffering from. The lists include

Silver nitrate, used for a variety of disorders, as an astringent or a sedative; cinchona bark and sulphate of quinine; ipecacuanha and opium, (these were mixed with nitre and vitriolated tartar to make Dover's powders); opium for tincture of opium to make laudanum; alum to make lotions for eye complaints, nasal douches and internal haemorrhages; various oils—peppermint, aniseed, castor, lemon, olive, terebinth,

(probably used as a disinfectant) and lavender (used as an insecticide and to help in women's disorders).

Mercury itself is not mentioned but there is an item listed as 'Pilul. Hydrag. Mass.' Other items mentioned included various instruments, wax bougies, phials and lancets.

Little information survives about Alexander's work as colonial surgeon. He was in charge of the hospital and dispensary; he had an assistant surgeon and a clerk for the necessary paperwork. He attended all the government officials but he was not allowed any private patients. He could treat the Aborigines if they or their laws allowed him access to them. His task would have been focussed on maintaining health. He was the complete professional and he guarded his knowledge and patient confidentiality well.

Sadly, Alexander only enjoyed his role as colonial surgeon for two years. By August 1835, he was so ill that he applied for leave of absence to return to Scotland. He left Perth at the end of October 1835 in HMS *Zebra* but had to be put ashore at Albany where he died on 8 November 1835.

He never married but he wanted to get back to Aberdeen to what he described as 'the witching women of the north'. His legacy of botanical, geological and zoological specimens is considerable and lies in many institutions across the world. When he died he was genuinely mourned; 'a more worthy creature never lived' is one comment. Another from the wife of the governor, whose babies he had delivered, is 'He is not only a loss to his friends but to the colony at large as he was clever in his profession and universally respected and esteemed by all classes.' Perhaps one of his most important legacies is his friendship with Mokkare. He was buried at his request at Mokkare's side but in 1840, Alexander's body was moved to a new cemetery. It is unlikely that Mokkare's remains were also moved and lie now under the car-park of Albany town hall.

Alexander never saw the journals that caused the dispute between him and Captain Beechey but it seems that they were sent back to Aberdeen. Alexander's sister-in-law is said to have cut them up and used them for jampot covers and for singeing the dead bodies of her fowls.

Gwen Chessell's biography '*Alexander Collie: Colonial Surgeon, Naturalist & Explorer*' was published by University of Western Australia Press in 2008. ISBN 0980296536

## **FROM FIFE TO AMERICA THE LIFE AND TIMES OF AN 18<sup>TH</sup> CENTURY SURGEON**

This paper has developed as the result of a visit made by my son a few years ago to Boston, Massachusetts. While he was sightseeing, an epitaph on a headstone in an old churchyard caught his eye, when he saw the Latin words *Universitatis Sancte Andreae* – the University of St Andrews. Like me, both Andrew and his wife had taken their degrees at St Andrews, and so he was intrigued enough by his unexpected find to take

a photograph as a record of the whole inscription, which he brought to me to try and translate. As the person buried there also turned out to have been a medical man from Rathillet in Fife, I've been trying to find out some more about him. He proved to have lived and died in remarkably interesting times, so— here's some of what I've been able to find out about him, or at least the times in which he lived, the background to his education in St Andrews, and what his naval career in wartime and his practice of medicine in colonial Massachusetts might have been like and something about the smallpox epidemic in which he died.

*Here lie the remains of Master [D[ominus] James Halkerston of the well-born Halkerston family of Rathillet born in the County of Fife in the one time Kingdom of Scotland.*

*He was among the North British alumni at S. Salvator's College at the University of St Andrews.*

*Serving with the unconquered British Royal Navy for several years he earned a well-deserved [?] reputation in the company of eminent surgeons.*

*In [this] town for five years he enjoyed the practice of medicine as well as surgery and was also enthusiastic in the art of pharmacy.*

*However, to the grief of his fellow citizens he was prematurely seized by death in the prime of his life during a rising epidemic of smallpox (a disease striking down many in New England).*

*He ceased to be on 15<sup>th</sup> day of June A.D. 1721, aged 36.*

*In most loving memory, this stone was placed here by his sorrowing wife Margaret.*

### **St Salvator's chapel**

A little research in the St Andrews University registers found that James had indeed been a student there, beginning his degree studies in 1698 and graduating with a BA in 1701. As a student James would have worn the distinctive red gown which had become the custom from 1672, but sadly today is falling out of fashion.

At that time St Salvator's College, which James attended, had 'a Provost, three Regents for teaching philosophy and one Regent who teaches Greek and one Regent who teaches Latin', and there were about 100 students, few of whom went on to get an MA. St Andrews was not teaching medicine as a separate discipline at this time, although it may have been a component of natural philosophy. So where did James learn medicine? I couldn't find him listed among the Edinburgh Surgeons, and although he might have joined the small number of Scottish medical students who went to Leyden or elsewhere in Europe to study, I suspect this would have been mentioned on his tombstone.

I think James may have left university to become a surgeon's apprentice, a period which would probably last for three years during which he would agree,

*to bind himself to his master by day and by night, holy-day and weekday; to reveal no secret of master or patient; to commit no filthy crimes or sins; to*

*go to no professor of medicine, chyma, anatomy, chirurgie, or materia medica during the first two years; to pay 50 sterling as apprentice fee, in return for which the surgeon [chirurgion] obliges himself to instruct him in the said airtes of surgery and pharmacy, and shall conceal nothing of the same, and entertains him sufficiently in bed and board.*

The next mention of him is in 1709, so we could perhaps presume that he entered a post-apprenticeship position with his master or elsewhere, until that date. I managed to find his admission to the Navy at the age of 24 or so, (in a record at the Barbers and Surgeons Hall in London) where perhaps he saw more opportunities for advancement in England and the newly united British Navy. The record is dated 23 November, 1709 and reads:

*We have examined the bearer hereof James Halkerstone and do find him fitly qualified to serve as Surgeon – on board any of Her Majesty's Shippes of Warr of the Sixth Rate Warrant. Your most humble servants  
Signed Grat.[?] Bale, Edw(ard). Green, Zach(ariah) Gibson, Cha(rles) Bernard.*

On the bottom of this handwritten certificate is a list of the three ships James served in, with dates and a counter-signature by Charles Bernard-

14 December 1709 *Royal Sovereign*

20 February 1709 Do [ditto]

7 July 1710 *Monks Prize*

15 April 1711 *Squirrel*

From April 1709 candidates for naval surgery had to pass two exams demonstrating competence in both physic and surgery before admission. The dual nature of their medical knowledge is confirmed by another printed certificate, issued by the

*Office of Sick and Wounded: etc the 1<sup>st</sup> Day of December, 1709.*

*To the Principal Officers and Commissioners of Her Majesty's Navy Gentlemen, We the Physicians in the Commission for taking Care of Sick and Wounded Seamen etc, whose Names are Subscribed, do hereby certifie, That, pursuant to an Order from the Right Honourable the Lord High Admiral of GREAT BRITAIN, etc, dated the 9<sup>th</sup> of April, 1709, We have examined the bearer hereof James Halkerston touching his qualification to be surgeon of one of Her Majesty's Ships (as to the Physical Part) and do judge him fitly qualify'd for a Sixth rate Man of War. We are, Gentlemen, your humble servants*

*L. Silvestre, R. Adam, H Humphre*

### **Royal Sovereign**

In spite of the recommendation for James to serve on sixth-rate ships, the *Royal Sovereign* was actually a first-rate ship, built at Woolwich in 1701. He served two short tours of duty here from November 1709, perhaps this was by way of induction

into the life of a sea surgeon. *Royal Sovereign* was a large and famous three-decker carrying 780 men, and 102 guns, so well known that, the author Jonathan Swift (incidentally a friend of the surgeon Charles Bernard), included a reference to the height of its mast in *Gulliver's Travels*. The *Monk's Prize* to which James was appointed in July 1710 was a much smaller ship, a 6<sup>th</sup> rate French privateer which had been captured as a war prize in 1709, carrying 90 men on board and fewer than 20 guns. Following this appointment James moved to *HMS Squirrel* in 1711, a larger 6<sup>th</sup> rate with 118 men and 24 guns.

### Naval Surgeons

At the beginning of the 18<sup>th</sup> century Britain was involved in the War of the Spanish Succession (1702-13), or 'Queen Anne's Wars' as they were known in America, in which the Navy was involved in fighting in the Mediterranean to prevent a possible unification of the thrones of France and Spain and, and in the New World to prevent further territorial acquisitions by them. Although the Navy had its own surgeons, when the war broke out in 1702, the Queen Anne's Navy Board was in the process of establishing a new organisation, *the Commission for the Sick and Wounded*, who were to be responsible, as the name implies, for addressing these problems in the Navy. This Commission immediately took over the responsibility for equipping, paying and recruiting extra medical men to assist in the war effort and it seems probable that James was one of these.

