The Scottish Society Of the History of Medicine

(Founded April, 1948)

REPORT OF PROCEEDINGS

SESSION 2012-2013 and 2013-2014

The Scottish Society of the History of Medicine

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THE SIXTY FOURTH ANNUAL GENERAL MEETING

The Sixty Fourth Annual General Meeting was held at the Edinburgh Academy on 27 October 2012. The President, Dr David Boyd, was in the chair. The Secretary, Dr Nigel Malcolm-Smith, presented his report and the Treasurer, Mr Iain Macintyre, presented the Treasurer's report, which was accepted. Mrs Carol Parry was elected as Secretary in place of Dr Nigel Malcolm-Smith who was thanked for his contributions. Professor Tony Wildsmith retired from Council and was thanked for his contributions and three new members were elected to Council, Professor Sandy Raeburn, Dr Joyce Richardson and Miss Christine Short.

THE ONE HUNDRED AND NINETY FOURTH ORDINARY MEETING

The One Hundred and Ninety Fourth Ordinary Meeting of the Society was held at the Edinburgh Academy on 27 October 2012, directly following the Sixty Fourth Annual General Meeting. There were four speakers, Poppy Edwards, from Dundee, talked on "Better than Bedlam – the Rise and Fall of the Mental Asylum", Roz Sullivan from Glasgow, talked on "The General Medical Council and the Changes in its Disciplinary Procedures 1858-2010" Jessica Dalzell, from Dundee talked on "Adaptations for the Empire: Roman Medicine 753BC to AD235" and Kim Ross, from Glasgow, talked on "The Locational History of Lunatic Asylums in 19th Century Scotland"

ALL CHANGED: CHANGED UTTERLY
THE DISCIPLINARY PROCESS OF THE GMC 1858-2012

This title is the refrain from a poem by William Butler Yeats, '*Easter 1916* ', and was used as the title of an article written by the then editor of the British Medical Journal, Dr Richard Smith, at the end of the GMC's disciplinary action against the doctors involved in the Bristol Case. Smith suggested that this case would result in total change for the medical profession: change in the

NHS organisation, change in society's attitude towards doctors' organisations and - most importantly - change in the trust patients place in individual doctors. This changing relationship between the public and the medical profession was relatively new. Until the 1990s there had been few changes in the processes for dealing with the self-regulation of medical practitioners.

The Medical Act entitled *'An Act to Regulate the Qualification of Practitioners in Medicine and Surgery'* (1858) established the General Council for Medical Education and Regulation, (abbreviated to the General Medical Council - GMC - in 1951). The GMC was the first body to be given statutory powers to regulate a profession. Their powers enabled them to control the standards of medical education for the profession, entry to it and discipline within it. The Council were mandated by Parliament to maintain a formal Medical Register of all duly qualified practitioners. Maintaining the Register is the basis of the GMC's power and is their method of controlling the profession. By registering medical practitioners, it makes them eligible to practise medicine in the United Kingdom. No medical practitioner who is not on the Register can hold any public positions.

The 1858 Act contained fifty-five Sections concerning the Council's remit, but only one mention of dealing with disciplining members. Under Section XXXIX the Council had jurisdiction to erase names from the Register of those doctors deemed to be guilty of infamous conduct:

> If any registered Medical Practitioner shall be convicted in England or Ireland of any Felony or Misdemeanor, or in Scotland of any Crime of Offence, or shall after due inquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect, the General Council, may, if they see fit, direct the Register to erase the name of such Medical Practitioner from the Register.

There doesn't appear to have been much discussion in Parliament over this clause other than a reference by the then Prime Minister, Mr Walpole, during the second reading of the Act to the effect that 'if they were to have a register of duly qualified practitioners, they must have some authority to supervise and control'. Who would have thought that, based on these few lines, the GMC would be primarily known among the public as a body concerned with professional ethics and discipline?

The first Medical Register contained 15,000 names and one hundred and fifty years later the number of registered doctors was over 240,000. There were very few changes made to the processes and procedures of the Council for almost one hundred years. Then in 1950 a new Medical Act was enacted making significant changes. The 1950 Act established a statutory Medical Disciplinary Committee, which would consist of the President and 18 other

members of the Council - at least six of whom should be lay members. Apparently this was not welcomed by the Council because until that time the entire Council sat on disciplinary cases. The Act not only dictated the constitution of the Committee, it also established the legal right for practitioners to appeal to the Privy Council; it permitted the administration of oaths of witnesses and very significantly it permitted the suspension for a set period of time. It also allowed for the restoration of names previously erased if there was suitable evidence of changed behaviour and references. Until that time the only sanction was erasure from the Register.

Almost all of the cases heard by the Council were breaches of the five 'As', Abortion, Advertising, Adultery, Alcohol and Association.

However, societal changes ended most of these. The introduction of the National Health Service in 1948 just about brought the end of 'Association' i.e. employing a non-registered person to assist you in your practice. Within the NHS there was no need for doctors to advertise as patients had ready access to General Practitioners, testing technology and hospitals. By the late 1990s the GMC had also withdrawn restrictions on private practitioners advertising, providing that they did not make unverifiable claims. Performing an abortion was illegal until the 1967 Act which decriminalised this practice. Adultery remains a disciplinary offence, only today it is more likely to be a charge of abusing trust with a vulnerable patient. The 'offence' of 'alcohol' was dealt with by the 1978 Medical Act. This Act established health procedures within the GMC which meant that doctors whose professional misconduct related to issues concerning alcohol, drug taking or mental health would now have to be heard by the Health Committee rather than the Professional Conduct Committee and could not be erased from the Register. Usually they were suspended and given time to receive treatment. If they recovered, they were permitted to return to work.

Until the 1980s, complaints to the GMC about doctors were relatively rare and only a very small number of doctors on the Medical Register were ever disciplined, but the years since then have seen patient disquiet with the medical profession. Probably because of the highlighting of GMC cases - usually sensational sexual cases - the public has become more aware of the disciplining of the medical profession and public trust in doctors has diminished. Concerns about GPs were expressed both within the medical profession and by the Government and the public. Working parties were set up to discover what could and could not be done. The result was the Professional (Medical Performance) Act which was passed under the then President, Sir (now Lord) Robert Kilpatrick. This Act is seen as being very significant in the regulation of doctors because it opened the door for the

GMC to look at clinical practice. Doctors with serious deficiencies in their performances could now be investigated by the regulatory body. It added a third arm to the Committees dealing with professional misconduct: - the Committees now were Professional Conduct, Health and Performance. The GMC also published guidelines for doctors entitled *Good Medical Practice* in 1996. For the first time in over 140 years The GMC told doctors what they should do rather than punish them for things they had done and the second edition of *Good Medical Practice* (1998) linked standards with registration.

In the 1990s there was much public criticism of the GMC. In part this was because of the decisions of the Conduct Panels which were being reported by the media and appeared unfair to patients, but mostly it was about the inability of the GMC to deal with those medical practitioners who had a poor pattern of professional practice but who had not committed individual acts of grievous professional misconduct. The GMC came under intense public scrutiny and Government intervention in the aftermath of some very high profile scandals such as the provision of Paediatric Cardiac Surgery at Bristol, the conduct of gynaecologist Rodney Ledward, the management of Pathology services at Alder Hey Hospital and the Shipman murders. There was huge involvement by the media and, probably because of that, various patient support and patient action groups were set up. This scrutiny brought about an awareness of the inadequacies of the medical regulator and with it a steady increase in complaints. Between 1990 and 2000 the volume of fitness-to-practise cases trebled and the GMC realised that the existing procedures for dealing with complaints were no longer fit-for- purpose and reform of the self-regulatory system was required.

The 2000 Medical Act (Amendment) Order was the beginning of unprecedented changes in the Council - not just in its structure but in its policies, processes and procedures. This 2000 Act made major changes such as:

1. The establishment of an Interim Orders Committee which had the ability to suspend doctors immediately if they were a danger to the public.

2 An increase of the time frame when doctors could apply for restoration to five years. Until that time doctors who had had their names erased could apply for restoration after a period of eleven months.

3 The introduction of the concept of non members of the GMC sitting as panellists at the adjudicating stage of Conduct Committees.

When the original Council had been established it consisted of 24 members - nominated by Royal Colleges, Universities and the Privy Council, and all were medically qualified. The Council grew in number as the number of medical schools increased - each one had a nominated person on the Council -

and the number of General Practitioners who were elected to the Council. By 2002 Council membership stood at 104. With the 2002 Medical Act (Amendment) Order this number was reduced to 35. By 2009 this had been reduced further to 24 with lay and medical members being given parity. The 2002 Order also introduced new Fitness to Practise procedures. The three Committees - Conduct, Health and Performance were abolished and one Adjudicating Committee would from then on consider charges of either Impairment or Serious Professional Misconduct. A radical change was that no Council member would sit on any Panel at the public stage of adjudicating.

Even with all the changes, complaints continued to rise. In 2008 the GMC received over five thousand complaints and in 2012 the number had risen to over 10,000 and because of this increase and the length of time that was being taken to hear cases in 2012 the Medical Practitioners Tribunal Service (MTPS) was established. This unit is part of the GMC but is answerable to Parliament and is led by a retired judge. However, the GMC can appeal its decisions if the Council thinks they are too lenient. 2012 also saw the introduction of a new Council being appointed for the first time. Until then members were nominated. From 1st January 2013 the Council consists of 12 members - 6 lay and 6 medical and all are appointed by an outside agency. The 1st December 2012 marked the commencement of Revalidation which will be linked to registration.

So, since 2000 all has changed within the GMC:

- The Council has been reduced to 12 in number and all members are appointed not nominated.
- There is no longer self-regulation as was - the disciplinary process is handled by a separate Unit - the MPTS.
- No member of the Council can sit on any Panel.
- The panellists on the Conduct Panels consist of medical and lay panellists who are appointed. These panels generally consist of three people - a Chair and two others and very frequently the majority are lay panellists.
- The old GMC's slogan was: Protecting Patients, Guiding Doctors
- The new slogan is: Regulating Doctors, Ensuring Good Medical Practice

The GMC has moved from being the moral guardians of its members to regulating clinical performance as well as behaviour and it would appear that indeed everything has:

All Changed: Changed Utterly

ADAPTATIONS FOR THE EMPIRE
ROMAN MEDICINE FROM 753 BC TO AD 235

Introduction

One of the greatest civilisations of all time, Rome lasted under various rulers from 753 BC to AD 476.[1,2] Until 27 BC, it was the Roman Republic, before Julius Caesar seized power and Rome became an Empire; through the centuries Rome's power continued to rise and fall, almost coming to an end on occasion before rising once more.[3] Even though Rome survived, during and after the Crisis of the Third Century, the Empire began to change drastically in both political and cultural terms and so only the years before this will be discussed.[3,4]

At that time, a lot of disease was considered to be the will of the gods and therefore beyond the scope of normal man, except for possible aid via prayers and rituals. The Greeks were among the first to consider health care with more secular and experimental methods and as Rome began to rise, the Greek way of thinking was absorbed into the Roman way of life, changing their approach to medicine. Other things, like some medicines, were adopted from the cultures the Romans invaded, and others still spread from Rome outwards.

Maintaining the health of a civilisation is essential for that civilisation to remain standing for any length of time, and one method of maintaining the populace's health may not apply everywhere. Since Rome was one of the biggest empires ever seen, and lasted for such a long time, it can be assumed that relatively sophisticated and varied methods of health care were needed to help maintain this position.

Folk medicine

Before the advent of more rational methods, the old Italian folk remedies were most often the only medical help a person could hope to receive. Folk medicine was mostly based around animal and vegetable remedies, as well as the ubiquitous calling on the gods.[5,6] Since disease was seen as under the gods' sphere of control, the earliest folk remedies only attempted to control symptoms, the only area it was possible to control.[1] Only priests would be able to divine the future of illness and various pestilences by auguries – the slaughter and inspection of the intestines of the animal by a specialised priest known as a *haruspex* would reveal the omens within.[4,7]

Folk medicine was mostly based around charms, chants, prayers, and herbs.[1,5,8] The *paterfamilias*, the male head of the family, was in charge of the household's medical affairs and would deal out remedies to his family, slaves and livestock as he saw fit.[7,9] Cato, in particular, raged against the Greek

physicians who had gradually begun to move into Rome – the Greeks were seen as threatening the Roman way of life, the power of the paterfamilias, and as charlatans who were there to part the sick and dying from their money. [1,7,9,10]

Physicians and their medicine

DOCTORS

The first Greek physician recorded as settling in Rome was Archgathus of Sparta in 219 BC, but he was eclipsed in importance by the arrival of Asclepiades of Bithynia later that century.[4,10] Previously the Romans had controlled their own methods of dealing out medicine, but now as Rome became even more powerful and larger, the opportunity for the Greek doctors to move in opened up. Asclepiades had seen the potential of becoming a doctor that appealed to the Roman way of thinking. As such he developed the tenet 'swiftly, safely, sweetly' and employed liberal use of wine as a therapy; this, along with the fact he acted in a more practical manner than many of the other Greek physicians in Rome at the time, gained him a great Roman following.[5,10] He used many Hellenistic theories, but applied them with a practical Latin bent and so led the way for his Greek colleagues to settle and prosper in Rome.[2,9]

The influence that the Emperors had on Roman health care was significant– they were the highest authority in Rome and their opinions would often end up becoming new laws.[7,10] Incrementally the position of the doctor in Roman society began to improve; in the beginning, many physicians were Greek slaves or freedmen, but in 46 BC, Julius Caesar granted all those working in Rome citizenship, while the city of Ephesus made doctors living within its walls tax exempt.[4,6,10] Roman physicians were made immune from taxes in 23BC when Antonius Musa cured the Emperor Augustus of a fever.[6,9] This continued with the Emperor Vespasian freeing doctors from military service, with the result that the numbers of physicians increased to ridiculous amounts.[6] Anyone could call themselves a doctor and so, by AD 160, a restriction was put on the number of public physicians, and by AD 200 medical licensing was established.[7]

Doctors would practise as one of three groups – a) an independent practitioner, b) attached to a family or the Emperor, or c) as a public physician.[7] Many of the independent practitioners were poor and operated from shops known as *tabernae medicae*, while the public physicians, or *archiatri*, were employed by the town councils to treat their citizens.[3,7] Emperor Antoninus Pius placed a cap on the numbers of *archiatri* who could

practise in each town and city, as too many physicians had been attracted to the posts and their salaries were a huge tax expense.[7]

Medical education in Rome appears to have been a rather haphazard affair, but it became especially important after the advent of medical licensing.[9] Doctors would have taught their sons their trades, while other physicians would take in students.[7] The students would follow the doctor around as he visited patients, or attend lessons in his *taberna medica*. Well-off students would travel to Alexandria or Ephesus to make use of the huge public libraries there – medical text books were otherwise difficult to obtain except through a guild or the army.[6,7] Meanwhile, the doctor was expected to teach himself pharmacology and botany – the best known herbal being *De Materia Medica* by Dioscorides, which was held in high regard.[6,9]

TREATMENT

Prevention of disease became important to the physicians, mostly because the treatments they would otherwise have to employ were not necessarily reliable, and they attempted this via a healthy lifestyle.[5] Dietetics became very important to the Romans, especially the richer members of society, who would become so obsessed with this regulation of food, drinking, exercise, bathing, relaxation and massage that they could practically no longer live normal lives.[7]

A mainstay of the physicians' treatment was that of bloodletting, in line with Greek humoral theory, which proposed imbalances in the body and methods of curing which attempted to restore balance. Bloodletting was thought to cure essentially every illness, including the stopping of bleeding from another wound, through diversionary tactics.[7] Purging was another method of balancing the humours – doctors would give aloes and hellebore, or administer an enema to the patient.[7] Meanwhile wounds would be treated with wine and vinegar, which have mildly antiseptic qualities, and bandaged; physicians recognised that if the wounds became infected it might result in the loss of a limb or the patient's' life.[7]

Medicine such as this, practised by doctors, still involved a lot of the folk medicine that had previously been under the control of the *paterfamilias*. The same herbs and mixes were used – most preparations were concocted of multiple ingredients, including wines, honey, milk and spices, as there was little understanding of physiology and drug actions – but in the later empire more exotic plants and animal products were introduced.[7,8] A rich doctor could afford to keep his own herb garden, but others had to depend on the drug markets, which tended to be unreliable and often full of adulterated or worthless products.[7]

There are discoveries of cough medicines – an amphora found in Carpow, Scotland, was marked as containing horehound, which was meant to be good for the common cold - and treatments for scurvy – a problem for the army when in Germany, which was treated with dock juice.[10] Wherever the empire spread, the soldiers took the ingredients for their medicines with them, and so scattered across Germany and Britain among the remains of Roman fortresses are seeds of various medical plants – wild celery, fenugreek, henbane, plantain, St John's Wort.[7]

Eye diseases were common and there are several known *medici ocularii* or physicians who specialised in eye disease – one of the more famous of these was Axius, who practised in Dover as part of the medical corps for the British fleet, and whose recipe for an eye salve contains ingredients still used today.[7] Specialists lived in big cities like Rome and Alexandria, as only a large population could support a physician focused on only one part of the body. As well as eye specialists, Galen mentions specialists in the ears, bladder, fevers, hernias, anal complaints and there were dentists, dieticians and gynaecologists; this emphasises the effect that Rome's size had on its health care.[7]

FEMALE DOCTORS

Female problems were treated not only by male gynaecologists and midwives, but by female doctors, *medicae,* as well.[6] Unlike their male counterparts, the *medicae* came from all social classes – the Emperor Tiberius' wife, Agrippina supplied medical aid to wounded soldiers, while others were from medical families, or were slaves or freedwomen.[7,10] It was rare in Rome to find an activity that both men and women were considered suitable for, but many of the *medicae* made fortunes from their practices and wrote up their work. Not all *medicae* were gynaecologists, but most were, as the male physicians had recognised that female problems might be more easily understood by someone of the same gender. However, *medicae* were rare in comparison to midwives and the latter were more often called in to help the male physicians.[7]

Military medicine and hospitals

MILITARY MEDICINE

The military was very important to the Romans – by Augustus's time the army was in France, Germany and Spain in the west, to the Euphrates in the east and down to the Nile valley in the south. The Roman Republic and Empire had risen to prominence amid constant wars and scuffles; the army was an essential part of maintaining the Roman way of life.

Initially, with the less professional citizen troops that supplied the army prior to Augustus, medical care was ad hoc and informal. Wounds would be treated

by other soldiers, some of whom became known for their healing skills, while generals would supply their armies with health care so as to keep them on their side and prevent uprisings.[1,9] In the late 1st century BC and early 1st century AD, the Emperor Augustus adapted the army to a professional force – the only role of the soldiers was fighting. As this constant standing army had to be kept occupied and happy, campaigns began to take place even further away from Rome, in distant territories, to provide new income and land, but this led to new problems as well.[1] So far from Rome, there was little hope of getting the injured to the safety of Rome or even to a friendly town, so a system had to be implemented to provide medical care for the legions closer to the battlefield.[2,10] As the professional army was expensive, it was also hoped that money could be saved by maintaining the health of the men, rather than having to constantly train newcomers to replace the injured. [1]

Work in the army was considered an excellent chance for a physician to receive education, and some doctors may have had to perform compulsory military service.[9,10] Some of the bigger fortresses kept medical textbooks in their hospitals, and this might have been the only way for a poorer doctor to read them. Doctors might discover new herbs and treatments from the local cultures as they travelled with the legions, and could also spread their own medicine as they went, often settling down in the provinces to work.[7,10] Therefore the army was one of the more important vectors for the spread and adaptation of Roman medicine.[1,11]

Numbers of medical staff depended on the size of the legion and its location – the more decorated legions who remained in Italy are recorded as having specialist doctors, while those in Africa and the Middle East would have a *marsus*, whose job it was to treat bites and stings.[2,7] The ranks, posts and numbers of the medical corps are disputed, but consensus seems to indicate that a wounded soldier would receive first aid on the battlefield by the *millites medici*, before being sent back to the encampment or fortress.[11] These would contain field hospitals or *valetudinaria*, and these will be discussed later.

Battle wounds would normally need surgery. Accounts from Celsus and Galen indicate that the military *medici* became well versed in all sorts of surgery – both Celsus and Plutarch give an accurate description of how a doctor might treat a man who had been gutted and keep him alive.[7,10] Instruments were constructed to help with the removal of arrows and other missiles.[11] The medical corps was also to prevent the spread of infectious disease, food poisoning and to help with sanitation and public health measures within the fort – where to build latrines, for example.[7] They also advised on the best diet for the soldiers and on the exercise to keep them in the best condition.

HOSPITALS AND INFIRMARIES

The importance of medical service to the Roman army is emphasised by the fact the camp prefect – the second in command of the legion – was in charge of his legion's corps, while a fortress's *valetudinarium* would be deputised to the control of the *optio valetudinarii*, so it would always be well supplied with provisions. [7]

The *valetudinarium* was an important part of any fortress, placed in a quiet area and all built to the same standard. Examples in Inchtuthil, Scotland, and Neuss, Germany, have almost identical floor plans, and smaller versions have been found in less important auxiliary fortresses in Housesteads, England, and Fendoch, Scotland.[7,8,10] The building was often among the biggest in the fortress, and built with four wings, with a sound buffer of storerooms at the front to dampen the noise from the rest of the fortress.[7,11] The hospital would be able to operate separately from the fortress in the event of an outbreak of disease, as it had its own latrines, kitchens, baths and a garden in the centre.[8] It also had an operating theatre – well lit from a central courtyard -, cubicles and small wards for the wounded and sick, mortuaries and isolation wards.[10]

Civilian hospitals seem to be rarer to find, although *valetudinaria* could be found on some of the larger farms outside Rome, for the care of slaves working the fields. An unhealthy slave was an unprofitable slave, so it can be assumed that these hospitals were built to help maintain the owners' profits.[6] Roman citizens seem to have either called the doctor to their home – if they were well off – or visited his *taberna medica*. Otherwise they would turn their home into a sickroom or attend a temple, in the hope that petitioning a god would heal them.[7]

Surgery

In the early Roman Empire, the art of the surgeon was as prized as that of an ordinary physician, but as time moved on, surgery came to be regarded as a poor comparison to the other medical arts.[2] However, there were still people who specialised in surgery – especially in Rome and the other large cities of the Empire.

In both military and civilian life, conditions would have been highly unsanitary and relatively minor wounds to the limbs would often become infected.[9] Surgeons would be prized for their ability to amputate a limb as quickly as possible, as the painkillers available would not necessarily anaesthetise the patient for as long as required.[7] There was a range of tools for people who had lost a limb – sticks, crutches, peg-legs and even full artificial limbs have been found.[10]

Other operations included cataract surgery, removal of bladder stones, removal of infected uvulas and tonsils and removal of teeth.[7] Plastic surgery had probably been brought across from the East, and Celsus mentions how to repair problems with the ears, lips and nose. The most famous Roman surgery is probably the caesarean section, which would be performed after the 10th month of pregnancy and if it was clear the mother would not survive, as the operation would almost certainly kill her – for this reason, Julius Caesar's mother probably did not have her son by caesarean, as she was obviously active as his advisor in his later life.[12] For this array of surgeries, there was an impressive number of tools. Commonly found are kits with scalpels, hooks, probes, forceps and bone levers, while other discoveries include specula, spreader mechanisms for the removal of arrows, and catheters of both male and female varieties.[7,9,13]

Public health

Rome's size and the fact the main population was so densely packed meant that it was constantly under threat from contagious diseases.[3]

Plagues were commonplace in Rome; the size of the population, the confined space and the poor hygiene which most of the citizens lived in and the ease with which travel could occur from every corner of the Empire, all contributed to this.[1,3,4] The plagues could be astonishingly deadly – several were reported to have killed thousands of people per day.[4] In response, the authorities banned burial within the city, and the more sanitary custom of cremation came into vogue.[4] Even emperors died of plagues – for example Marcus Aurelius in AD 189. Malaria was a great issue as well – both Julius Caesar and his successor Augustus suffered from it – and the Romans seemed to have an understanding of the cause. Varro recommended against building in low-lying and swampy areas, and also seemed to have a grasp of germ theory.[4,5,9]

Every year Rome was also beset with floods – the Tiber was particularly prone to flooding in the area around Rome and few precautions were taken to prevent this.[14] The poorer areas of Rome would become swampy, with fountains and gutters filling with rubbish and sewers flowing backwards, since there were no valves to prevent backflow.[14] Disease would become rife as corpses littered the streets and the grain stored in the warehouses by the river became mouldy. *Aediles*, public officials in charge of city maintenance, were charged with keeping the streets as clear of waste as possible.[4]

However, the constant supply of fresh water to the pipes and basins in the city from the aqueducts may have helped to clear some of the detritus from the drinking supply and street gutters. The aqueducts were sourced from aquifers far away from the towns and were therefore unaffected by any flood borne

diseases.[14] They could supply each person in Rome with 50 gallons of water a day, supplemented by water from various wells.[4,7] The Roman capability of supplying their towns and cities with fresh water also allowed them to build massive public baths, with only a small entrance fee. While the majority of Roman citizens wouldn't have attended regularly, the presence of a bath in the town granted them a chance for hygiene that they wouldn't have otherwise had. People would have also attended the baths as a chance to socialise, get a massage, take exercise or get treatment from the doctors who had set up shop nearby.[7]

Latrines in the cities were often flushed with waste-water from nearby public baths and while confining this waste to the sewers would have reduced the spread of some disease, the cleaning sponges that were provided would have been breeding grounds for many sorts of bacteria.[7] Nevertheless, it is important to note that Rome had public pay lavatories under Vespasian, (not achieved by London until 1851.[4]) While the sewers were notoriously smelly and leaky, they also channelled the waste away from centres of population and so protected them from the worst of diseases within. [4,7,9]

Conclusion

Aspects of Roman health care range from civilian health care to military medicine, from Greek doctors to folk medicine, from practical surgery to calling on the gods for help. In particular, the role of public health in ancient Rome was important – the provision of clean water, public baths, latrines, street cleaners and the town-employed doctors were essential for continuing health in the big cities.