The surgeons they took on at this time weren't counted as naval officers, nor were they under naval regulations. The wording of his tombstone "*serving with the Navy*", rather than "*in the Navy*" suggests that James may have been one of these war-time recruits who would work for the duration of the war only, serving on a ship of the line, or as surgeons in land hospitals taking casualties or in specially designated hospital ships - often adapted by the simple method of cutting a few more ventilation holes in them - conditions on the hospital ships weren't too good, apparently. In 1704, following a visit of inspection to a hospital ship in Gosport, Rear-Admiral Thomas Dilkes had written to the Admiralty complaining that

*'the hospital rooms were too low and poorly furnished, the bedsheets were of poor quality and insufficient and he considered the laying of two [patients] in one bed to be very inconvenient....'*

With, presumably, some years of training behind him and a certificate of professional competence, James was now a surgeon on a sea-going vessel, and in this if he was lucky, he would have been helped by another surgeon and by an assistant. A possibly exaggerated and rather gruesome description of what on-board surgery and medical care was like can be found in Tobias Smollett's *Roderick Random*, which relied on Smollett's own experiences as a naval surgeon's assistant in the 1740s. These assistants often had very little status, disparagingly described as the 'loblolly boys', nursing assistants who merely ran round taking medicines and food to the patients,

including bowls of 'loblolly' - a sort of gruel. During the Mediterranean campaigns, a few female nurses and laundresses began to be employed on board ships but received little favour from the naval officers, as Rear-Admiral George Byng wrote sniffily to the Secretaries of the Admiralty in 1703/4:

*whereas the women now entertained on board as nurses take up a great deal of room and in the opinion of the captain and the surgeon, are rather an inconvenience than otherwise, we conceive that they may be discharged and men employed in their stead'.*

Pay had been increased in 1703 to attract a better class of practitioner and, as a surgeon, James would be paid in the region of £100 a year all found, while the assistant would only get £18. In addition, an allocation of money, based on the type of ship he served on, was given to the surgeon to buy drugs for the voyage, ranging from £8.5s 0d for a 6<sup>th</sup> rate to £30.0.0d for a 1<sup>st</sup> rate ship such as the *Royal Sovereign*. In order to maintain a reasonable standard of medical supplies, the surgeon wouldn't get any salary at all until he'd certified that the drugs he'd bought for his medical chest had been supplied from Apothecaries Hall, which regulated not only their manufacture and quality, but also the price - a subject of considerable annoyance to the surgeons. In an early form of medical insurance, twopence to sixpence a month was also deducted from each seaman's pay at source and given to the surgeon. From the early 18<sup>th</sup> century, the naval surgeons were required to keep some form of record of their patients, but unfortunately most of these archives, both from the Barber-Surgeons and from the Navy, have since been destroyed. However, the appearance of two books specifically on the problems of medicine at sea, Thomas Bates's work on *Fevers Incident to Seamen serving in the Mediterranean (1708)*, and James Christie's on *Sickliness in Fleets and Ships of War (1709)*, suggest a rising concern for maintaining the health of seamen.

### **Naval duties**

The surgeon was expected to inspect new men on board to establish whether they had any disease and if they were indeed fit to serve in the navy. A dispensary and an area set aside for operations were often well down the ship on the airless orlop deck, while the sick bay would consist simply of a very cramped row of hammocks on the lower deck with a singularly ineffective canvas sheet recommended to separate infectious from non-infectious patients.

Although this below-decks position for the sick bay had the advantage of being relatively far from the heat of the action, wounded patients had to be brought down for treatment by several steep and precarious companion-ways, which can't have helped in their treatment or recovery, and the anaesthetic-free surgery which was likely to follow only compounded the dangers. A naval surgeon, John Moyle, wrote his book *Chirurgus Marinus (The Sea Surgeon)* in 1693, describing the dimly-lit theatre of a ship in action, with the deck painted red to disguise the blood, a sail spread over the

treatment area, two sea chests used as an operating table, and all surrounded by the paraphernalia of the barber-surgeon - the instruments and ligatures, tow for absorbing blood, linen cloths, medicinal oils and cordials, rum and opium for analgesics, a leather pad for amputation patients to bite on, and overhead the deafening noise of battle.

Apart from battle wounds, fractures, other accidents and burns, the surgeon might also expect to have patients with dysentery, fevers and other epidemic infections including 'ship's fever' or typhus, consumption, toothache, and malnutrition and stomach problems from the harsh inadequate diet, to which one can add the after-effects of drunkenness and fighting, and the after-effect of shore leave - a dose of the pox.

On a long voyage, the most likely disease was scurvy and although a treatise on the cure of scurvy with citrus fruit would be written in 1753 after controlled experiments by James Lind, another Scot and a naval surgeon, it would take almost 50 years and many deaths before the navy adopted his dietary advice for the sailors. This is especially surprising because John Woodall (1570-1643) a member of the Barber-Surgeon's company, was appointed as the first surgeon-general of the East India Company in 1613. In 1617 he published *'The Surgeon's Mate or A Treatise... of the Surgeon's Chest'*, a medical textbook aimed at young sea surgeons. It describes the instruments and medicines for a surgeon's chest and their uses, and also contains sections on surgical problems and serious medical conditions as well as a discussion of scurvy, for the prevention and cure of which Woodall prescribed *'the juice of vegetables and fruits'*.

It was the next discovery in my research on James's life which has proved to be especially tantalising. In April 1711 he'd obviously received important news when he wrote a letter only a week after his appointment to the HMS *Squirrel*, to the Commissioners of her Majesty's Navy Office,

*Having a Relation dead in ye Country which hath left me an Estate, beg leave of yr. Honours to lay down being surgeon of her Majesty's Ship Squirrel and if you would perhaps to appoint another Surgeon for the said ship.*

*Your Honours most Obedient Humble Servant, James Halkerston Chirurgeon*

Another document indicates that he was finally discharged from the Navy as he requested on 2 May 1711, so the administrative process had moved on pretty quickly. Was his new estate in "ye country" in Scotland or England, or could he even have been left a property in America by a colonialist relative? After only 2 years service, rather than the 8 required, James had not served long enough to receive a pension from the Navy, but perhaps he now had enough money to live on from his savings and his bequest. I have not solved the problem of tracking down either who left him what, or precisely where he was between 1711 and 1717 when his gravestone tells us he set up his medical practice in Boston. I have traced the *Squirrel's* voyage to Boston in 1711 at the same time that James left the Navy, so presumably he just got off there, By leaving the Navy in May it would appear he narrowly missed being involved with the

British fleet which left Boston in July of the same year in a failed attempt to attack the French at Quebec.

### **Boston, Massachusetts**

The town of Boston on the East coast of America was a British colony not yet 100 years old. In the first years of the century there was a surge in the numbers of Scots and Irish, particularly Protestant dissenters, arriving in the American colonies to take advantage of the release of new areas of land for settlement as well as religious freedoms they offered. Perhaps James had seen Boston already on an earlier voyage and considered it a congenial place to settle, where his own prospects as a medical man would be good. By 1719, the year that the first gas lamp had been installed in the now affluent town of Boston, James Halkerston had found himself a wife and on 17 October he and one Margaret Hubbert were married by the Rev Benjamin Wadsworth, pastor of the First Church of Boston. The marriage of a Christopher Halkerston in Boston in 1742 also appears in the genealogical records and this does seem likely to have been James and Margaret's son, perhaps born between 1719-21, before, or even after, the premature death of his father from smallpox.

### **Medicine in the eighteenth century**

As the tombstone tells us, James worked as a physician, surgeon and apothecary in Boston for five years. This triple combination of careers, largely separate occupations in mainland Europe, was still quite common in both Britain and the New World. Although there were a number of medical men in the colonies, there was only a scattering of university-trained doctors in America at the time. There was no medical college there until after the Revolution and few established European physicians appeared willing to surrender their comfortable living for a life in the colonies.

What was the academic basis of medical practice at this moment in history? In early 17<sup>th</sup> Century Europe a slow change had begun to take place in the approached to medical theory and its application, Enquiring minds were struggling to understand and amalgamate the concept of the body as a machine to establish the precise place of the '*animalculi*' seen under the microscope, and the consequent analogy of insects and eggs within the patient that might explain disease transmission. These different ideas jostled for precedence in the minds of men with medical interest or learning as they attempted to shape a coherent alternative to the theory of humours, and the body as a reflection of the macrocosm.

These concepts still underpinned most medical theory and practice. In colonial America in addition to the religious influences pervading the whole society, medicine was still strongly under the authority of the 1-2<sup>nd</sup> Century classical physician Galen. As late as 1750 an apothecary in Charlestown, Mass, called his shop the 'Galen's Head'. But like every other European cultural artefact, guides to health, regimen and child rearing as well as more scientific books were being transported across the

Atlantic by the newcomers and soon reprinted in N. America, - medical books among them. Although there was a lively interest in the new theories emerging from Europe, and there was some indigenous medical writing, much treatment was still concerned with reduction or elimination of excessive or evil 'humours' by methods such as bleeding or cupping, and the administration of emetics, laxatives, or diuretics and the recipes, mostly containing herbal ingredients, would be made up by the doctor himself.

Diseases such as dysentery, smallpox, malaria, pneumonia, influenza, rickets and fevers caused many deaths. Tobacco smoke was considered a prophylactic, so men, women and children might often be seen smoking. There was no regulation of pharmacy here until 1736 and only too often substances such as calomel (mercuric chloride) were favourite and frequently lethal ingredients in medical recipes, usually given in combination with wine, opium and castor oil. Popular verses of the time noted:

*If any fatal wretch be sick  
Go call the doctor, haste, be quick  
The doctor comes with drop and pill  
But don't forget his calomel...*

The patient gets worse, the doctor doubles the dose, until...