Since Rome maintained an influence over such a wide area, for such a long time, there had to be many aspects to the delivery of health care. Romans absorbed the cultures of the lands they had invaded, but were also prepared to put their own slant on what they did absorb. This can be clearly seen in the influence that Hellenistic theories and theorists had, and also in how the Romans changed what they inherited.

The huge scale of the empire meant that Rome needed a complex approach to health care, and also influenced how this was achieved. Rome had a massive population closely packed together, excellent roads reaching to the limits of their empire, a multiply tiered class system and an army that was the basis of their power. No one sort of health care could cover all these needs at the same time. But with the immense size came the influence of absorbed cultures, the influence of the imperial authorities and the strength to exist for long enough for positive changes to occur.

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THE LOCATIONAL HISTORY OF LUNATIC ASYLUMS IN MID-NINETEENTH CENTURY SCOTLAND AS VIEWED THROUGH REPORTS FROM THE SCOTTISH LUNACY COMMISSIONERS, 1857 – 1872

This paper is situated within the specialist sub-field of historical geography, linking across to the broader field of 'psychiatric history' which, in Scotland, remains largely unwritten. The focus will be on the geographies of mental ill-health facilities, or 'asylum geographies' – a small field of studies addressing the relationships surrounding space, place, environment, landscape and architecture, and their impact upon people with mental health problems: the 'mad', the 'idiot', the 'lunatic' of earlier times. At this point I would like to confirm that, in keeping with historical accuracy, these terms will be used throughout this presentation and my own research, as this was precisely the kind of vocabulary being applied at the time. To substitute terms like 'mental illness' or 'mental disease' would import to the past a specific medicalised understanding which is very much a modern invention.

Attitudes surrounding mental health have shifted significantly over the centuries, from a medieval state when the insane were effectively tolerated and actively incorporated into everyday life, to early modern appeals for lunatics to be locked up alongside the other bad, deviant and idle people in society, to a more modern approach labelling the insane as a distinctive human category whose peculiar needs could only be met in specialist mental health institutions – the so called 'madhouse', or 'lunatic asylum' – and to still more recent shifts leading to de-institutionalisation and 'care in the community'. This paper is set in mid-Victorian Scotland at the height of the 'Asylum Age', concentrating on these public spaces that were designated and designed specifically for the mentally ill. Previous 'radical/critical' interpretations of this period in Britain, after Foucault, Scull and Goffman, construed the asylums predominantly as sites of oppression and control, spartan 'prisons', locking the insane 'out of sight, out of mind'. However, more recent work has shown that this is a grossly simplified and limited perspective on a complex and evolving structure that was extremely responsive to local and national

politics, changing economic climates, and significant social change. During this period, the relationship between the location and design of the asylum, and its potential to treat and even cure insanity, was firmly based in the medical, moral and architectural discourses of the time.

The paper aims to tease out a blueprint for the location, environmental setting, grounds and architecture of Scottish asylums as decided by the Scottish Lunacy Commissioners, with evidence primarily from their first fifteen Annual Reports, which were started in 1857, after the passing of the 1857 Lunacy (Scotland) Act. The emphasis is resolutely geographical, addressing the socio-spatial segregation of mad people urged by the Commissioners; what Foucault refers to as the "space reserved by society for insanity".

Insanity provision prior to the 1857 Act consisted of a number of Royal Mental Hospitals, which were situated close to the main urban settlements, and were specifically built, non-profit organisations, as well as private madhouses, parochial asylums and poorhouses. All were inspected and licensed by the Sheriffs, who were also in charge of drawing up the rules and regulations for the management of the institutions. However, due to variable and inadequate oversight, these establishments were typically overcrowded, lacked classification, relied on mechanical restraint and lacked any form of medical attention. Many of the keepers believed that nothing could be done to promote the recovery of the insane.

As a response to these discourses which criticised the existing institutional provisions for the insane, official measures were being put in place across Britain to moderate and ensure central control over the public spaces specially designated and designed for the 'mad'. Hospitals such as the famous York Retreat were providing models that reformers felt could be more widely reproduced, to help with the increasing numbers of insane within society, and Browne, writing in 1837, believed that "men of enlightened minds, liberal education, and kind dispositions" should be put in charge of the insane and asylums, and as a result the abuses would disappear. Thus, initiated by these growing concerns and followed by the 1855-57 Scottish Lunacy Commission enquiry, the General Board of Lunacy for Scotland (1857) was inaugurated with the Lunacy (Scotland) Act of 1857. The Act pledged that every district in Scotland would soon be provided with a public institution for the care of the insane.

From this point, I will discuss the findings of the first fifteen annual reports, exploring the overall asylum system as it developed over this period, down to the ideal architectural arrangements within the institutions; re-constructing the geographies from the macro to the micro scale.

The 1857 Act divided the country into 21 lunacy districts, with the mandate

that every area be provided with its own, purpose built District Asylum, as at the time of the act, there was a very distinct geographical difference in institutional provision, with the northern districts lacking any asylums in the opening years. Initially, due to their belief that asylums, "beyond all question" were the best place to alleviate the symptoms of insanity, the Commissioners very much 'sold' the idea of the public asylum, without any consideration, during these first few years, of any other system for treating the insane. They fully believed that asylums proved the greatest service to both the patient and the public, with the primary aim being the cure of the insane. Thus they saw it their duty to ensure that the buildings fulfilled all expectations, as the best hope of recovery was viewed as being early treatment in the institutional environment. However, by 1864, the Commissioners' opinion appears to have taken a dramatic shift (a pragmatic reflection of growing problems).

This shift may have occurred for many reasons, such as increased overcrowding in the establishments and lower cure rates than anticipated. The falling faith in the public asylums was highlighted in 1867, with the statement: "viewed even in the most favourable light, detention in an asylum partakes a good deal of the character of imprisonment". By 1870, the Commissioners reported that over half the patients sent to asylums were incurable on admission, with many of them insane for a number of years. They stated that these patients were in need of care and nursing, rather than treatment, which could be effectively administered at home. Thus, by the concluding years of the research period, it was felt that many patients were unnecessarily, even improperly, sent to asylums, and that the asylum system, of which the Commissioners had been instrumental in expanding, may have reached its limits.

From here, I will now outline the Commissioners 'blueprint' for their ideal asylum.

The Commissioners still held strong views regarding the specific places, regions and types of environment in which the insane should be treated. They sought to incorporate elements of rurality into the institution, to benefit from the proposed curative atmosphere, and to remove the insane from the suspected cause of illness: urban living (Smyth, 2005). Foucault also believed that the social reformers strived to create an environment that would encourage particular behaviours, thus restoring the values that were alleged to have been lost through the processes of industrialisation and urbanisation.

The sites of the asylums within each of the 21 asylum districts were influenced by the various suggestions put forward by the Commissioners to the District Boards. These fundamentally geographical recommendations drew together both moral and medical and hygienic dimensions for the site of

asylum buildings. Furthermore, the land surrounding the asylum building was also to be used for cultivation (space permitting), and contrary to Foucault's assertion that "in the asylum, work is deprived of any productive value; it is imposed only as a moral rule", in many instances throughout Scotland, the farm was used to economic advantage. Philo states that these requirements differed from the early-nineteenth century, in that there was now less locational tension between the moral and medical components. By mid-century, both pointed to the location of the asylum in a rural setting, thus linking it to the teachings of a conjoined 'medico-moral' discourse.

However, again showing that opinion surrounding the siting of an asylum may be shifting towards the end of the fifteen-year study period, it was noted in 1870 that, "the bustle of a city is not *per se* detrimental to asylums. This view was brought up later in the same Report, which stated, "insanity affords no adequate cause for complete isolation from the outer world". This may be the first indication that the opinions of the ideal site of an asylum may be shifting once more.

Moving more towards the micro-geographies of the asylum, the medico-moral discourse also extended to the architecture of the buildings. The external and internal spaces of the asylums were utilised and manipulated in the treatment of the inmates, with the belief that through careful planning, they could ultimately cure the disease. Foucault highlights that within establishments such as asylums, both the social ordering of space, and the use of what he terms 'disciplinary techniques', could create 'docile bodies' "which may be subjected, used, transformed and improved". Individuals were now being controlled through the power of the norm, with this power being effective primarily due to being relatively invisible. The insane behaved not through overt repression (as in the mechanical restraint of earlier years) but now through a set of standards and values associated with normality, constructed through architectural arrangements.

The Commissioners offered 33 suggestions and opinions for the construction and arrangement of the asylum buildings, which ultimately outlined the plans and architecture for their ideal asylum. The suggestions spanned all aspects of the asylum, encompassing the medico-moral discourse, from the general form, or layout of the buildings, which were to be arranged so "as to afford an uninterrupted view of the surrounding country, and the free access of sun and air", and positioned so as "to give the principal rooms a southern or south-eastern aspect", to the types of stairs to be constructed and which cement to be used on the walls. The aim was to create an environment far removed from the old 'madhouse'.

Spaces were divided along gender and class lines, as well as between areas

open to the general public and those reserved for patients only. Furthermore, echoing Browne's 1837 belief that the architectural spaces of the asylum could be manipulated to allow for the complex classification of different types of maladies, the Commissioners stated that provisions might be made "for...the idiotic, imbecile, and fatuous patients, and also for chronic cases".

The Commissioners were also of the opinion that different standards of asylum accommodation should be provided depending on the wealth of the district. It was believed that the unfortunates in poorer regions knew no better, expected no more, therefore no extra money was spent on them. On the other hand, comments were made that some aspects of Edinburgh Asylum's arrangements were "quite unworthy of the metropolitan asylum". It would appear therefore, that there were not only clear spatial divisions within the buildings, but also an evident geographical variation across Scotland as to the type and standard of asylum accommodation recommended by the General Board.

Moving through the Reports, emphasis was increasingly placed on the micro-spatial considerations within the asylums, ideally attempting to create a "comfortable domestic appearance". This was encouraged through the adoption of internal decorations and objects of comfort and interest, which, it was believed, would help with the treatment of the patients. Thus, spaces within the asylum were designed and manipulated, again to fit in with the Commissioners' medico-moral visions. This was carried out to the smallest details, from room-size down to decoration, ideally creating a 'home' for the inmates. This concept gained in importance over time, with the realisation that the majority of inmates would never be cured, living out the remainder of their lives in these institutions, possibly creating tension and contradiction with others who urged a more *laissez-faire* approach.

In summary, previously, there were two opposing broad-brushed views of the 'Asylum Age': the asylum as a 'celebratory' account, and as evidence of improving 'medical-psychiatric' inventions, against the simplistic 'critical' account, which viewed the asylum simply as a vehicle of 'police' oppression and exclusion of troublesome individuals. The patients were shut away 'out of sight, out of mind', the separate geography of the institutions, according to Wolpert, "encouraged a rationalization of the us/them dichotomy and the development of distinctions between normal places and deviant places". The approach adopted within this paper can be construed as a middle-way between these two strands. With its Foucauldian credentials, this research demanded attention to the precise details of what the lunacy reformers said-and-attempted-to-implement. Following Foucault, it was vital to extract the detailed 'geography' from the documentary record, given that space was

clearly so central to the whole nexus of therapy-as-social-control. Matters of location and architecture were indeed folded into the discourses and practices of those 'experts' responsible for producing the 'Asylum Age' in Scotland and narrowing down where the 'geography' stops was exceptionally difficult. Of fundamental importance throughout the reports was the want to provide proper care and treatment for the insane. For the most part, the General Board felt this could be provided through the spatial separation of the insane in rurally situated purpose-built asylums. Numerous examples could be extracted from the reports to highlight the importance that the Commissioners gave to the location, architecture and internal design of these therapeutic spaces. These geographical issues were written into the very heart of the Commissioners and clearly embedded in the 'medico-moral' discourses of the time.

THE ONE HUNDRED AND NINETY FIFTH ORDINARY MEETING

The One Hundred and Ninety Fifth Ordinary Meeting was held in the Royal College of Surgeons and Physicians of Glasgow on 2 March 2013. There were two speakers, Dr Tony Butler talked on The Early History of Drugs for the Treatment of Angina and Dr Gordon Lowe took as his title From Harvey to Heart Attacks: what Stoppeth the Circulation?

THE EARLY HISTORY OF DRUGS FOR THE TREATMENT OF ANGINA

Angina pectoris is a common condition, particularly amongst elderly gentlemen of unseemly life-style; attacks are occasioned by cold weather, heavy meals and physical exertion. The chest pain is severe and may make the sufferer unable to move. It is caused, in part, by high blood pressure. The symptoms were first described systematically in 1768 by William Heberden during a lecture to the Royal College of Physicians in London but to manage the condition he could only suggest a modest life-style. John Fothergill (1774) recommended 'an exact temperance of diet and liquors' while William Butter (1806) rather dangerously suggested 'a laxative duly persisted in'. Even the great William Osler's advice in a book on the subject of angina (1889) was limited to 'quiet of mind, avoidance of worries and cares, the cultivation of a calm equanimity …. Late suppers should be avoided'. By that date there were drug treatments available but he mentions them almost as an afterthought.

The first widely used treatment for the alleviation of the pain of angina was the inhalation of amyl nitrite, a substance first made by Antoine Balard in

1844. Its therapeutic usefulness was discovered partly as a result of the presence in Edinburgh of several members of a distinguished family, the Gamgees. Although born and brought up in Italy, two of the sons of Joseph Gamgee (1801-95), Sampson and John, were largely responsible for the establishment of veterinary science as a profession in Scotland and played a part in the early days of the Royal Dick Veterinary School. Sampson and John found they could make more money as surgeons by treating animals rather than humans. The youngest son of Joseph Gamgee, Arthur (1841-1909), after a brilliant career as a medical student in Edinburgh, qualified as a doctor and travelled around Europe to continue his studies. He returned to Edinburgh as house physician at the Royal Infirmary. In 1869 he moved to the Hospital for Sick Children. Because of the family involvement with animals, Arthur was used to working with them and noted that if animals inhaled amyl nitrite their blood pressure was lowered, an effect he also found in humans. Working with him was a very bright student, Thomas Lauder Brunton, who had found he could reduce the pain of angina by venesection, a procedure that lowered blood pressure. Brunton reasoned that if patients with angina inhaled amyl nitrite it should relieve the symptoms and this was found to be the case. Inhalation of amyl nitrite became rapidly the standard treatment for attacks of angina and many sufferers carried a phial containing amyl nitrite for use in an emergency. This is occasionally mentioned in novels and, in at least one (*The Good Soldier* by Ford Maddox Ford), it is called amyl nitrate (rather than nitrite), a very different substance with no known therapeutic value except as an explosive. During the 1960s amyl nitrite was used by hippies at 'love-ins' under the name 'poppers' as it induced a feeling of elation due to enhanced blood supply to the brain.

Amyl nitrite is an inconvenient medicament as it is very volatile and so other, chemically related, compounds were tried of which the most successful was found to be glyceryl trinitrate (GTN). This compound had been first prepared by the Italian chemist Ascanio Sobrero. He noted its violent explosive properties and, as was the custom at the time, examined the effect of ingesting it. It produced a number of effects depending on the quantity ingested but a common one was to cause a headache. For this reason, it immediately claimed the interest of homeopathic doctors as a *treatment* for headache on the principle of *similia similibus curantur*. It underwent investigation by advocates of homeopathy by the process of *prüfung* or *proving* but its success as a cure for headaches is not recorded. At the same time, conventional doctors noted its considerable physiological impact and one, William Murrell of Westminster Hospital, decided to test it upon himself, rather alarmingly, during an outpatients' clinic he was taking. He put a few

drops of GTN solution on his tongue and immediately his head began to throb. His efforts to deal with the next patient were unsuccessful and, eventually, he cancelled the clinic and went home. Further experimentation led him to see GTN as a treatment for the symptoms of angina and he published a seminal paper on the subject in *The Lancet* of 18 January 1879. The value of GTN was quickly recognised and it is still in use to this day.

At the same time as its appearance as a drug, GNT was being turned into dynamite by Alfred Nobel and its commercial success led to the enormous fortune that allowed him to establish the Nobel Prizes. Towards the end of his life, Nobel developed angina and was prescribed GTN by his doctor so that it contributed not only to his wealth but also his health.

Both an organic nitrite and an organic nitrate can act as a vasodilator, thus alleviating the symptoms of angina. Will inorganic nitrates (such as potassium nitrate, commonly known as saltpetre) and/or inorganic nitrites (like sodium nitrite) do the same? The nitrate ion (NO_3^-) is a benign chemical species with no direct physiological effect in humans, apart from acting as a diuretic. The body uses it as a vehicle for excreting waste nitrogen, via urination, from the metabolism of proteins. In contrast, the nitrite ion (NO_2^-) is physiologically very active. In acid solution, as in the stomach, it can act upon secondary amines with formation of carcinogenic nitrosamines. It has been suggested that this could be a cause of stomach cancer but recent research has tended to reject this view. This is fortunate as sodium nitrite is added to tinned meat, such as Spam, as an antibacterial agent to prevent botulism. It seems that the wartime delicacy of Spam fritters was entirely safe and the added nitrite gave the Spam its attractive, pink colour by reaction with haemoglobin to give nitrosylhaemoglobin. Nitrite is present in blood plasma and recent research has indicated that its concentration is crucial in the vasodilatation of arterioles and capillaries, thus having a significant role in the control of blood pressure. Enhancing plasma nitrite levels by swallowing sodium nitrite does not work as nitrite is ultimately destroyed by the acid conditions of the stomach, but for elevating plasma nitrite levels there is a more subtle route and one that is used naturally. During ingestion nitrate in food, particularly in vegetables, is converted into nitrite by naturally occurring bacteria in the mouth, particularly those under the tongue. Also, the abundance of blood vessels there permits direct absorption of nitrite into the blood stream before nitrite approaches the stomach. This is one reason why eating vegetables and masticating them well in the mouth, something mothers have been telling their children for generations, is so beneficial. It also means that, except under exceptional circumstances, destroying bacteria in the mouth with a mouthwash, is not recommended. The effect of nitrate in the diet,

properly consumed, upon blood pressure is dramatic enough that the following advice was given by a distinguished group of researchers in the journal *Hypertension* in 2008: 'we advocate consumption of a high diet in nitrate …… to protect individuals at risk of adverse vascular events'.

In view of its hypotensive action it might be that raising nitrite levels in blood plasma could be a way of reducing the pain of angina but no examples of this have been found in the literature of Western medicine. However, Chinese physicians of the medieval period found a way of doing so, although they almost certainly did not know why it worked. Potassium nitrate, commonly called saltpetre, was well-known to the Chinese. They called it *xiao shi* (硝 石) or 'salve stone'. They knew how to collect it (it forms an encrustation of the ground from the decay of nitrogenous organic matter) and how to purify it by recrystallization because they used it to make one of their most significant of their inventions: gunpowder. As every schoolboy used to know, gunpowder is a mixture of saltpetre, charcoal and sulphur. It revolutionised warfare in China, and later in Europe, as well as being widely used in civil engineering projects. They also found saltpetre valuable in medicine. In the great *materia medica* of AD 1597 by Li Shizhen, the *Ben Cao Gang Mu* (本 草 纲 目) or '*Drugs Classified by Type'*, is written, 'saltpetre is a miraculous product of the Heaven and Earth'.

For the specific use of saltpetre in the treatment of angina we must turn to an obscure Chinese manuscript contained in the cache of manuscripts secreted in a hidden store in the abandoned Buddhist grotto at Dunhuang in Gansu Province. They were discovered when a Daoist monk, Abbot Wang, was trying to restore the grotto to its former glory. As most of the manuscripts are Buddhist scriptures they were probably hidden away in around 1000 AD when Islam swept into China. In 1910 the great British explorer Sir Aurel Stein visited the grotto and bought some of the manuscripts from Abbot Wang, who wanted money for his restoration work; they are now in the British Museum and include the world's oldest printed document, the *Brilliant Sutra*, published in 868AD. Other European and Japanese visitors did the same and the manuscripts are now distributed in museums around the world. A few of them are of medical interest and have been gathered into a collection. One of them describes treatment for a condition that is almost certainly angina. The complete translation is given in *Medieval Chinese Medicine. The Dunhuang Medical Manuscripts* edited by Vivienne Lo and Christopher Cullen (Routledge 2004) and an abridged version follows:

> ...For treating symptoms such as struck by evil, acute heart pains…
>
> Saltpetre (5 spoons) … sprinkle under the tongue and hold it there. If saliva forms have the patient swallow it. This is a certain cure.

(translation by John Moffett, Needham Research Institute, Cambridge)
Scholars are generally agreed that this was written in the 8th century AD and the perspicacity of the unknown Chinese physician of that time (physicians were artisans rather than scholars) in noting that the saltpetre had to be retained in the mouth, for bacterial action to occur as we now know, for the cure to work is truly remarkable.

The connection between nitrate intake and cardiovascular health appears to have been widely appreciated by medieval Chinese physicians although, as with all their other cures, they had completely erroneous ideas of why they worked, a phenomenon not unknown in modern Western medicine. If the patient benefits, the *modus operandi* can await another day. So, for cardiovascular health eat plenty of nitrate-rich vegetables, particularly beetroot, and, all other things being equal, you may not be troubled with angina. As the compiler of the *Shen Nong ben cao jing* (*The Pharmacopoeia of the Heavenly Husbandman*), a medical text of the 2nd century AD, put it:

Long term taking of nitrate makes patients able to enjoy a healthy life.

Compare that with the quotation from *Hypertension* given above and you will see that medical wisdom in this matter has not changed over 1800 years.

FROM HARVEY TO HEART ATTACKS: WHAT STOPPETH THE CIRCULATION?

William Harvey, in his book De Motu Cordis (1628), elegantly demonstrated that the heart circulated blood around the body. As a retired vascular physician, I review the history of development of knowledge of what STOPS the circulation. Throughout history, most people have died from epidemics of trauma, starvation, and infections. However, over the last century, these causes of death were reduced, and were also eclipsed by a worldwide epidemic of heart attacks, strokes and blood clots in the arteries and veins of the limbs. Nowhere has this been more evident than in Scotland.
I think this topic would have interested Harvey. As an anatomist, he encountered vascular pathology. As a scientific physician, he would want to know how his successors established the causes, treatment and prevention of vascular diseases. And as a patient, dying of a stroke in 1657 at the age of 79, he might have wanted to know what was happening to him.
So what would Harvey know about vascular disease in his lifetime? Venous disease, in the form of varicose veins and venous ulcers, was known from classical times. A votive tablet, found at the Acropolis in Athens, on the site of the temple of Doctor Amynos, is the earliest known depiction of varicose veins, and dates from the fourth century BC. In the 16th Century a famous

patient who probably had venous thromboembolism was King Henry the Eighth of England. At the age of 36, he developed venous ulcers following immobilisation after a jousting accident. Exacerbated by the restrictive garters he wore to show off his fine calves, they never healed, and restricted his mobility. Immobile and with his gargantuan appetite, his weight rose to 28 stone, and he died in 1547 at the age of 56, breathless with massively swollen legs, most likely due to pulmonary embolism.

Harvey knew about venous ulcers, and he also described how ossified arteries could reduce blood flow to the leg, causing gangrene. Peter Lowe, founder of the Royal Faculty (later the Royal College) of Physicians and Surgeons of Glasgow, in his book of 1597, the Whole Course of Surgery, described the progressive nature of gangrene, and correctly identified that the arteries did not supply their natural heat, causing suffocation of the member.

When Harvey died of his stroke in 1657, the vascular nature of stroke was not known. Hemiplegia had been described by the Byzantine Paulus Aeginata in the 7th century AD. A year after Harvey's death, in 1658, Johannes Wepfer in Switzerland first suggested that stroke could be due either to arterial obstruction, or to haemorrhage.

It was not until the eighteenth century that cardiac ischaemia was described: the classical description of angina pectoris by William Heberden in 1772. John Hunter, the Scottish founder of modern surgery, suffered from angina and had his first attack in 1773. It was Hunter who suggested that angina arose from ossification of the coronary arteries. The pathogenesis of angina was further studied by Allan Burns, an anatomist at Glasgow University by the age of 16. In the first textbook on cardiology in the English language in 1809, Burns compared angina to the pain of an exercising limb to which a tourniquet had been applied. He therefore founded the pathophysiology of cardiac and leg ischaemia.

In the nineteenth century, we enter the age of the blood clot. Another Glasgow boy, Andrew Buchanan, in 1836, described fibrin, the main component of blood clots, and its formation from circulating fibrinogen. Buchanan was a surgeon at Glasgow Royal Infirmary; and later the first Regius Professor of Medicine and Physiology. By showing that clots originated in the blood, he paved the way for two great German pathologists to characterise these clots and their contributions to disease.

Rudolf Virchow described thromboembolism (venous and arterial) and also atherosclerosis. He also showed that arterial clots could be emboli from the heart, or could arise from arteriosclerosis. He ascribed arteriosclerosis to accumulation of fat, rather than inflammation as suggested by others. Every medical student is taught the so-called Virchow's Triad, but while he

recognised the roles of the vessel wall, stasis, and the blood in thrombosis, he never actually described the triad.

The second pathologist, Carl von Rokitansky, is remembered for his suggestion that thrombosis could contribute to atherosclerosis - a concept supported a century later by Duguid, Professor of Pathology in Aberdeen, and now known as the Rokitansky-Duguid hypothesis. Rokitansky's other contribution to vascular pathology was the differentiation of three types of stroke (which he called encephalomalacia) - red which was haemorrhagic, white which was ischaemic, and yellow, which was chronic scarring from either type.

In 1868, Charcot and Bouchard in Paris described the small intracerebral aneurysms which are the major cause of haemorrhagic stroke. So, by this time, the major vascular pathologies - thromboembolism and aneurysmal haemorrhage - had been described. However, the pathways through which fibrinogen was converted to fibrin clot were not known.