*The man begins in death to groan  
The fatal job for him is done  
The soul must go to heaven or hell  
A sacrifice to calomel.*

This was also the time when many patent medicines began to be popular and some early settlers or their medical providers equipped themselves before travelling out with such things as Bateman's Drops, British Oyle, Daffy's Elixir (a compound of senna) or Anderson's pills, a Scottish cure which was first recorded in the 1630s and derived from an aloe-based Italian recipe. One version of these pills was packaged with the cheerful legend "*Remember you must die*"! Venice treacle was still in vogue, a variation on theriac, the mediaeval compound medicine and panacea containing viper's flesh, although the title of snake-oil salesman would soon become synonymous with charlatan or quack who might offer cures for diseases such as those mentioned in a record of 1677: - '*Glimmering of the Gizzard, Quavering of the Kidneys or the Wambling Trot*'.

There are apparently records of fourteen Boston doctors who had opened their own apothecary's shops by 1722, supplying not only medicines, but instruments and other medical sundries. Perhaps James was one of these, as his epitaph suggests. There was no official pharmacopoeia until 1820 and most medical recipes, containing locally

available herbal ingredients, would need to be made up by the doctor himself. Although there may have been some familiar flowers and plants, the new emigrants from Europe would have to learn the acceptable substitutes for European flora, as well as identifying local medicinal plants before feeling confident enough to gather and process their own medical recipes.

Herbal teas were particularly valued for their health-giving properties. St John's Wort was a popular cure-all, and toads burned to a crisp and powdered were taken in small doses for diseases of the blood. Styptics included cobwebs, sassafras root, wych hazel and eagle feather down. In 1708 one cure for jaundice involved yellow substances such as lemon, saffron and turmeric; another one consisted of '20 head lice mixed with nutmeg and sugar and powder of turmerick'. These recipes are especially interesting now that the medicinal properties of turmeric [although not the lice] are once again being explored in western medicine.

### **The 1721 smallpox epidemic**

Now we move on to the smallpox epidemic in which James Halkerston died. Boston was a prosperous port city and the largest town in the new colonies with 12,000 residents by 1720. It had endured six serious outbreaks of smallpox during the 17<sup>th</sup> century, and as a result, the town instituted a series of public health measures including the quarantine of potentially infectious ships from 1701. Patients with smallpox, plague or other virulent fevers were nursed in separate houses, and by 1717 a specialised pest hospital had been built.

It was another virulent epidemic in 1721, which devastated the city, drove most of the citizens to flee their homes, and brought death to James Halkerston. On 22 April the *HMS Seahorse*, a British ship arriving from Barbados, docked in Boston harbour. Within a day of passing the customary health inspection a crew member began to show symptoms of smallpox. He was quarantined and a red flag was put up in front of the house near the harbour where he was being looked after, reading 'God have mercy on this house'. By early May nine more crew members showed signs of acute smallpox. They were also quarantined, but the precautions came too late and soon afterwards cases began to appear in the residents of Boston. The signs and symptoms were described in a later work by local doctor, Zabdiel Boylston.

*Purple spots, the bloody and parchment pox, Hemorahages [sic] of blood at the Mouth, Nose and Fundament and Privities; Ravings and Deliriums; Convulsion and other Fits; virulent inflammations and swellings in the Eyes and Throat...some looking as black as the Stock, others as white as a Sheet; in some the Pock runs into Blisters and the Skin stripping off, leaves the Flesh raw... others have deep and fistulous Ulcers...with Rottenness of the Ligaments and Bones*

Among the treatments suggested at this time were those of *A Brief Rule to Guide the Common-People of New England How to Order Themselves and Theirs in the*

*Smallpocks, or Measels.* By the Rev. Thomas Tacher of Old South Church, Boston: What his suitability to advise was I don't know but he recommended that as soon as the disease appeared '*Let the sick abstain from Flesh and Wine, and open Air, let him use Small Beer [sic] warmed with a Toast for his ordinary drink, and moderately when he desires it.*' Other suggested foodstuffs were '*water-gruel, water potage, boiled apples and milk*' and still in accordance with Galenic theory, none of these items should manifest a hot quality.

### **Inoculation**

There is an interesting story attached to this particular smallpox outbreak which some of you will probably know. A Boston Protestant preacher, Cotton Mather, had an African slave he named Onesimus. As local smallpox deaths grew into the hundreds, Mather, a man who '*made it his business to make everything his business*', began to advocate the use of smallpox inoculation, the technique which was to be the precursor of vaccination and a practice he had learned about from Onesimus. The slave, who probably came from central Sudan, had described the procedure, common to Africa, where pus from a smallpox sore was rubbed into a cut in the arm of a non-infected person. When successful, disease resistance would be developed. The Chinese had used this practice for centuries and inoculation came to notice in England about 1700, and in 1714 and 1716, the Royal Society of London had published favourable accounts of the technique as used by surgeons from Constantinople and Venice. A similar technique of inoculation was introduced into Britain from Turkey by Lady Mary Wortley Montague (1689-1762) in April 1721, the first one in England being performed on her daughter. The following year the British royal family were inoculated and having been found to be relatively safe, it became widely practiced.

In the Boston area all the physicians received letters from Mather about his proposals but Dr Zabdiel Boylston was the only one to be convinced by Mather's argument to start a campaign of inoculation. Resistance was very strong at first and at one point, according to a maybe apocryphal story, after some deaths among the recently-inoculated, Cotton Mather was almost murdered by one of his opponents, when a small bomb was thrown into his house with a note attached: '*Cotton Mather, you dog, damn you! I'll inoculate you with this bomb- a pox to you*'. The fuse of the bomb fizzled out and Mather was spared to continue his campaign.

All the other doctors in town, presumably including James Halkerston, opposed Mather's crusade. Led by William Douglas from Edinburgh, the only local doctor with a medical degree, a Society of Physicians Anti-Inoculators was formed which met regularly in coffee houses to denounce Mather's campaign.

A letter war was waged in the local paper *The Courant*, and in pamphlets from each side, with disputes between those who felt that inoculation ran counter to divine Providence and those of a more practical turn of mind. Douglas himself published a

polemical pamphlet, *The abuses and scandals of some late pamphlets in favour of inoculation of the small pox, modestly obviated, and inoculation further consider'd*, in which he argued that Mather was undermining medical authority and also contended that inoculation without regulated quarantine afterwards would only make the epidemic worse. Perhaps surprisingly, a group of the town's ministers who were among those who wrote in support of Mather's proposals, then found themselves accused of trying to subvert the will of God. Smallpox, said the opposition, was 'a judgment of God on the sins of the people, and to avert it is but to provoke him more.'

Benjamin Coleman (1673-1747) was a local Congregational Minister who wrote a pamphlet recommending the new practice from his own observations and he gives us a fascinating insight into the detail of the process.

*Know then that the incision which the doctor makes into the Arm or Leg, are the least you can ...imagine, and but Skin deep; the quantity of variolous matter...has been but a single and very small drop upon a bit of Lint. After 24 hours we threw it entirely away and put on a dressing of cabbage leaf from day to day. From 6 and sometimes 8 days the Patient continues perfectly well; then a gentle fever rises, accompanied with all the symptoms of the Small-Pox but in a low degree, an aching head and back, and pains in the bones, etc. This makes him dull and heavy for a Day or two, and presently he finds himself well and the Pock appears; rises and goes off without any more illness or pain [and by the 9<sup>th</sup> day] quickly heal of themselves under the same dressing of Cabbage-leaf.... without the Assistance of Medicine ordinarily and almost any need of Nursing [by day] or ...of a Watcher by night, The Patient feels, eats ...and sleeps well. He rarely complains of any pain in his Head,...sore Throat, or Thirst; and is seldom offended with his own smell.*

Mather's and Boylston's reputations were restored by the overall results. Nearly 6000 of Boston's population were infected by this epidemic of smallpox. Over 842 died, but only 6 of the 287 people who were inoculated died. Mather was eventually hailed as a hero, becoming the first native-born American to become a member of the Royal Society. He wrote a treatise the following year, 1722, called *An Account...of the Inoculating of the Smallpox* and followed this with *The Angel of Bethesda, an Essay upon the Common Maladies of Mankind*. This was the first comprehensive account of the practice of colonial medicine, which, firmly situated between the Middle Ages and the Enlightenment, included many chapters wrapped in religious prose while others were devoted to the therapeutic properties of urine and dung.

For James Halkerston, things might have been different had he submitted himself to the experiment, but he was one of the 14% of uninoculated fatalities, and at the age of 36 was laid to rest in the Granary Burying Ground, one of the oldest churchyards in Boston. His tombstone indicates that he was greatly mourned. Maybe the earlier

epitaph noted by Cotton Mather in Westminster was appropriate for James too: *'One who through the spotted Vail of Small-pox rendered a pure unspotted Soul to God'*.