Joseph Lister, Professor of Surgery at Glasgow Royal Infirmary, is best remembered for his work on antiseptics, published in 1867, and his carbolic acid spray-pump. However, 4 years earlier, he showed that blood coagulation could be initiated by 2 pathways. One, the intrinsic pathway, was initiated by exposing freshly-drawn blood to a glass tube, and took 10 minutes. In contrast, the extrinsic system was initiated by adding a fragment of tissue, which contained a clot-promoting thromboplastin and took 10 seconds. Lister's observation was important, but it was still not known how clots developed in the circulation. It was twenty years later in 1882 that Guilio Bizzozero, Professor of Pathology in Turin, identified through his microscope the blood cell fragments called platelets, which initiate thrombosis.

The most important consequence of thrombosis, myocardial infarction, was only described at the end of the nineteenth century. The first systematic description of focal myocardial fibroid lesions, associated with coronary artery occlusion, was published in 1887 by John Stephen, pathologist at Glasgow Royal Infirmary. He reviewed the world literature, which comprised 5 cases, and expanded it with 21 clinical and pathological cases of his own.

As we leave the descriptive pathologists of the nineteenth century and enter the twentieth we enter the era of science and technology in vascular disease. As a general practitioner in Burnley, Lancashire, the Scot James Mackenzie measured vascular pulse waves, using his clinical polygraph. By this technique, he identified atrial fibrillation, a major cause not only of heart failure, but also of thromboembolic stroke and leg ischaemia. Mackenzie himself was an early victim of the emerging epidemic of coronary artery disease, developing angina in London in 1908. When he moved to St

Andrews in 1918, he could play a weekly round of golf, but as his angina and claudication progressed he had to hang up his clubs. He died in 1925 and donated his body for the Professor of Anatomy, David Waterston, to dissect. Mackenzie's heart is preserved there, showing left ventricular hypertrophy, myocardial infarction, and severe coronary artery disease. Measurement of myocardial infarction and ischaemia in life had by then been made possible by electrocardiography, pioneered by Willem Einthoven in the Netherlands.

As first proposed by Mackenzie for St Andrews, population-based prospective epidemiology included, from the 1950s, measurement of the emerging epidemic of coronary heart disease. In the first 70 years of the twentieth century, there was an exponential increase in Britain and other developed countries. But why - was it more atherosclerosis, or more thrombosis? Jerry Morris, Professor of Epidemiology at the London Hospital, studied the prevalence of advanced coronary atheroma in middle-aged men over the first 40 years of this epidemic. While coronary deaths increased 30-fold, coronary atheroma did not increase -in fact it fell, possibly partly due to the malnutrition of post-war austerity.

In parallel with the epidemic of fatal arterial thrombosis, there was also an emerging epidemic of venous thrombosis - fatal pulmonary embolism. And because men and women were getting older, fatter, and smoking actively and passively - the main population risk factors for arterial and venous thrombosis - I suggest that this vascular epidemic is thrombotic, rather than atherosclerotic. Support for this view comes from recent publications confirming severe arteriosclerosis in Egyptian mummies and other preserved bodies from ancient times.

How have we come to identify arterial disease and venous thrombosis in life? In 1896, John Macintyre, an electrician turned naval surgeon, established the world's first clinical radiology department in Glasgow Royal Infirmary. He thereby set the scene for clinical radiology to explore disease. Plain radiography could visualise only aortic aneurysms and gross arterial classification; however, the introduction of vascular contrast radiography by Dos Santos in Lisbon in 1938 allowed the visualisation of thrombi, initially in the veins. Venography facilitated clinical trials of anticoagulants such as heparin, introduced to clinical surgery by Murray and Crafoord in 1939, in the treatment of venous thromboembolism, and also in its prevention in high-risk hospital patients.

Arteriography was also pioneered by dos Santos in the 1930s, but it was not until Seldinger in 1953 replaced the needle with a cannula that it could be performed almost anywhere in the body. And once a thrombus or embolus had been accessed and visualised, it could be removed, either by local infusion

of a thrombolytic drug, or mechanically by a catheter. Thrombolysis of a peripheral arterial occlusion with streptokinase was first reported by George McNicol and colleagues in Glasgow Royal Infirmary in 1963. Mechanical removal of arterial thrombi by balloon catheter was pioneered by Fogarty, also in 1963; and in 1974 Andreas Gruntzig dilated atherosclerotic stenoses using balloon catheters, initiating an explosion of interventional radiology in peripheral and coronary arteries. And in parallel there has been an explosion of saphenous vein bypass grafting for more severe peripheral and coronary artery disease.

Invasive radiological cardiovascular imaging has, however, been replaced in many cases by diagnostic ultrasound. Like clinical radiology, clinical ultrasound was pioneered in Glasgow. Ian Donald, Professor of Obstetrics, worked with radar in the Royal Air Force, and having seen the Glasgow shipyards using ultrasound to diagnose flaws in metallurgy, developed its use for diagnosis of abdominal masses, including the foetus, in 1958. Vascular ultrasound has allowed non-invasive assessment of the severity of peripheral and carotid artery disease, as well as direct visualisation of stenoses and thrombi.

Ian Donald died of rheumatic heart valve disease. It is therefore appropriate that cardiac ultrasound has allowed non-invasive visualisation of heart valves and intra-cardiac thrombi, and has facilitated studies of anticoagulants in prevention of cardiac thromboembolism. Their benefits were soon clear in patients with mitral stenosis, or with mechanical heart valves, but it took several large randomised trials in the 1990s, and a collaborative meta-analysis, to establish that warfarin prevented two-thirds of embolic strokes in non-valvular atrial fibrillation. While effective, long-term warfarin carries an appreciable risk of intracranial and other major bleeding, which caused the premature death of Scotland's first First Minister, Donald Dewar. Fortunately, newer oral anticoagulants appear safer.

How did treatment of acute myocardial infarction and ischaemia evolve? The first step was to treat cardiac arrest, with closed-chest cardiac massage and electrical conversion of ventricular fibrillation. This was pioneered in Edinburgh Royal Infirmary by Desmond Julian in 1961, leading to the establishment of coronary care units with monitoring of cardiac rhythm. However, mortality remained high, prior to the identification and treatment of acute coronary artery thrombosis.

The causal role of coronary plaque rupture and thrombosis remained controversial until the 1980s. The inflammatory nature of atherosclerotic lesions, derided by Virchow in the 1840s, was revived by Constantinides in the 1960s, and by Russell Ross in Seattle in the 1970s. Plaque rupture with

occlusive thrombus was consistently demonstrated in 1965 by William Fulton at Stobhill Hospital in Glasgow, using systematic post mortem arteriography and study of sections. However, eminent American pathologists such as Roberts argued into the 1970s that thrombi were the consequence, not the cause, of myocardial infarction.

A major part of Roberts's argument was that many patients did not have coronary thrombi at post-mortem. However, in 1980 de Wood and colleagues in the USA, who rather boldly routinely performed surgical thrombectomy in acute myocardial infarction, showed that thrombi were present in most patients operated upon within 6 hours of symptom onset, but later were less commonly found - presumably because of endogenous thrombolysis. The pathological studies of Michael Davies in London clearly established the dynamic nature of coronary thrombus formation and lysis after plaque rupture, and the clear message was that stabilisation of partially-occlusive thrombus with antiplatelet and anticoagulant drugs, and prompt removal of an occlusive thrombus, were required. The results of the ISIS-2 trial in 1988 clearly showed reduction in mortality by aspirin which prevented platelet thrombi, by streptokinase which removed fibrin thrombi, and an additive benefit of both drugs. Subsequently, heparin anticoagulation, and primary percutaneous coronary intervention rather than thrombolytic drugs, have further improved outcomes in patients with evolving acute myocardial infarction.

Treatment of acute stroke lagged behind treatment of acute coronary syndromes, largely because the general physicians to whose wards patients were admitted thought nothing much could be done. In 1970 Bernard Isaacs established the first Stroke Rehabilitation Unit in Britain, in Lightburn Hospital, Glasgow, and by taking patients from the Royal Infirmary for active rehabilitation their outcomes started to improve. 20 years later, Peter Langhorne and colleagues published the first meta-analysis of randomised trials of Stroke Unit care versus Medical Ward care, showing reduction in mortality persisting for a year; and subsequent analyses also show reduced disability and earlier discharge.

So, early rehabilitation is good for the brain (and the heart, and the leg) but what about identifying and treating the cause of the stroke? The development in the 1960s and 1970s of CT scanning, by Godfrey Hounsfield and colleagues at EMI, and of MRI scanning by Peter Mansfield and colleagues in Nottingham, allowed discrimination of ischaemic stroke from haemorrhagic stroke. Distinction of ischaemic stroke has allowed appropriate treatment, such as anticoagulation for cardioembolism, endarterectomy for carotid stenosis, and acute treatment with antiplatelets, anticoagulants or thrombolytics.

Since William Harvey's time, there has been a very slow evolution of our understanding that major stoppages of the circulation in the limbs, heart and brain are usually due to blood clots forming from blood platelets and fibrinogen. It is only during our own lifetimes that we have progressively learned how to treat vascular heart attacks, brain attacks, leg attacks and lung attacks. We have also only recently learned how to prevent them, through identification of raised blood pressure, raised cholesterol, and tobacco-smoking as the three risk factors which collectively cause about 90 percent of heart attacks. Large randomised trials and meta-analyses have clearly shown that reducing blood pressure and blood cholesterol reduces risk and mortality, as predicted by epidemiological studies.

With better primary prevention, heart attacks have become less common in men and women over the last quarter century. And with better treatment and secondary prevention, subsequent mortality is falling. This has been clearly shown in several countries including Scotland. However, challenges remain for control of vascular disease. Despite the pleas of King James the Sixth of Scotland and First of England to his subjects to avoid tobacco use, it continues to increase globally, as do other risk factors including poor diet, binge drinking, obesity, diabetes, and social deprivation. All risk factors come together in deprivation. In his recent World Health Organisation report on social deprivation and mortality, Michael Marmot observed that a girl born in rural China lives 42 years longer than a girl born in sub-Saharan Africa. Reducing global inequality is clearly difficult. But what is surely unacceptable is that, from this report, a girl born in the Calton area of East Glasgow has a life expectancy 28 years less than a girl born 10 miles away in the middle-class suburb of Lenzie. 28 years - two-thirds of the global extremes of life expectancy.

Physicians and surgeons in Scotland, following in the footsteps of William Harvey, the founder of medical science, have played a major role in identifying the causes of a blocked circulation. Their successors still have a major task to apply evidence-based prevention and treatment equally to an ill-divided Scotland and to an ill-divided world.

THE TWENTY SECOND HALDANE TAIT LECTURE

The Twenty Second Haldane Tait Lecture was held in the Craighouse Campus of Napier University in Edinburgh on 1st May 2013. The speaker was Alistair Moffat and his paper was entitled "How DNA Rewrites History". This was a most interesting and entertainingly delivered talk, which was well received and was followed by an excellent dinner.

Mr Moffat covered a number of topics including early hominids, the history of modern humans, and the use of DNA to understand the origins of populations. He reminded his audience that all inhabitants of northern Europe are immigrants, having arrived since the last Ice Age.
The Scots: a Genetic Journey, by Alistair Moffat and James Wilson, was published by Birlinn in 2012, (ISBN 1780270321)
Details of the project to look at the DNA of those living in Britain can be found at https://www.britainsdna.com/

THE ONE HUNDRED AND NINETY SIXTH ORDINARY MEETING

The One Hundred and Ninety Sixth Ordinary Meeting, on 15 June 2013, was an all day meeting of the SSHM with the participation of the Highland Medical Society. Papers were given by Mr Tom Scotland on Casualties sustained by the British Expeditionary Force in France and Flanders, 1914-1918, Professor Marjory Harper on A Dysfunctional Diaspora? Causes and Consequences of Mental Illness among Scottish Emigrants to Canada, 1867-1914, Professor Alasdair Munro on the Beaton Medical Kindred in the Highlands, Professor Stephen Leslie and Mr Jim Leslie on the History of Highland Hospitals and Dr Miles Mack on the Dewar Report. This was an excellent and very successful meeting which was preceded on the Friday evening by a dinner at the Kingsmills Hotel in Inverness, attended by members of the SSHM and the Highland Medical Society.

CASUALTIES SUSTAINED BY THE BRITISH EXPEDITIONARY FORCE, FRANCE AND FLANDERS, 1914-1918.

During the Great War, the British Expeditionary Force in France and Flanders sustained 2.7 million battle casualties. Just over a quarter were never seen by the medical services. These men had been killed, were missing or had been taken prisoner. Of those who lived to be treated, 5.4% of the total number of casualties died from wounds sustained.
At the outbreak of the war, a system was put in place to evacuate casualties from regimental aid posts close to the front line, to field ambulances and then to casualty clearing stations before transferring them by hospital train to base hospitals on the French coast, where they would undergo definitive surgery. It took far too long to reach these base hospitals. Filthy wounds sustained in the heavily fertilised fields of France and Flanders were contaminated by organisms responsible for gas gangrene. As a result, many patients reached base hospitals with established gangrene and lost their limbs or their lives. It

was necessary to operate on such patients before they were sent by train to the base.

Casualty clearing stations were generally out of range of shellfire and yet close enough to the front to be reached relatively quickly by motor ambulance wagon convoy. Clearing stations increasingly took on the role of performing major limb and life-saving surgery before patients were sent by train to base hospitals. By 1917, 30% of the wounded underwent definitive surgery at clearing stations. During the Third Battle of Ypres in 1917, no fewer than 61,423 soldiers were operated on in casualty clearing stations.

The clinical problems presented by huge numbers of casualties during the Great War led to the emergence of surgical specialties, including orthopaedic surgery. In 1914, surgeon Robert Jones from Liverpool visited hospitals in France, and pointed out that there were far too many soldiers with musculo-skeletal wounds whose initial management had been poor, and who were blocking hospital beds in France and in Britain. These men were neither fit for return to military duty, nor for discharge to civilian life. Jones notified Director General of Army Medical Services, Sir Alfred Keogh, about this state of affairs and this led to Jones opening an experimental orthopaedic unit in Alder Hay in Liverpool in early 1915, segregating soldiers with orthopaedic wounds for the first time. So successful was this unit, that Jones opened the first of many Orthopaedic Centres on the site of the Hammersmith Workshop in Shepherd`s Bush, London, in 1916. This centre provided the surgical expertise to treat late orthopaedic problems such as mal-union or non-union of fractures, whilst at the same time providing a curative workshop by giving men an occupation which both restored function and improved morale. By 1918, there were 17 orthopaedic centres around Britain with a total of 20,000 beds.

Jones also made a major contribution to the management of the most serious acute orthopaedic wound of the Great War, the compound fracture of the femur, caused by bullet or shell fragment. He introduced the Thomas Splint to immobilise fractures of the femur. Invented by his uncle, Welsh medical practitioner Hugh Owen Thomas, and used by him to immobilise knee joints affected by tuberculosis, the Thomas Splint proved to be equally effective in stabilising fractures of the femur.

Jones made the Thomas splint available on the Western Front with the help and encouragement of his colleague Henry Gray. Before the war, Gray was surgeon to the Aberdeen Royal Infirmary and he spent three and a half years in France, first in charge of a group of base hospitals in Rouen, and then as consulting surgeon to the British 3rd Army. He was widely regarded as one of the most capable military surgeons. Gray documented a mortality of 80% for

compound fractures of the femur in 1914 and 1915. Splints for immobilising these fractures in the early months of the war were ineffective and uncontrolled movement of the bone ends at the fracture site led to excessive blood loss. As a result, soldiers reached clearing stations in a shocked state and unfit to withstand the major wound excision necessary to save their limbs and lives.

During the Battle of Arras which began on Easter Monday in April 1917, Gray collected a series of 1009 compound fractures of the femur in a six-week period, all of whom had their fractures treated using a Thomas Splint. Before the Battle of Arras, using inadequate splints, the mortality of this type of wound in clearing stations alone was 50%. Using the Thomas Splint at Arras, the mortality in clearing stations was 15.6%, a reduction of more than 30%. All but 5% of patients were fit to undergo wound excision.

Gray wrote a book in 1918 entitled "The Early Treatment of War Wounds" in which he summarised the management of a wide variety of wounds. This book was widely regarded as a definitive work on war surgery which epitomised the advancing knowledge of the period. Indeed, Gray laid down the principles of war surgery, which are as relevant to-day in Camp Bastion in Afghanistan as they were in France and Flanders 1914-18.

A DYSFUNCTIONAL DIASPORA? CAUSES AND CONSEQUENCES OF MENTAL ILLNESS AMONG SCOTTISH EMIGRANTS TO CANADA, 1867-1914

Professor Harper's paper has been published in *Neurosciences and History*, 2(1), 2014, I-XX. In summary, Professor Harper's work looked at the difficulties faced by Scottish emigrants when they arrived in Canada. This was carried out using an analysis of patient case files for individuals admitted to mental health services in British Columbia between 1872 and 1913, together with a study of the papers of government immigration departments whose activities had a close relation to the policies and practices of the British Columbia Provincial Asylum for the Insane. Factors making things difficult for immigrants included a particularly challenging environment, high expectations unrealized, homesickness and the absence of efficient support networks. While those with mental illness might be admitted to psychiatric hospital, some were voluntarily repatriated or formally deported. Scots were not unique in this. Immigrants from other countries faced similar difficulties and were dealt with in a similar way.

THE BEATON MEDICAL KINDRED; HEALTHCARE IN THE HIGHLANDS AND ISLANDS OF SCOTLAND 5OO YEARS BEFORE THE NHS

That the Highlands and Islands of Scotland had medical expertise and a system for training physicians which was the envy of the rest of Scotland from the 14th to the 18th century comes as a surprise even to Scottish people. The Beaton medical kindred were responsible for this school of medicine, which over a 400-year period produced at least 76 physicians. The Beatons, also known as McBeths, Bethunes and McVeys were thought to have come from Aghadowey in Ireland across the relatively short stretch of water to Islay, where they settled initially in the parish of Kilchoman. One version of the story of the origin of the family is that the Beatons came to Scotland with Aine, the daughter of a landowner, as part of a wedding retinue when she married Angus Og, Lord of the Isles, early in the 14th century. At this time in Ireland there were a number of families with a reputation for healing and the Beatons in Aine's retinue took these skills with them to Scotland.

The reputation of the Beaton doctors spread rapidly and the Royal appointment of Patrick McBeth or Beaton as physician to Robert the Bruce underlined their pre-eminence. Patrick is reckoned by some historians to be the progenitor of the Beaton medical kindred in Scotland. Although records from this time are scanty there is good evidence that Farquhar Beaton, thought to have come from Islay, was given land in north Sutherland in 1379 in return for medical services to King Robert. Royal appointments of Beaton doctors continued from the reign of Robert I to Charles I when, at any given time, there were Beaton physicians, sometimes more than one at a time, on the payroll of the state. When King James VI went to London after the union of the Crowns he took a Beaton doctor with him.

In the 15th and 16th centuries the clan system in the Highlands was very influential and gradually the Beaton physicians became physicians to powerful clan chiefs. They were appointed as doctors to clan MacLean in Mull, clan MacLeod and clan MacDonald in Skye, and, around 1550, they were made physicians to clan Munro in Easter Ross. They were also linked to clan Fraser at Glenconvinth near Inverness.

What do we know about the training of the Beatons? From information given in the Gaelic Medical Manuscripts, training was done by apprenticeship either with a Beaton doctor or with a doctor from another medical dynasty. We know that Angus Beaton from Husabost was training with Duncan O'Conchobhair in the Oban area from 1611 to 1614. One of the duties of the apprentice was to transcribe medical documents. Angus wrote frequent line

fillers and notes in the medical documents and it is from these that we are able to build up a story of the activities of tutor and apprentice. It is clear that the apprentice followed his mentor, visiting patients in different places. Thus Angus Beaton was in Lismore on 30th November 1611, in Muckairn early in 1612 and in Dunollie in July. We also know that he was in Ardconnel on 23rd August and in September he was located on Island Stalker. We know from the writings in Gaelic Medical Manuscript MS LX that Angus completed a translation of the Prognosis of Hippocrates in Ardconnel and later in the same year he copied a paper on urine while he was in Dunollie and completed a transcription of a Gaelic version of Galen's Anatomia in Ardconnel. The training of Beaton physicians could be lengthy – extending to 27 years in Angus Beaton's case. We also have a considerable amount of information about Duncan o'Conchobhair, Angus Beaton's mentor. Firstly, he spent more time at Dunollie than elsewhere and presumably had a contract with the MacDougalls of Dunollie to provide healthcare. He may also have lived there. He was known as Donnhadh Albannach, "Duncan the Scot", in Ireland where his family ran a medical school at Aghamacart in upper Ossory. It is clear that Duncan frequently travelled between Scotland and the family home in Aghamacart and there is strong evidence that at least some of his time there was spent transcribing medical documents.

The Gaelic Medical Manuscripts written by members of the medical dynasty and their apprentices were the textbooks used by the Beatons. They were usually major medical works sourced from the best medical centres in Europe at that time, such as Montpellier, Padua, Salerno and later the University of Leiden. The Lilium Medicinae written by Bernardus Gordon, Professor of Medicine at the University of Montpellier, was one volume which was well thought of. Rev Donald MacQueen writing in 1784 claimed that Farquhar Beaton of Husabost, who lived two centuries previously, had so much regard for Lilium Medicinae that when he had to journey from one place to another he himself would travel by boat but his copy of Lilium Medicinae would be taken by his servant the long way round by foot. How the Beatons came to have in their possession documents on Galenic (Roman), Hippocratic (Greek) and Arabic medicine as well as European medicine is not clear. It is possible that the Scottish Beatons visited some of the important centres of medical learning but from available records there is no clear evidence of this happening. Perhaps a more likely explanation is that their relatives from the medical schools in Ireland went to some of the more important centres and on their return may have distributed documents to the Scottish Beatons. There are some 22 Gaelic Medical manuscripts in the National Library in Edinburgh. These are written in classical Gaelic, the language of both Scottish and Irish

Gaels until 1550. One of the Gaelic medical documents is of particular interest - it was very small measuring 6.5x4.5 cms and had several straps attached to it. Experts tell us that these straps would have been used to keep the book closed during transportation, and would have attached to the physician's belt in order to keep the book dry in wet weather. This book contained many medical definitions, some of which might still be relevant today.

There is evidence that the Beatons were highly regarded by their employers and payment for services was given, usually consisting of a grant of lands. Fergus Ollamh was granted "fermes" of Ballenabe in Islay in 1542 in return for his services as a doctor. Likewise, the Munros of Foulis granted land at Culnaskea to Neill Beaton for specified medical care and a small rent.

The medical profession enjoyed high status within the clan system and on formal occasions they would be seated next to the bard. Marriages frequently took place between the Beaton doctors and the clan chief's female family members. It is said that the Beaton doctors who were physicians to the clan Munro for 150 years always married into the Munro family for the whole of the 17th century. A similar situation arose with the Beatons of Husabost, who frequently married the daughters of tacksmen of the Macleods of Dunvegan.

Although many of the 'textbooks" used by the Beaton kindred dated from Greek and Roman Medicine it is clear from the meeting of Martin Martin with Fergus Beaton, who was a physician in South Uist around 1695, that, in addition to having several volumes of Hippocrates, he also had more up-to-date material written by Avicenna, Averroes, Bernardus Gordon and Johannes de Vigo. Avicenna and Averroes were medical philosophers who lived in the 11th and 12th centuries who modified and updated Greek and Roman medical thinking. Their thinking spread to universities such as Salerno and Montpellier and it is to Montpellier that the Gaelic medical dynasty turned and particularly to the writings of Bernardus Gordon who was appointed professor of Medicine in 1285. Johannes De Vigo was an Italian doctor who wrote a volume called Practica in Chirurgia in 1513 which within 30 years had gone through 21 editions. Although Fergus Beaton may have been somewhat old fashioned, these volumes would have reflected the state of conservative mainstream European medicine in the late 17th century.

A further feature of the Beaton medical tradition is that they practiced surgery as well as medicine, unlike their contemporaries in the main Scottish cities who trained physicians separately from surgeons. Gille Coluim MacBride in 1550 wrote of the Beatons of Ballenabe "The kindred of Mac-beathadh, accurate in their practice, carvers of bones and arteries". In the Munro Writs, reference is made in a contract, signed in 1615 between the Munros and Neill Og Beaton, that surgery was part of his expected repertoire as a physician.

There is also some information available about the precise operations performed by the Beatons. Martin Martin says that Neill Beaton of Lusta was able to perform trepanning of the skull and it was thought that a Beaton surgeon performed an operation for stone on one of the sons of the Fraser clan chief.

Despite some surgical prowess the Beatons were essentially physicians who practised folk medicine as well as herbal cures. Some of the herbal cures would have been taken from the textbooks which were translated by the Beaton doctors and apprentices but, in addition, the strong tradition of local herbal medicine would have been utilized to effect cures in the local population who would have understood the choice and efficacy of the treatment. Martin Martin in his travels around the western isles came across betony used as a wound ointment and we know that Angus Bethune recommended Betony, used as a tea for dissolving phlegm and treating headache.

The term ollamh was used in both Scots and Irish Gaelic to refer to a master in any profession or craft but eventually it was used to denote a master or mentor physician without any qualification or further description being thought necessary.

It is clear in the Gaelic medical tradition that land was only held by the physician's family if the family was able to produce a male doctor capable of providing medical services for the extended family of the clan chief. When the hereditary doctor was no longer able to practice he had no option but to return the lands to the landlord.