### **Covenanter's Grave**

Before I close, there is yet another facet to this story of our 18<sup>th</sup> century doctor. Rathillet is now a small hamlet in North East Fife in the parish of Cupar and the early Halkerstons were the local lairds. An entry in Cupar parish records notes the birth of James Halkerston in 1683 to George Halkerston and Isabel Smyth of Rathillet and this baby seems most likely to have been our traveller, although the dates don't quite match up. The most famous, or infamous member of the Halkerston family of Rathillet was undoubtedly David Halkerston, or Hackston, which is an abbreviated form of the name, laird of Rathillet, Covenanter, conspirator and onlooker at the murder of Archbishop Sharpe at Magus Muir, near St Andrews, on 3 May, 1679. Halkerston of Rathillet was executed in Edinburgh in 1680 for his part in the murder, his hands cut off, his body hung, drawn and quartered and his head cut off and his severed parts displayed around Fife and Edinburgh. His head and hands are buried in a grave in Cupar Old Kirk, with parts of two other Covenanters.

I thought that this notorious Covenanter might have been kin to James Halkerston. As James was born in 1683-5, David can't have been his father, but I have worked out through various references to the family, that he was James's uncle. I also found that in 1740 one John Halkerston was a surgeon apothecary in St Andrews. He also appears in the register of St Andrews students, taking his BA degree between 1707-10 and his MA in 1711, and I feel sure that he was James's younger brother.

Whether further research will manage to unearth anything more about James remains to be seen. I found that his wife Margaret married again in 1725, taking on nine stepchildren, and after the suicide of her second husband, a clergyman, she disappears from the genealogical records. Maybe another trip to the Granary Burying Yard in Boston might lead to the discovery of her gravestone, or to some other record of Christopher Halkerston, which could link him to James and Margaret.

So that is the story of the life and times of James Halkerston, this medical son of Rathillet, who travelled far from his home, and died too young, but I hope you'll agree that his short life spanned some remarkably interesting times in war and peace, in Scotland, at sea and in colonial America. I've enjoyed researching it all, but anyway, his memory lives on through the words that his wife chose for his tombstone, still to be seen in a graveyard 3000 miles from Fife.

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Guildhall Library, London contains James's certificate of examination to enter the Navy, 1710.

National Archive, ADM 106/2958 and National Maritime Museum contain the documents referring to James's naval service and the letter regarding his legacy.

For individual details of the ships James served in: see D. Lyon, *The Sailing Navy List* (London, 1993).

For the Halkerston family, see: St Andrew's University (SAU) GD1/361/1, pp. 335-39; For John Halkerston, apothecary: SAU B65/5/3 pp. 313-15.

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The story of Cotton Mather, Onesimus and the smallpox inoculations can be found at <http://qhc.bmjournals.com/cgi/content/full/13/1/82>

These two papers brought the 2008-2009 Session of the Society to a conclusion.

## **The Scottish Society of the History of Medicine**

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### **REPORT OF PROCEEDINGS SESSION 2009-2010**

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#### **THE SIXTY FIRST ANNUAL GENERAL MEETING**

The Sixty First Annual General Meeting was held at the Edinburgh Academy on 24 October 2009. The President, Mr Roy Miller was in the chair. 37 members or guests were present. The Secretary, Dr Nigel Malcolm-Smith, presented his report and in the absence, through indisposition, of the Treasurer, Dr Morrice McCrae, the President outlined the Financial Report. Three new Council Members were elected, Dr Vaughan Martin, Mr Iain Macintyre and Mrs Carole Parry.

#### **THE ONE HUNDRED AND EIGHTY FIFTH ORDINARY MEETING**

The One Hundred and Eighty Fifth Meeting of the Society was held on 24 October 2009 at the Edinburgh Academy, Henderson Row, Edinburgh, directly following the Sixty First Annual General Meeting. Thirty seven members or guests attended. Two speakers gave papers, Professor Iain Donaldson speaking on "Three Literary Physician Anatomists in 16<sup>th</sup> Century Paris" and Mr Iain Macintyre on "Suffrage, Surgery and SWH : Elsie Inglis 1864-1917"

#### **SUFFRAGE, SURGERY AND SWH : ELSIE INGLIS 1864-1917**

Elsie Inglis's name is well known to a Scottish audience through her work in medical education for women, women's suffrage, the Scottish Women's Hospitals in the First World War and the hospital in Edinburgh named in her memory.

She was born in 1864 in India where her father was a civil servant with the East India Company. John Inglis had reached the higher echelons of that organisation but was passed over for an assistant governorship and, feeling that the East India Company was becoming too imperialist in its outlook, he decided to return to Scotland with his family in 1878. From an early age Elsie had been close to her father and throughout his life he was to prove a major influence on his daughters. Elsie went to school at the Edinburgh Institution for the Education of Young Ladies at 23 Charlotte Square and an episode in her schooldays here gives an early insight into her resolve and the strength of her character. Charlotte Square Gardens were open only to the residents of the Square but this did not include the girls of the Institution. To correct what she regarded as an unfair and inappropriate anomaly Elsie took a petition round the residents asking that the schoolgirls be given access. This would have been a

formidable task, as the residents of Charlotte Square were the great and good of Scottish Society, but her petition was successful, an early example of her powers of persuasion.

She resolved to study medicine, an ambition which would have been quite impossible only a few years earlier. Sophia Jex-Blake (1840- 1912) opened the Edinburgh School of Medicine for Women in 1886 and Elsie Inglis was among the first students to enrol. The school was located in the northeast corner of Surgeons' Square, with the clinical teaching provided at Leith hospital. Initially all went well, with Sophia Jex-Blake proving a superb teacher and the lady medical students popular at Leith Hospital. (In other hospitals women medical students were often regarded with hostility or even contempt). Jex-Blake felt it important to impose high standards of behaviour and discipline on her students, standards which they came to regard as inappropriately harsh. On one occasion, at the suggestion of the house surgeon, four students stayed after hours in Leith Hospital to follow a case, in direct contravention of Jex-Blake's rules. She subsequently expelled two of them, Grace and Martha Cadell. Pioneer female medical students were nothing if not feisty and the Cadell sisters responded by suing the School for illegal dismissal - and won the case. The reputation of Jex-Blake's Medical school was damaged by the episode; she lost confidence and many of the students lost faith in her. Elsie Inglis turned to her father, a staunch supporter not only of his daughter's education but of the concept of medical education for women. John Inglis had a circle of influential friends including Sir William Muir, a family friend from days in India, who was now Principal of the University of Edinburgh. With the help of such influential people, the Medical College for Women was opened at 30 Chambers Street Edinburgh in 1889, in direct competition to Jex-Blake's School of Medicine. The newer medical college had several advantages, not least of which was lower tuition fees, largely because there was no clinical teaching. The Royal Infirmary of Edinburgh would not accept female students and Jex-Blake held the monopoly at Leith Hospital. So for clinical teaching Elsie Inglis went, with her fellow students, to Glasgow Royal Infirmary where two surgical teachers inspired her to follow a career in surgery. Mr (later Sir) William Macewen and James Hogarth Pringle each made immense contributions to surgery and both were avid supporters of medical education for women. A further major influence from Glasgow days that was to direct her future medical career was the slum conditions which she saw there. Sir Edwin Chadwick's report on the sanitary condition of the nation some 40 years earlier had described the condition of the population in Glasgow as the worst he had seen in any part of Great Britain. Elsie Inglis resolved to offer her medical skills to deprived communities and, in 1892 as a final year medical student, wrote in her diary "I mean to have a hospital of my own in Edinburgh someday".

In 1892 Elsie Inglis qualified with the Scottish triple qualification, a diploma offered by the three Scottish Medical Royal Colleges, which allowed her to become a

registered medical practitioner. (She later graduated MB, CM from the University of Edinburgh, which allowed women to graduate from 1896). For postgraduate training she went to the Rotunda Hospital in Dublin, one of the leading obstetric hospitals in Europe, and here she saw techniques of midwife training which she was to bring back to Edinburgh. In London she gained further experience at the New Hospital for Women, later to become the Elizabeth Garrett Anderson Hospital, and here she trained under Dr. Elizabeth Garrett Anderson, the great pioneer of medical education for women. Returning to Edinburgh she set up in private practice with Dr. Jessie MacGregor (1863-1906) who had been a friend from student days. Despite a series of quarrels when Jessie decided to stay on in Jex-Blake's School of Medicine, their friendship resumed and they were to form a happy and successful medical partnership. This came to a tragic end in 1906 when Jessie MacGregor, visiting relatives in the United States, contracted Rocky Mountain Spotted Fever from which she died. Elsie continued to practise on her own in Walker Street in Edinburgh's fashionable West End.