During the latter part of the 17th century the influence of the Beaton medical kindred gradually faded. There were a number of reasons for this change. Firstly, it related to the reducing influence of the clan system. This was exacerbated in the eighteenth century when, after several failed Jacobite rebellions, the governments of the day systematically attempted to dismantle the clan system and passed laws to ensure its demise. Secondly, it was becoming more the norm for sons of the clan chief and landlords to be educated and the young men migrated to the cities or joined government military institutions. The study of medicine became respectable and clan chiefs could afford to pay for medical apprenticeships and university fees. When John Monro returned from the University of Leiden around 1700 and decided to set up a medical school in Edinburgh similar to the one in Leiden, with Anatomy being taught on a grand scale with large lecture theatres, the Gaelic Medical dynastic system in which his ancestors played a major role in Monro country in Easter Ross could not compete and rapidly went into decline. In addition to these factors the nepotistic nature of the Gaelic medical

system was an irrelevance in the more cosmopolitan environment of a city that was soon to play a major role in the Scottish Enlightenment.

Further reading

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THE HOSPITALS OF THE HIGHLANDS AN OVERVIEW OF THEIR ORIGINS

Introduction and Early Hospitals

In common with other remote areas, the provision of adequate hospital facilities and medical staffing seems to have been a challenge in the Highlands of Scotland. This article describes the early origins of these hospitals and hospital based services and discusses some of the historical difficulties in providing such services – some of which have resonance today.

It has been noted that ‘a striking feature of most medieval hospitals in Scotland is the lack of involvement of medical practitioners’.[i] Such establishments were often attached to a church or religious settlement and their modern equivalent seems more a travel inn than a hospital. There is possible physical evidence of such a hospital in Caithness but no clear evidence elsewhere in the Highlands although any place called ‘Spittal’ deriving from the Latin ‘hospitum’ is, of course, a possible site and there are several. For example, Spittal Shore near Redcastle, Black Isle, was referred to as the "hospital-house of Edirdouer" in a charter dated 1299-1311. In 1290, envoys of King Edward I of England probably stayed overnight at St. John's Hospital near Helmsdale and, the following night, probably at St. Magnus at Spittal.[ii] In 1457, the Chancellor of Ross was appointed by the king to visit and reform hospitals, presumably within the Highlands or Moray and

presumably some indeed existed.[iii] Scotland had medieval leper settlements but there are none recognised in the Highlands although one was thought to have existed in the 13th – 15th centuries near Bruachnain Cottage to the west of Inverness.[iv] There is no evidence of the famous Gaelic healer families such as the Beatons or Macbeaths working in any form of hospital. In the Early Modern period, charters to the burgh of Inverness from Mary Queen of Scots (1567) and James VI (1591) mention a hospital. Inverness Kirk Session records mention a hospital in 1661-63 'which from other information must have existed in 1641.'[v] Dunbar's Hospital in Inverness dates from 1668 and the building survives but it was intended as an almshouse as, most likely, were its predecessors. There are 18th century references to a military hospital on Castle Street and a hospital in Academy Street in Inverness but unfortunately there are no details.[vi] However, we do have details of Cromwell's Fort, Inverness (1652 – 1662) which included 'an apothecary shop with drugs, Mr Miller their chyrurgion, and Doctor Andrew Monro their phisitian'. It also had a 'row of buildings called the Line' with accommodation 'for sick soldiers to lodge in'.[vii] This is probably the Highland's first recorded 'modern' hospital but unfortunately the citizens of Inverness, less than appreciative of the Fort's protection, tore it down at the first opportunity!

In 1798, the committee established to promote a Northern Infirmary in Inverness noted 'the impossibility of offering effectual medical aid to the sick poor in the Highlands' citing the 'thinly scattered' population, the 'swellings of rivers' the 'stormy weather' and the 'bad roads' as contributing factors.[viii] In the Highlands of Scotland, the challenges of a landscape much dissected by river and glacier, the varied and indented coastline and the distribution of population and economic activity have challenged health care providers over the years and they continue to do so to this day. Not only were there physical difficulties. By the 19th century, decades of emigration had depleted many areas of an economically enterprising class which was exacerbated by the contrasting wealth and opportunity offered in growing industrial and commercial areas elsewhere both at home and abroad. The Royal College of Physicians of Edinburgh Survey of 1850-52 has much evidence of the difficulties of Highland medical practitioners in making a reasonable living. The medical practitioner at Ardnamurchan noted 'The chief hardship is the want of an income which disables the practitioner from having medicines, instruments or applying medical comforts where required or a horse where the roads permit…'[ix]

Among much other useful data the College found was that there were only 133 medical men in the whole region- not all reliable - and that 36 had no registered qualification. 4 ministers and 7 farmers had medical degrees and

assisted when required but took no income, while 10 were in semi-retirement from the Navy, the East India Company, Hudson's Bay Company or the army. 41 parishes, mostly in Ross, Sutherland & the Islands, were 'never visited by regular practitioner and may be regarded as destitute of medical aid'.

Fig 1 The Original Northern Infirmary, Inverness
Each wing held 4 ‘lunatic cells’

General hospitals

If supporting a local doctor was difficult then it is clear that few communities had the means to set up a voluntary hospital. Nevertheless, Inverness opened its Northern Infirmary in 1804 and, apart from the major cities, it was the third town in Scotland to have its own hospital. Nairn followed its example in 1847 but, by the end of the first half of the 19th century, there were still only 3 hospitals in the whole of the Highlands and Islands, the third being at Kirkwall. The Royal College of Physicians of Edinburgh Survey of 1850-52 recommended ‘that small hospitals for the sick should be erected in some of the more populous districts’, one of many calls for more hospitals, and the latter half of the 19th century saw action in local communities to establish their own one, the last one – at Broadford in Skye being opened in 1914 (see Table 1 below).

Most voluntary Highland hospitals grew up from local associations, usually with the help of a bequest or gift of property, land or capital. Community leaders, such as the local provost, magistrates or aristocrats acted as trustees and there was a range of management organisation depending on the conditions of any endowment. Typically, voluntary hospitals depended on attracting subscribers, annual church collections and, most importantly, one-off donations or legacies, the latter often funding specific improvements. No hospital appears to have been a paying concern without this additional support and patient fees, where charged, seldom met the cost even of the individual’s treatment.

Name	Date est.	Beds
Royal Northern Infirmary, Inverness	**1804**	**69**
Nairn Town & County	**1847**	**12**
Belford, Fort William	1863	18
Gesto, Edinbane, Skye	1872	12
Ross Memorial, Dingwall	**1872**	**17**
Ian Charles, Grantown on Spey	1885	12
Cromarty Hospital	**1894**	**10**
Lawson Memorial, Golspie	1900	10
Bignold, Wick	1903	13
John Martin, Uig, Skye	1905	6
MacKinnon Memorial, Skye	**1914**	**6**

Table 1 General Hospitals in the Highlands in 1914
(Those initiated mainly by voluntary subscription are shown in bold, others were established by individual endowment)

This was despite local doctors giving their services free.[1] The Northern Infirmary in Inverness was large enough, however, to employ a resident medical officer, although the role seems to have been more clerk and dispenser with the free medical treatment firmly in the hands of local doctors. As the table above shows, there were only five most of which were small. The designs are interesting. Nairn, like Inverness built a conventional house but, 25 years later, Dingwall chose a pavilion style (Fig 2 below) much in favour at the time and commented on favourably by Sir Henry Burdett, an authority on hospital design.

[1] Except in some endowed hospitals such as the Belford, Fort William and Gesto in Skye. Doctors who attended local authority poorhouses and fever hospitals received a fee.

Fig 2 The Ross Memorial Hospital, Dingwall

As Table 1 shows, most general hospitals in Highland originated from an endowment by wealthy individuals. There seems to be no obvious pattern, for example, following a lifetime of hard work and frugality, solicitor and factor Andrew Belford left his fortune to build the *Belford* hospital; Kenneth Macleod returned from indigo planting and politics in India to fund the *Gesto* at Edinbane: *John Martin* did the same except his fortune came from coffee in Sri Lanka; *Ian Charles* Ogilvie Grant, (Earl of Seafield), was one of the wealthiest landowners in Scotland, George *Lawson* owned the Clynelish Whisky Distillery at Brora and Sir Arthur *Bignold*, local MP, had the fortune of the Norwich Insurance Group behind him. Some of these hospitals, such as the Gesto in Skye, existed on their original endowment until taken over by the NHS. Others, such as the Bignold in Wick, achieved voluntary status when endowment funds dwindled. Some voluntary hospitals received major endowments late in their history such as at Nairn, where, in 1906, the new hospital was mainly financed by one donation from Ecuador. In 1914, the Belford and Mackinnon hospitals both had to be rescued by a grant from the new Highlands and Islands Medical Service. The only private hospital in Highland was the Grampian Sanatorium at Kingussie, later renamed St Vincent's, which survived financially and was eventually incorporated into the NHS in 1986.

Highland hospitals received much funding from abroad either from expatriates or from those returning home after making their fortune overseas. This is particularly apparent in the north Skye hospitals and in the initial funding of the Northern Infirmary and Nairn Town and County. Owners of sporting estates and their shooting season guests also made important financial contributions. A notable example is Arthur Bignold who financed the hospital of his name in Wick. Such donations partly compensated for the lack of a

prosperous middle class outwith Inverness. However, local landowners were also prominent in health care provision such as Colonel Seaforth and Sir Kenneth Mackenzie in Ross and Cromarty and the Countess of Seafield in Speyside.

By the 1920s, several national committees and reports note that voluntary hospitals in Scotland were under pressure, with considerable waiting lists. By contrast, it seems that, apart from the Northern Infirmary, Highland hospitals were often underused. Indeed, managements were often concerned by the number of patients who were attracted away by the more specialised services of Inverness or larger centres. The north had a traditional association with Edinburgh and indeed early funding attempts for the Bignold Hospital in Wick had to compete with fund raising for Edinburgh Royal Infirmary.[x] In the West, the association was with Glasgow and, in the 1940s, it was noted that 'medical practitioners are loud in their insistence that this association should continue'.[xi] In 1920, over 800 Highland patients were treated in city hospitals (see Table 2 below).

Glasgow Royal Infirmary	103
Glasgow Western Infirmary	230
Glasgow Victoria Infirmary	40
Edinburgh Royal Infirmary	361
Aberdeen Royal Infirmary	77
Total	811

Table 2
Highland Patients treated outwith Highland in 1920
Source: Report on the Hospital Services of Scotland 1920

At the time, Highland general hospitals had 210 beds. The average patient stay in hospital was around one month making the capacity of Highland general hospitals around 2400 patients a year. Therefore, a large proportion[2] of Highland patients were going elsewhere for hospital treatment.[xii]

The smaller rural hospitals faced a fairly difficult existence financially. Hospitals such as the Gesto and John Martin in Skye had limited income from their endowed capital and there seems to have been little regular local fundraising. Costs therefore had to be minimised. The sole matron was on duty twenty-four hours a day and in order to allow her annual leave and to

[2] Although many going elsewhere were suffering from pulmonary tuberculosis and thus avoiding local sanatoria or fever hospitals rather than general hospitals.

ensure annual deep cleaning, the hospital closed for a period each year. At the John Martin, the hospital was closed for at least a month each summer although the evidence suggests that the dates varied from year to year according to circumstance, (the need for repair work could also affect the opening period). Matron was, as her title often suggested, housekeeper and could not be absent from the hospital for more than a few hours at a time. In some cases, such as at the Mackinnon in Skye, matron negotiated a fee with patients. Although, general hospitals were essentially for the poor, those who had means were expected to pay and, in a small rural community, it would have been difficult to hide one's means from matron.

Poorhouses

In 1845, the Poor Law (Scotland) Act established Parochial Boards to administer poor relief in each parish, overseen by a central Board of Supervision in Edinburgh. Boards had to have '…proper and sufficient arrangements for dispensing and supplying medicines…' and were empowered to '…nominate and appoint a properly qualified medical man who shall give regular attendance at (any) poorhouses…' After 1848, an annual medical relief grant of £10,000 allowed these developments to take place.[xiii] The Poor Law was not universally welcomed and a prominent Highlander wrote at the time that 'the idle and the profligate claim and obtain equal charity with the well behaved, helpless and unfortunate', an opinion which has a strange resonance in 21st century Britain.[xiv]

In 1920, JP Day[xv] examined the effectiveness of local government in the Highlands. His proposition that structures of administration, devised for central, mainly urban areas, have severe limitations when imposed across peripheral areas, was well supported by the evidence. In the mid to late 19th century, the Parochial Board worked well in Inverness and tolerably well in the small East coast burghs. However, in rural areas they were underfinanced and often poorly administered due to the small middle class, traditionally the source of the membership. The poverty of Highland areas, expressed in their low rateable values, further reduced their financial viability and the dispersed nature of the population made providing services problematic for all but the most centrally located. Traditionally, Highland parishes had supported the poor at home or in a rent free house or lodging and Parochial Boards continued this practice, establishing cottages and small houses where paupers could be accommodated. However, the view from the urban south favoured large poorhouses as being more efficient and this mirrored the workhouses which had been established in England. Poorhouses were not necessarily the most appropriate for much of the Highlands where dispersed populations

meant that many poorhouse inmates could be far removed from any remaining family and/or community support. Many parishes had small populations and it required several, typically seven or eight, to combine to build large Combination Poorhouses. The first was the Easter Ross Combination Poorhouse near Tain in 1850 and the others are shown in Table 3. Inverness parish was large enough to open its own in 1861, having initially used the unsuitable Dunbar's Hospital. Highland Poorhouses, except Inverness, were too remote from much of their catchment area and remained underused and uneconomic.

Poorhouse	Open	Sick beds	Closed	Subsequent History
Easter Ross Combination, Tain	1849	c12	1968	Residential home after 1948
Latheron Combination	1854	12	1948	Demolished
Black Isle Combination, Fortrose	1855	c12	1944	Residential
Thurso Combination	1856	c12	1915	Residential
Skye Union, Portree	1859	c12	1930	School Hostel
New Inverness Poorhouse	1861	27	1986	NHS Hospital after 1948
Sutherland Combination, Bonar Bridge	1863	c12	-	Migdale Hospital after 1948

Table 3 Poorhouses in the Highlands

The Poorhouses had an immediate medical function in the checking of inmates for fitness to work but, since the eligible poor were often sick and infirm, these institutions, in effect, became partly hospitals for the chronic sick and all had sick wards from the start. Furthermore, a stream of edicts from the Board of Supervision in Edinburgh ensured that poorhouse nursing and medical officer standards were gradually improved. These edicts were not always advantageous to the Highlands. By focusing grant assistance on poorhouses, they diverted money away from parishes without poorhouses, which were often in the remotest areas and already severely deficient in medical services. There were other difficulties again related to the urban focus of the Board of Supervision. In the 1880s, grant assistance was

concentrated on nursing provision, which worked against the small rural poorhouse with only a single nurse.

By 1915, the virtually empty Thurso Poorhouse had closed. The 1929 Local Government Act allowed local authorities to review the use of poorhouses and this prompted the conversion of the Skye one to a school hostel. At this time, poorhouses in some parts of Scotland were converted to local authority hospitals but, in the Highlands, despite some attempts at rationalisation, for example in Ross and Cromarty, lack of resources meant that poorhouses largely remained a refuge for the destitute, the chronic sick, the mentally ill, vagrants and unmarried mothers, all to a large extent thrown together in establishments which 'for the care of the chronic sick who are mentally normal … are ill-equipped, inadequately staffed and often structurally unsuitable'.[xvi]

Only three Highland former poorhouses continued after 1948 and only two as hospitals. The Inverness one, by then renamed Muirfield and later called Hilton Hospital, continued for the chronic sick until 1986 when it became residential flats. Similarly, the former Sutherland poorhouse, later renamed Swordale and now Migdale continued in its original building until 2010 when a new hospital was built nearby. The photograph below shows the original frontage essentially unchanged after almost a century and a half.

Fig 3 Migdale Hospital 2008 in its original building

Infectious Diseases Hospitals

In 1867, the Public Health (Scotland) Act made Parochial Boards responsible sanitary authorities with powers to prevent infectious diseases and these powers and responsibilities increased as their social benefits became

increasingly obvious. Eventually, the 1889 Local Government (Scotland) Act forced local authorities to build fever hospitals and appoint a Medical Officer of Health, a post first created in Edinburgh in 1862. These officers, such as William Bruce in Ross and Cromarty, John Alexander in Caithness and Roger McNeil in Argyll, became eminent and their often hard hitting annual reports appear very effective in raising awareness of, and combating, public health problems. As elsewhere, housing, water supply and sewerage in the Highlands left much to be desired but improvements in public health had reduced smallpox, typhoid and cholera outbreaks by 1900. Tuberculosis, scarlet fever and diphtheria took over as the main scourges and they lasted well into the 1950s. It was not until 1968 that Ross and Cromarty reported no deaths in the County from tuberculosis.[3]

Fever patients were isolated in their own homes or went to local voluntary hospitals[4] but the risk of cross infection led to the construction of fever wards or separate hospitals. Most homes were too small to accommodate patients easily and there was a high risk of the rest of the household being infected. Hospitals were therefore important refuges, sometimes for healthy family members while the infected house was fumigated. Some hospitals had been built following specific disease outbreaks such as at typhoid at Nairn in 1847 and at Portree in 1892. However, a frequent response was to build small, 2-ward huts of corrugated iron and wood with a nurse's room and kitchen as emergency hospitals. These were prefabricated and, in the Highlands, were usually permanently sited. They often sat empty for long periods and, by 1917, several were 'in a state of disrepair' and 'unfitted for the reception of patients'.[xvii]

Fig 4 Elevation of Smallpox Hospital Waternish, Skye
manufactured by Speirs of Glasgow

[3] We are indebted to Robert Steward, former Highland Archivist for pointing this out.

[4] Even smallpox patients were admitted to the Northern Infirmary.

Hospital	Open	Beds
Burnside, Thurso	1891	4
Auchbain, Daviot	1893	4
Battengorm, Carrbridge	1893	?4
Portmahomack	1893	?4
Smallpox Hospital, Wick	1901	4
Smallpox Hospital Waternish, Skye	1904	4
Victoria, Fort William	1904	6
Lochcarron	1907	4

Table 4 Emergency ('Smallpox') Hospitals

In some areas, cottages were set aside as fever hospitals such as at Portmahomack (cholera), and Auchbain, Daviot (smallpox). (Table 4). Sometimes, as at Fort William and Portmahomack, the emergency hospital had a tenant whose main condition of lease was to vacate the place immediately should there be a smallpox or cholera outbreak. Most of these hospitals had gone by the 1920s, when smallpox and cholera were mainly distant memories, although a temporary hospital was erected at Nigg in 1920 to accommodate a smallpox outbreak at the Black Isle Poorhouse.

An alternative strategy to treating disease outbreaks in remote rural areas was to have prefabricated units standing by ready for transport and erection wherever required but this was not very practical. Roger McNeil, Medical Officer of Health for Argyll, previously at the Gesto hospital in Skye, described an authority's use of a Doeker prefabricated unit. When an outbreak occurred there were initial difficulties in finding a suitable site, the erection took a week, then a sudden violent storm caused damage which had to be put right, so that the total time required was 6 weeks at which point 'no-one could then be found to take advantage of it'.[xviii] There is no record of this system being used north of Argyll. Wester Ross had sites prepared for tents to be erected and tents were indeed used in the Raasay typhus outbreak of 1922. Skye and the Black Isle had horse drawn hospital vans (below) which could be pulled to the location of the outbreak and used either as patient or as nurse accommodation.

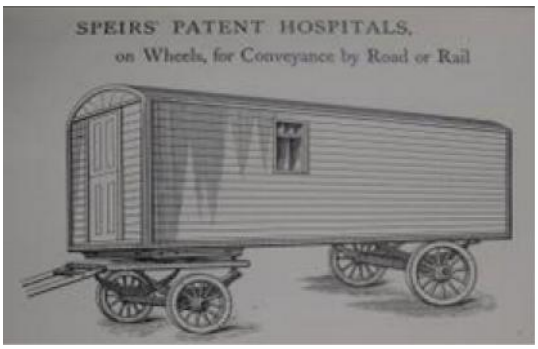

Fig 5 Speirs Hospital Van

Apart from emergency hospitals, most local authorities provided fever hospital facilities in line with the requirements of the Local Government Board, (Table 5 below). Early general hospitals such as the Northern Infirmary and Nairn Town and County accepted fever patients but, as time went on, the necessity of preventing cross infection forced the setting aside of fever wards such as at the Northern Infirmary in the 1870s. Wick had a fever hospital from at least 1870 although to date we have found no record of it apart from the 1870 OS map.

Northern Infirmary Fever Wards	1804	Initial beds
Harrow Park Wick Later Town & County	1870 1910	10 23
Citadel, Inverness	1877	18
Ross Memorial, Portree	1892	8
Belford Infectious Diseases, Fort William	1893	8
Ballachulish Infectious Diseases	1901	10
Cambusavie, Sutherland	1906	10
Meadowside, Kincraig	1906	12
Nairn Infectious Diseases	1910	12
County, Invergordon	1922	48
Culduthel, Inverness	1917	63

Table 5 General Infectious Diseases Hospitals

Increasingly, as transport improved, infectious diseases facilities became specialised and centralised, although the Scottish Hospitals Survey of 1938[xix] was still advocating local fever isolation blocks attached to hospitals. In 1917, Culduthel in Inverness became the main fever hospital for Inverness-shire and, ultimately, for the Highlands, before fever outbreaks became fairly rare.

By the 1900s, tuberculosis had become a major problem. General hospitals accepted TB patients and the Northern Infirmary constructed its own phthisis (lung disease) wards. In 1901, Dr De Watteville opened the Grampian Sanatorium in Kingussie, Scotland's first privately run TB establishment. It was followed by the voluntary (and isolated) Invergarry Sanatorium and the endowed Seaforth Sanatorium at Maryburgh (Fig 6 below) which was fully funded by Colonel and Lady Seaforth.

For some reason there was a stigma surrounding TB and many Highland sufferers in the North preferred to be treated in the cities, often moving there to stay with relatives. As treatments progressed, many Highland TB centres had an obvious lack of facilities especially X Ray and surgery, the latter only being carried out at the Northern Infirmary. Surgical patients were frequently sent elsewhere such as Tor na Dee near Aberdeen where, in 1954, 10 beds were reserved for Northern Region patients.[xx]

Hospital	Beds	Open	Note
Northern Infirmary		1803	Phthisis wards from 1870s. Separate sanatorium block in 1908.
Northern Lunatic Asylum		1864	Phthisis main cause of death. 22 bed sanatorium opened in 1913.
Grampian Sanatorium, Kingussie	20	1901	From 1898, 6 beds in doctor's own house.
Invergarry Sanatorium	26	1907	Rarely fully used due to remoteness.
Cambusavie, Golspie	12	1907	TB cases later dominated.
Town and County, Wick	10	1910	TB ward added during World War 1.
Northern District Lunatic Asylum (Craig Dunain)	22	1913	New 35 bed unit opened in 1936.
Culduthel, Inverness	24	1917	Sanatorium block from 1924.
County, Invergordon	64	1922	TB a major specialism from the start.

Table 6 Main TB Facilities in Highland

Fig 6 Seaforth Sanatorium, Maryburgh

Mental Health Hospitals

In 1804, the Northern Infirmary followed the lead of Glasgow's Town's Hospital and some other hospitals by including quite basic 'lunatic cells' in the wings. Attempts to establish a voluntary Royal Asylum in Inverness in the mid-19th century were overtaken by the 1858 Lunacy Act which was followed by the opening of the Northern District Lunatic Asylum in 1864. Its rapid rise in patient numbers testified to the unmet need in the area and, for its time, the hospital's treatment of patients and its discharge rates were seen as good practice and gained high praise from national inspectors. A major weakness in the system was the failure to establish other mental facilities in the Highlands, despite attempts to convert the underused Sutherland and Nairn poorhouses at one stage. The outcome of this failure was a constant pressure on the facilities of the Asylum and the virtual exile of many vulnerable patients from the support of their families and communities, including emotionally and culturally, in this highly centralised facility. By the 1960s, Craig Dunain, as it was then called, which had been designed 100 years earlier for 200 patients, had over 1000. It was not until 1970, that a separate facility for those with learning and physical disabilities opened at Craig Phadrig. Both hospitals closed in 2000.

Maternity

The Belford Hospital had maternity beds when it opened in 1865 but this was unusual and the first dedicated maternity home in Highland was the 2 bed unit at Fort George which opened in 1913. Most Highland areas had little hospital maternity provision until the 1920s when some, such as at Grantown, built maternity extensions. From the 1920s, there were also increasing numbers of maternity beds in nursing homes, with a few specialising in maternity such as the Ida Merry Home in Inverness and the Henderson in Wick. Maternity and nursing homes largely existed for the middle classes and respectable poor. Expectant mothers who were neither or who were unmarried had only access to the poorhouse. The 1937 Maternity Act forced local authorities to provide

hospital facilities but an inability to agree to maternity provision at the Royal Northern Infirmary forced the opening of Rosedene Hospital in Inverness in 1940. Table 7 shows the situation in Highland at this point. Rosedene can be seen as Highland's first maternity hospital and it is likely that facilities varied considerably across the other establishments, although the main nursing homes would have had facilities not dissimilar to the maternity wings of local hospitals. In 1947, post war demands forced the opening of a temporary maternity ward at the new Raigmore Hospital followed by a 50 bed unit in 1951 when it became Highland's main centre for maternity, being the only hospital with the capacity to deal with the post-war baby boom and the increased expectation of giving birth in a hospital. After 1948, former poorhouse maternity provision at last ceased and, in the 1950s, most maternity beds in private and voluntary nursing homes closed. The opening of the main Raigmore maternity facility in Inverness precipitated the closure of smaller units although facilities continued at Nairn, Grantown and Dingwall until the new Raigmore maternity facility opened in 1988.

Establishment	**Beds**
Rosedene, Inverness	16
St Margaret's Nursing Home, Inverness	6
Rossal Nursing