Her student ambition to set up a hospital of her own was realised in 1899 with the opening of a small hospital for women at 11 George Square. To fulfil her ambition to serve the most deprived she looked for an appropriate building in Edinburgh's Royal Mile, which at that time housed the city's slums. From the Lawnmarket to the foot of the Canongate the tall tenement buildings were crammed with families many of whom lived in abject poverty and amongst whom ill health was rife. The tenement at 219 High Street was in the heart of this community and that location, as far as Elsie Inglis was concerned, more than overcame the obvious architectural and structural barriers to its being converted into a hospital. She called it "The Hospice" a title displayed prominently on the building. It was not a hospice as we understand that word today but rather a surgical, gynaecological and obstetric hospital for women, together with a centre for district midwifery and a dispensary. (Today two plaques to the memory of Elsie Inglis are discreetly displayed on its wall). In 1905 she was appointed to the consulting staff of the Edinburgh Hospital for Women and Children, later to become Bruntsfield Hospital, an appointment which caused Sophia Jex-Blake, by this time retired to England, to write severing all connection with the hospital. In 1910 the Bruntsfield Hospital was expanded and Elsie Inglis showed Queen Mary around the extended hospital. It was decided that medicine and surgery and gynaecology should develop there while the hospice should specialise in midwifery.

By now Elsie Inglis was a medical leader in Edinburgh and almost inevitably she became a leader in the suffrage movement, becoming Secretary of the Scottish Federation of the National Union of Women's Suffrage Societies. A suffragist rather than a suffragette, she had little time for the direct action of the Women's Social and Political Union, the faction of the suffrage movement led by Mrs. Pankhurst, which advocated and practised direct action. Their actions in Scotland included the attempted arson of the headmaster's study at Fettes College and the burning down of the interior

of the ancient church of St Mary at Whitekirk in East Lothian (happily restored shortly afterwards by the leading architect Sir Robert Lorimer).

At the start of the First World War Elsie Inglis was almost 50, an experienced and successful surgeon. She offered her services to the RAMC at Edinburgh Castle to be told "My good lady, go home and sit still". This snub stimulated her to set up the Scottish Women's Hospitals, (SWH), and the phrase was later to become a mantra for the women of the Hospitals, recited when they were about to embark on a difficult or hazardous task. Elsie Inglis became prominent in recruiting and fundraising, using her experience in fundraising for the Hospice to good effect. The initial target of £50,000 was soon exceeded and eventually the SWH was to raise over £450,000 (over £19 million today). In addition to raising funds in Britain, the Empire and the USA, the suffrage network facilitated the recruitment of women doctors and nurses and women from all walks of life responded to the call to volunteer as drivers, orderlies, porters and cooks. Elsie Inglis, by now an inspiring writer and speaker, was a passionate advocate for a greater role for women in society. "We will" she wrote "bring home to men the fact that women can help in any kind of work. So much of our work is done where they cannot see it. They'll see every bit of this."

Although the British government repeatedly declined offers of the services of the SWH, the French and the Serbian governments were more than happy to accept. The first of the Scottish Women's Hospitals was set up in Royaumont Abbey, 25 km north of Paris, and this unit continued to care for the wounded throughout the war. Elsie Inglis had accepted the role as publicist and fundraiser with some reluctance, and although she performed this to great effect, she longed to work as a surgeon. When illness forced one of her colleagues home, she went as chief medical officer to the Serbian unit of the SWH in April 1915. In October of that year, as the Serbian army retreated in the face of the Austro-German advance into Serbia, Elsie Inglis took the decision that her unit should remain with the Serbian army. "As long as the Serbs fight, we'll stick to them" she wrote. It was a decision that was greatly appreciated by the beleaguered Serbs and was to mark the start of the great esteem and popularity which she enjoyed in that country. The Serbian unit of the SWH was captured with the Serbian army and began to treat the German and Austrian wounded in addition to the Serbs. Elsie Inglis and her unit were repatriated in February 1916 via Vienna and Zurich.

On return to Britain Elsie Inglis resumed her campaign, successfully fundraising and recruiting. In July 1916 the Serbian prime minister appealed directly to the SWH for a unit to join the two Serbian divisions attached to the Rumanian and Russian armies fighting in Rumania. As a result the SWH Russian unit was formed and in August 1916 some 75 women assembled at Liverpool with Elsie Inglis as chief medical officer. With 16 assorted vehicles including ambulances, kitchen cars, lorries and

staff cars and some 50 tons of medical equipment, they embarked on a remarkable long, hazardous journey to Rumania.

The unit, joined by Serbian liaison officers and men, sailed north along the west coast of Norway through waters made treacherous by the presence of German U-boats. Days at sea were filled with training, which included exercises in first aid and stretcher drill and language classes in Russian and Serbian. (In the event, ironically, the most useful language proved to be German). After disembarking at Archangel they travelled by train the length of Russia from White Sea to Black Sea, going via Moscow to Odessa and then to Reni where they sailed down the Danube by river steamer to Cernavoda, which guarded the eastern end of the strategically important Carol Bridge and, at that time, lay some 10 miles behind the frontline.

Shortly after arrival the women began to set up field hospitals and soon found themselves under regular attack by enemy bombers. Within weeks the Serbian divisions and their Russian and Rumanian Allies were in retreat and the field hospitals of the SWH retreated with them often under aerial and artillery bombardment. As the retreat continued into Rumania the SWH field hospitals now had to treat civilian as well as military casualties. The work of the SWH became widely known and hugely appreciated throughout Serbia, a country facing defeat and desperately seeking heroes to boost morale. Their fame and repute grew as a result of reports like this from a Serbian doctor. "Elsie Inglis" he wrote "maintained a unique discipline ... during the terrible retreat when her hospitals were ceaselessly bombed... she worked without a day's rest, not shrinking from the most arduous or loathsome tasks. We shall never forget these days when we saw the Scottish women collecting our wounded from the firing line in their own ambulances".

By the end of October the SWH had regrouped on the north bank of the Danube, but by the start of 1917 the retreat continued into Russia itself and base hospitals were established in Reni and Odessa where they were to remain for the next eight months. The Russian revolution in March 1917 produced uncertainty about supplies, about Russia's ability to continue fighting and about the safety of the SWH staff.

Throughout 1917 Elsie Inglis was concerned about the fate of the Serbian troops marooned in Russia. In a series of telegrams to the British government and to several influential individuals she expressed her concern for the Serbian divisions isolated in post-revolutionary Russia, pleading that they be relocated to France or Salonika. The rump of the Serbian divisions was eventually relocated to Salonika via Britain but Elsie Inglis would not live to see this.

By September 1917 she was clearly unwell. The following month the SWH Committee in London, ordered the Russian unit home, and, accompanied by several companies of Serbian troops, they made the train journey back to Archangel and sailed for Newcastle, where Elsie Inglis died the day after landing. Her body lay in

state in St Giles cathedral in Edinburgh a few yards from the Hospice which she had established. Serbian and British royalty attended her funeral and the Serb government awarded her the Order of the White Eagle, the highest decoration it could bestow. Elsie Inglis became a national heroine. Queen Mary, whom she had shown round Bruntsfield Hospital, wrote that “her splendid service to Serbia can never be forgotten” while Winston Churchill, in paying tribute to the Scottish Women’s Hospitals, declared that “the record of their work, lit up by the fame of Dr. Inglis, will shine in history”.

To preserve her name a memorial fund was set up to build a new hospice in Edinburgh. The location chosen was Spring Gardens overlooking Holyrood Park. The site was, as the fundraising brochures put it, “quite near the homes of the poorest parts of the city” and thus maintained the ethos of care for the deprived that had been championed by Elsie Inglis. The Elsie Inglis Memorial Hospital, a maternity hospital staffed by women, was opened in 1925 and provided invaluable obstetric and neonatal service until its closure in 1988. The building survives today as the Elsie Inglis nursing home.

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### **THE ONE HUNDRED AND EIGHTY SIXTH ORDINARY MEETING**

The One Hundred and Eighty Sixth Ordinary Meeting was held in Glasgow on 6 March 2010, with the President Mr Roy Miller in the Chair. Twenty six members or guests attended. Two papers were read, one by Dr Alistair McKenzie on Anaesthetic and Other Treatments of Shellshock: World War I and Beyond and the other by Mr Miller on Adam Brown Kelly’s Chair.

A brief summary of Dr McKenzie’s paper follows.

## ANAESTHETIC AND OTHER TREATMENTS OF SHELL SHOCK: WORLD WAR I AND BEYOND

Shell shock or neurasthenia was a major problem for medical services in the First World War and its aftermath. As early as December 1914 it affected 7-10% of the officers and 3-4% of other ranks in the British Expeditionary Force. One of the first to publish on shell shock was Dr Charles Myers in February 1915, when practising at a War Hospital in France. As a result he was appointed by the War Office. In the summer 'forward psychiatry' was begun by French doctors, who tried treatment with electric shock. Some British doctors tried treatment with general anaesthesia - ether and chloroform; others preferred application of faradic current. In June 1916 the War Office recognised shell shock as a genuine war injury.

Four British 'forward psychiatric units' were set up in 1917. One of these was commanded by Major William Brown, who favoured modified Freudian methods - early Cognitive Behavioural Therapy (CBT). The USA sent Dr TW Salmon to investigate and his report was responsible for the introduction of *selection* and of psychiatrists into the USA military.

Hospitals for shell shocked soldiers were also set up in Britain: Maghull MH near Liverpool, Seale Hayne MH in Devon, RVMH at Netley (Hants), and (for officers) Craiglockhart War Hospital (CWH) in Edinburgh. The War Poets Wilfred Owen and Siegfried Sassoon were at CWH in 1917. William Brown became Commanding Officer of CWH in 1918. Patients diagnosed as having more serious psychiatric conditions were transferred from CWH to the Royal Edinburgh Asylum.

Gradually, towards the end of 1918, anaesthetic and electrical treatments of shell shock fell out of favour. The efficacy of 'forward psychiatry' in WWI was acclaimed and also disputed!

In 1922 the War Office produced a report on shell shock which had recommendations for prevention of war neurosis. However, when World War II broke out in 1939, this seemed ignored: pre-selection was rejected and recruiting boards were unable or unwilling to distinguish neurosis from malingering. The term 'combat fatigue' was introduced as breakdown rates became alarming, and then the value of pre-selection was recognised.

At the Maudsley Hospital in London in 1940 William Sargant advocated barbiturate abreaction for quick relief from severe anxiety and hysteria. He used IV anaesthetics: Somnifaine, paraldehyde and sodium amytal. 'Pentothal narcosis' and 'narco-analysis' were adopted by British and American military psychiatrists. By 1942 in London, Sargant also employed continuous sleep treatment, modified insulin to increase

weight, and convulsion treatment. However, by the end of WWII medical thinking gradually settled on the same approaches that had seemed effective in WWI.

In 1980 the term 'Post-traumatic Stress Disorder' was introduced and this was recognised by the WHO in 1993 as a separate diagnostic entity. Current guidelines for treatment include CBT and some drugs, but **no** anaesthetics.

### ADAM BROWN KELLY'S CHAIR

Adam Brown Kelly was the son of Lawson Kelly, a GP on the south side of Glasgow who, along with a colleague, Dr Ebenezer Duncan, was instrumental in the foundation of the Victoria Infirmary, a hospital which is unique in that it was founded by an Act of Parliament, "The Victoria Infirmary of Glasgow Act 1888."

Adam was born in 1865 and educated at Madras College, St Andrews, before entering Glasgow University, graduating BSc in 1817 and MB CM in 1888. In 1892 he became an ENT dispensary physician at the Victoria's Tradeston Dispensary, going on to become a consultant on the hospital staff in 1905, by which time he had acquired a DSc and an MD with commendation. He became a Fellow of the Glasgow College when it was still the Royal Faculty in 1920 and was a President of the Section of Laryngoscopy of the Royal Society of Medicine. He died in 1941.

He and Donald Paterson, an Edinburgh graduate working in Cardiff, gave complementary papers, at the summer meeting of the RSM in May 1919, on upper end dysphagia occurring in anaemic women who also had glossitis, angular stomatitis and koilonychia. It was noted that their post-cricoid narrowing had a predilection to become malignant. Their papers were published in the Journal of Laryngology and Otology that same year.

In 1914, in the United States, Dr Henry Plummer, Senior Physician at the Mayo Clinic, commented on a series of patients who were iron deficient, many with splenomegaly, who had difficulty in swallowing, which he regarded as hysterical. He treated them with iron for anaemia and bouginage for dysphagia. Eight years later, in 1922, his colleague Porter Vinson wrote about these observations, with no mention of glossitis or stomatitis. In 1926 Dr, later Sir, Arthur Hurst of Guy's Hospital, London, reported on a patient with the full blown syndrome which he called Plummer-Vinson Syndrome. Hurst later apologised in 1928 in the BMJ for using the term, admitting that he had been unaware of the earlier papers. After a review of the relevant literature, Ormerod in the Journal of Laryngology and Otology in 1966 concluded, "*if this group of symptoms and signs is to be included under the title of somebody's syndrome, then there seems to be more justification in conferring the distinction on Paterson and Brown Kelly than on anyone else.*"

At the outbreak of war on 4<sup>th</sup> August 1914, Stobhill Hospital to the north of the city of Glasgow was requisitioned for military use and was run as two military hospitals, the 3<sup>rd</sup> and 4<sup>th</sup> Scottish General Hospitals, by territorials of the RAMC. The wounded were transported into the heart of the city via a branch line of the Caledonian

Railway, which had been laid during the construction of the hospital in 1901. Adam Brown Kelly was the ENT Specialist, with the rank of Captain. 1040 beds were available. By September 1914, 200 wounded had already been admitted. This experience was the source of one of his most interesting papers. Brown Kelly's successor and one time surgical dresser, Alex Strang used to visit the Victoria regularly after retiring. He told me this story about the great man which is notable in these days of obsession with hospital waiting times.

The ENT clinic was held in the Victoria on a Wednesday. All patients were instructed to arrive before noon. At around 1.00pm Dr Strang appeared, opened the outpatient ledger and wrote down each patient's details and history. Adam Brown Kelly arrived at 3.00pm and began the clinic. If a patient was deemed to warrant endoscopy, the clinic was temporarily abandoned. The patient was taken to theatre and put on the operating table with his head extending over the edge. Donning a rubber apron, Dr Strang sat cradling the head so that he could move it when the patient was asleep. The tricky bit was that Strang also had to administer the chloroform anaesthetic - no mean feat. He recalled omitting the apron once and struggling to keep the head steady despite an agonising burning sensation in a rather sensitive area. The pair would then return to the clinic and continue in like fashion until all were dealt with. This could be 1.00am or even 2.00am. His son Derek said that his mother would only worry once midnight had passed.

In his obituary, his colleague GB Brand wrote "*We remember him as a tall well built man with a scholarly stoop, who radiated kindness... I am certain that he never made an enemy.*" Yet this is the shy man who at the annual dinner of the Glasgow Southern Medical Society sang "Three Jolly Sailor Boys" and in a trio "Faint Heart never won Fair Lady", followed by "The Skye Boat Song."

And now to the chair. Adam Brown Kelly lived in a large house, 26 Blythswood Square, just around the corner from the Royal College of Physicians and Surgeons of Glasgow and opposite the Old Automobile Club. Impressed by a similar chair the famous Sir Morell Mackenzie had designed, he commissioned Mr Mayer of Mayer and Meltzer, some time in the 1890s, to make this chair to be used for clinical examination and operative procedures. Like Mackenzie, Brown Kelly had visited the acknowledged centres of excellence on the Continent, such as Vienna, Berlin and Paris. It was from Paris that he brought back Ethyl Bromide as an anaesthetic agent instead of Ethyl Chloride for use in adeno-tonsillectomy. He obtained it specially from Duncan, Flockhart and Co. of Edinburgh.

The chair that he had made has certain unusual features. The high back, with its adjustable headrest, is at right angles to the seat. This forces the occupant to maintain a very upright posture, unable to retreat from the examiner. There is only one armrest, on the left side, and the central portion of the seat can rotate. These features facilitate certain otolaryngological procedures.

All examination was done using reflected light, concentrated by a concave mirror on the forehead. Its central aperture allowed the examiner to look down the centre of the light beam. The light source was behind and to the left of the chair back.

In the era of gas lighting, Brown Kelly used limelight to enhance the brightness. This is obtained by playing a hot flame on a ball of lime. He used ordinary coal gas, into which was fed oxygen from a cylinder, a procedure which sounds terrifyingly dangerous. (An Edinburgh civil engineer, called Captain Drummond, who was involved in the trigonometrical survey of Britain, had popularised the use of limelight in 1825, employing it for signalling.) 10% cocaine solution was used for local anaesthesia for procedures such as antral lavage and removal of nasal polyps.

The chair really came into its own during adeno-tonsillectomy. The tonsils were removed using a guillotine and the tonsils with a curette. In John Hunter's day, the instrument used on the tonsils really was a guillotine, because only the superficial part was cut off. In the more modern instrument the tonsil was forced through the ring and "dislocated" from its bed, allowing the vessels to be crushed. The ragged avulsed vessels retracted and liberated tissue thromboplastins brought about haemostasis. Considerable ambidexterity is required, as is speed of action. When I was learning, I was told that it would take at least three months to acquire the skills to do the operation properly, and this was in an era when an anaesthetist was also involved and the patient was lying on an operating table.

Brown Kelly had an assistant sitting in the chair, holding the child whose legs were restrained by the assistant's crossed legs. An arm was placed across the chest and the other hand held the child's forehead. Lint was laid over the child's nose and mouth and Ethyl Bromide sprayed onto it. Depth of anaesthesia was monitored by inspecting eye movement. Judgement was critical, as was speed. A Doyen's Gag was inserted and opened. The right tonsil was removed with the right hand and the left with the left hand. The child was then turned to the right, prone over a basin of cold water, the face sponged and the mouth cleared. The child was then returned to the upright position and the adenoids curetted, then returned face down over the basin and sponged until recovery, which was very quick and accompanied by much crying, which remarkably settled just as quickly.

Adam's son, Derek Brown Kelly, inherited the chair and I have witnessed him using it for adeno-tonsillectomy. Describing the procedure makes it seem barbaric, but in practice the children I witnessed accepted it with apparent equanimity. Perhaps it is worth recording that Adam Brown Kelly removed Derek's tonsils and adenoids when he was 12, and on this very chair. Derek remembers seeing a very bright circle of light, which began to rotate, but nothing of an anaesthetic smell or even of pain. What lingers most in his memory was his father making him walk upstairs to bed afterwards.

Derek continued this method of operation for many years and in fact tried to persuade me to follow suit, but I was happy to let him be the last to use what was an historic procedure, although I guillotined tonsils quite happily in more amenable conditions.

When Derek Brown Kelly retired, Eric Osborne inherited the chair, which he used for examination in his rooms and when he retired it was pensioned off to his basement. I had promised Derek, whom I befriended until his death at the age of 97,

that I would try to find it a permanent home. The then Honorary Librarian of the College, Ian Boyle, liked it and its provenance and this has given me the opportunity to tell this story in its presence.

### **THE HALDANE TAIT LECTURE 2010**

The Nineteenth Haldane Tait Lecture was held in the Craighouse Campus of Napier University in Edinburgh on 5 May 2010. The speaker was Professor Hugh Pennington of Aberdeen University and his topic was Listerism, its Reception in Glasgow, Aberdeen, Copenhagen and Dorpat.

### **LISTERISM, ITS RECEPTION IN GLASGOW, ABERDEEN, COPENHAGEN AND DORPAT**

In 2012 we will commemorate the centenary of the death of Joseph Lister. It is to be hoped that we do a better job of praising his achievements than we have in the past. The most recent in-depth celebratory account of his work was published in East Germany in 1984<sup>1</sup>. Maybe it is a Scottish trait to be guarded in the praise we give to our innovators. But the lessons that Lister taught are still very relevant regarding the prevention of surgical infections. It is hard to think of a better reason for studying medical history.

In general the stories of his development of antiseptic surgery, the revolution that he started, and his uphill struggles for acceptance of his system are well known. But many details remain unexplored. I attempt here to fill some gaps by examining the implementation of Listerian practice in four centres in northern Europe.

Lister published a long five-part paper describing his system in the *Lancet* in March, April and July 1867<sup>2</sup> and gave a paper on it at the British Medical Association meeting in August in Dublin. The impact in Aberdeen was immediate. William Pirrie, the Professor of Surgery, wrote<sup>3</sup> 'having perused in the columns of the *Lancet* Professor Lister's original communications on the use of Carbolic Acid: having also, on the 7<sup>th</sup> of August....in Dublin, heard him read his paper....and, having, on my arrival at the Aberdeen Hospital on the following Sunday morning, been called to an extensive burn....it occurred to me that carbolic acid might be found as useful in burns as it has proved to have been in other cases.' The patient was a 'thin, delicate-looking girl eleven years of age' who had been extensively scalded, with vesicles on the shoulder, neck and shoulder. 'Two folds of lint, dipped in a liniment of one part of carbolic acid to six parts of olive oil, were closely applied to the whole of the scalded surface. A double layer of tinfoil was placed above the lint....in ten minutes, the patient, much to my surprise, stated that she was free from pain....on the twelfth day the skin was everywhere perfectly healed...and although the case was watched with the utmost care, not a single drop of pus was discovered.' Pirrie was an enthusiastic user of acupressure, a system that used needles and wires, rather than ligatures, to prevent haemorrhage from blood vessels. He wrote a book about it<sup>4</sup>. His successor in the

Chair, Alexander Ogston, wrote<sup>5</sup>, however, that Pirrie 'attributed to acupressure many virtues which it did not really possess, among others that it prevented suppuration. He really believed this, though the rest of us all knew that the apparent results were due to the zeal with which his trusted nurses in his wards wiped away every drop of pus immediately before (he) made his rounds.'

There is no evidence that Pirrie adopted Listerism in his surgical practice. But others did, with events elsewhere moving even faster than at Aberdeen. Herrmann Georg Joseph<sup>6</sup> describes 16 abscess cases treated antiseptically at St Jacobs Hospital in Leipzig. The first were treated in July 1867, before the publication of the final part of Lister's Lancet paper. The great majority had tuberculous abscesses, half of them linked to spinal disease. None developed secondary infections after abscess drainage, the lethal 'hectic fever' that developed so frequently after this procedure for the textbooks of the day to say that such abscesses should be left alone. Joseph concluded that Lister's method was 'victorious'. It was 'the way forward'.

Lister was aware of events in Leipzig and the work there of Thiersch, the professor of surgery, who used salicylic acid rather than carbolic. But he gave the European priority to Saxtorph in Copenhagen. 'I believe he was the first to bring it (antiseptic surgery) into operation on the Continent' he said in 1875<sup>7</sup>. There is a paradox. Saxtorph first visited Glasgow to see Lister's work in the summer of 1868, when Harald Philipsen and Valdemar Holmer, surgeons at the Copenhagen Kommunehospitalet, were already using the antiseptic method<sup>8</sup>. Saxtorph's adoption of it was slower than his well known letter to Lister ('not a single case of pyaemia has occurred since I came home')<sup>9</sup> might indicate. Saxtorph's operation results were discussed by Watson Cheyne, Lister's keenest disciple, in 1882<sup>10</sup>. 'Before 1873 Saxtorph had performed 15 excisions of joints, of which 9, or 60%, died. These wounds were treated in the ordinary manner. He then introduced antiseptic precautions, but they were very imperfectly carried out. During this period (between 1873 and 1877) he performed 76 excisions of joints with 32 deaths, or a mortality of 42%.' Perhaps it was another link with Saxtorph that drove Lister's enthusiasm for his work. Both were strong opponents of women in medicine. The historians of the University of Copenhagen remember Saxtorph for this, not for his surgery<sup>11</sup>. In 1874 he said 'It would do irreparable harm to the Danish medical profession...if only one female were to have her application granted, we should soon be swamped by such indecent persons, and it would only lead to bitter regret at having given way to the spirit of the time - or else we should, as doubtless will happen in Edinburgh, have finally to yield to the combined protests of the medical students and many professors and banish females again...'. Lister was one of the anti-female Edinburgh professors. Even in the 20<sup>th</sup> century he still regarded mixed sex classes for medical students as 'monstrous'<sup>12</sup>.

In 1870 Alexander Ogston, who had been appointed junior surgeon to the Aberdeen Royal Infirmary, visited Hector Cameron's wards at the Royal Infirmary in Glasgow to see Listerism at first hand. 'I was shown a knee joint which had been opened...there could be no room for doubt...the wound made into the joint was there, but where was

the inflammation that ought fatally to have followed? There was none...I felt inclined to sit down, cover my face with my hands, and think out what the great revelation implied in the future.<sup>15</sup> On the 17<sup>th</sup> of May 1876 he did his first antiseptic osteotomy - not a life-saving operation but one to rectify a deformity, in this case, one of gross knock-knee in an 18 year old moulder in an iron foundry<sup>13</sup>. This event signalled the transformation of this operation into a routine procedure<sup>14</sup>. By 1884 William Macewen at the Glasgow Royal infirmary had recorded a personal series of 1,800<sup>15</sup>. Ogston's discovery of *Staphylococcus aureus* in Aberdeen in 1880 was, of course, another milestone<sup>16,17</sup>.

Listerism was doing well in other centres. Carl Reyher, Dozent (Reader) in surgery at Dorpat, visited Lister in Edinburgh in June 1873 and August 1874 and brought the technique home with him<sup>18</sup>. At that time Dorpat (now Tartu, Estonia) was a leading university in the Russian Empire. Founded in 1632 by Gustavus II Adolphus of Sweden and refounded in 1802 by Tsar Alexander I, it was administered by, and catered mainly for the Baltic Germans who ran that part of the Empire for the Tsar<sup>19</sup>. It was well known as a surgical centre. Nicolai Pirogov, inventor of his eponymous amputation, pioneer of anaesthesia, and facilitator of nursing improvements during the Crimean war on the Russian side<sup>20</sup>, was Professor of Surgery there from 1836 to 1841. In 1877 Reyher was a consultant surgeon to the Russian Army of the Caucasus, and Ernst Bergmann, Professor of Surgery at Dorpat, held the same position in the Russian Army of the Danube. During the Russo-Turkish war in that year they were the first to use the antiseptic system systematically on the battlefield. Reyher divided his cases into 'primary' - treated antiseptically from the very first, and 'secondary' - cases that had been examined or treated without antiseptic precautions before coming under his care. His knee joint results (Table 1) were impressive<sup>21</sup>. Bergmann had the same degree of success in managing injuries of the same joint.

Table 1 Results of Reyher's treatment of joint wounds.

	Primary antiseptic treatment			
	Total	Healed	Died	% Mortality
Shoulder	1	1	0	0
Elbow	2	2	0	0
Hip	1	0	1	100
Knee	18	15	3	16.6
Foot	5	5	0	0
	Secondary antiseptic treatment			
	Total	Healed	Died	% Mortality
Shoulder	7	4	3	42.8
Elbow	11	8	3	27.2
Hand	5	4	1	20
Hip	4	0	4	100
Knee	40	6	34	85
Ankle	6	4	2	33.3
Tarsus	5	4	1	20

1314 dissertations were published by students in the Dorpat medical faculty between 1802 and 1890<sup>22</sup>. Particularly notable was one by Leonid Bucholtz, 'Das Verhältniss von bakterien zu einigen Antisepticis'. It was published in full in 1875<sup>23</sup> and was remarkable not only as an 81 page paper in an important journal with its single author being described as 'Stud. med', but because of its pioneering and prescient nature. Bucholtz worked out how to measure the antibacterial activity of antiseptics and showed that mercuric chloride (corrosive sublimate) was 100 times more powerful than carbolic. In 1881 Robert Koch used much more technically advanced methods - he had invented most of them himself - and got a similar result, finding that sublimate was 300 times stronger than carbolic<sup>24</sup>. Sublimate rapidly replaced carbolic in surgery<sup>25</sup>.

Lister's antiseptic ideas were taken up in many centres without delay. The number of publications on them took off in 1875 (Figure 1). Their greatest success was when they were applied with attention to detail to prevent, rather than to treat, surgical infections in particular circumstances. They allowed psoas abscesses to be opened as a routine, osteotomies to be done with remarkably low infection rates, and they reduced the mortality from bullet wounds of joints by an order of magnitude. Perhaps the biggest impact on hospital activity was at Glasgow Royal Infirmary, where in 1880 William Macewen did 335 osteotomies. I have speculated that the subsequent decline in the number of these operations there might have been due to his clearance from the west of Scotland of knock-knee patients with severe enough deformities to need surgery! But the number of operations in hospitals did not massively increase because of the adoption of antiseptic practice. At St Thomas's Hospital in London, for example, theatres were only used on Wednesday and Saturday afternoons until 1895. Only in that year did lists begin to be scheduled every week-day.

Aseptic methods began to supplant the antiseptic system at the beginning of the 1890s<sup>25</sup>. A major centre of innovation was Bergmann's clinic in Berlin. He had moved there from Dorpat *via* Wurzburg, and was now 'Professor Dr Ernst von Bergmann, Geheimer Medizinalrat und Generalarzt'. But metropolitan centres did not have a developmental monopoly. The first European surgeon to use sterile rubber gloves and to write a paper on them was Werner Zoege von Manteuffel, Professor of Surgery in Dorpat<sup>26</sup>!

### **Acknowledgements**

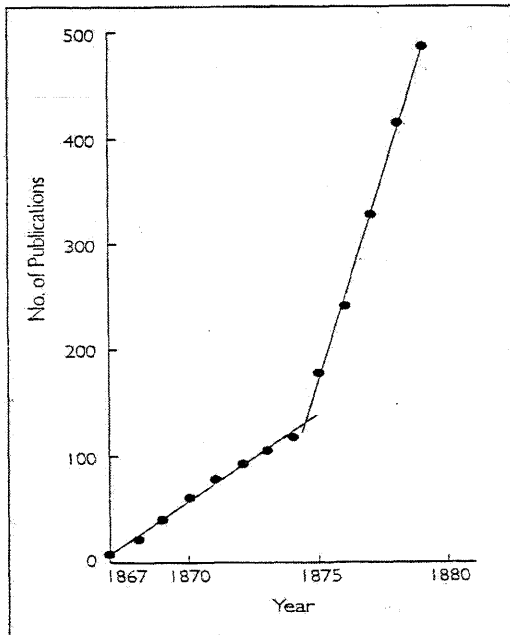
I thank Dr Anna-Elisabeth Brade, Institut for Folkesundhedsvidenskab, University of Copenhagen, for sending me papers about Mathias Saxtorph, and Fiona Watson, Archivist, Northern Health Services, for drawing my attention to Pirrie's 1867 Lancet paper.

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Cumulative numbers of publications listed under 'Antiseptic Surgery' in the Index Catalogue of the Library of Surgeon General's Office, US Army, 1880. (Washington, D. C. U.S. Government Printing Office.)

Figure 1

## **THE ONE HUNDRED AND EIGHTY SEVENTH ORDINARY MEETING**

The One Hundred and Eighty Seventh Ordinary Meeting was held at Dudhope Castle, University of Abertay, in Dundee, on 12 June 2010. Thirty three members or guests attended and after an excellent lunch there were two speakers. Mr Iain MacLaren gave a fascinating talk on the Medical Services of the Roman Army and Professor Tony Wildsmith gave a most interesting talk titled (Mostly Celtic) Local Heroes, in which he described pioneering work in the development of Local Anaesthesia, with particular reference to Scottish contributors such as JY Simpson, Alexander Wood, Alexander Hughes Bennett and JW Struthers. Members of the Society will be interested to know that Professor Wildsmith's paper was subsequently published in the Journal of the Royal College of Physicians of Edinburgh, (2012, vol 42, pages 179-183).

[http://www.rcpe.ac.uk/journal/issue/journal\\_42\\_2/wildsmith.pdf](http://www.rcpe.ac.uk/journal/issue/journal_42_2/wildsmith.pdf)

With these two papers, the 2009-2010 session of the Society came to an end.

# The Scottish Society of the History of Medicine

## Constitution as revised at AGM of 1999

1. The Society shall be called "THE SCOTTISH SOCIETY OF THE HISTORY OF MEDICINE," and shall consist of those who desire to promote the study of the History of Medicine.
2. A General Meeting of Members shall be held once a year on the last day of October or within four weeks of that date, to receive reports and to elect Members of Council and (when required) Office Bearers. The quorum shall be 20 members and decisions shall be taken by a majority. The President shall have a casting vote, and there shall be no proxy voting.
3. The management of the affairs of the Society shall be vested in a Council, comprising a President, a Vice-President (serving as Deputy President and President-Designate), a Secretary, and a Treasurer (the four Office-Bearers), along with nine other members ("Ordinary Members of Council"). The immediate Past President may also be included as a member of Council, as provided below. The quorum at Council meetings shall be six and there shall be no casting vote.
4. The President and Vice-President shall be elected at an Annual General Meeting, to serve normally for a tenure of three successive years, and shall not hold their post for more than three successive years, but shall be eligible to serve again after the lapse of one year if re-elected. In addition, the immediate Past President may remain a member of Council for two years after the end of his or her term of office as President. The Secretary and Treasurer shall be elected at an Annual General Meeting, to serve normally for a tenure of three successive years, and shall be eligible to serve again if re-elected, but should not normally hold office for more than six consecutive years. The names of all candidates for election as Office-Bearers and of their proposers shall be made known to the Secretary before the Meeting at which election is to take place.
5. Any Office-bearer may be required to retire from office by resolution at any AGM, but the proposer and seconder of the resolution shall give a month's notice in writing to the Secretary (or in the case of the Secretary to the President), and the resolution must be pre-circulated to Members in the papers for the AGM.
6. Three Ordinary Members of Council shall be elected at each Annual General Meeting, to serve normally for a tenure of three successive years, and shall not be eligible for re-election at the end of their tenure until a year has elapsed; each year, the three Ordinary Members most senior by date of election shall demit office. If an Ordinary Member is otherwise unable to complete his or her term of office, the Council shall co-opt a replacement to complete the term, and this replacement shall be eligible at the end of the term to be elected for a further full term, despite having already served part of a term.
7. The Council shall have power to co-opt at any time other members who in their opinion are fitted to render special service to the Society. Such co-opted members shall be in addition to those in clause 6 above, and the co-option shall require the approval of each subsequent Annual General Meeting if it is to continue further.
8. To recognise outstanding service to the Society or to Medical History in general, upon occasion an Honorary Member of the Society may be elected at any Annual General Meeting. Any name proposed (with the name of a proposer and seconder, and details of the case) must be intimated in writing at least three months before the meeting to the Secretary, so that they are included in the pre-circulated Agenda for the meeting. Honorary Members shall pay no subscription.
9. The Annual Subscription shall be reconsidered from time to time by Council and reported to the Society at the Annual General Meeting. The Subscription (or revised Subscription) will fall due immediately following the AGM. A Member whose subscription is outstanding for a full year shall cease to be a member of the Society.
10. The Council shall ensure that full and punctual Accounts are kept for the Society and shall cause to be prepared once a year a Statement of Accounts and a Balance Sheet for the previous year.
11. The Society's funds shall consist of funds in the hands of the Treasurer, together with other sums of money and securities. These funds shall be held by the Treasurer, acting with the President and the Secretary (the Trustees), in trust for the Society's aims and objects, and in furtherance of this purpose the three Trustees shall have the following powers:
  - (a) Payments shall be made out of income or capital of the Society as the Trustees shall determine; all cheques shall require the signatures of two of the three Trustees.
  - (b) The Trustees may purchase and sell stocks, bonds, securities and other investments.
  - (c) The Trustees may delegate the management and investment of the Society's funds to the Treasurer and will consult with him on a regular basis as to the performance of the investments and assets comprising the Society's funds.
12. The Secretary shall keep brief Minutes of the proceedings both of the AGM and of the Council, shall prepare Agenda, and shall conduct the correspondence of the Society.
13. Meetings shall be held at least twice yearly, and the place of meeting shall be in any of the University centres, or elsewhere, as the Council may decide.
14. This Constitution may be amended at any General Meeting of the Society on four weeks' notice of the proposed amendment being given by the Secretary, such amendment to be included in the Agenda circulated for the Meeting. No such alteration or amendment shall have the effect of prejudicing the Society's charitable status in law.
15. The Council may resolve that the purposes for which the Society's funds are held can no longer be carried out by them or could be carried out more efficiently by some other body, fund or institution, and shall so report to a General Meeting of the Society; and if the General Meeting agrees, require the Trustees to make over the Income and Capital of the Society's funds to that other body, fund or institution whose aims and objects most closely resemble those of the Society, and so bring the Society to an end.

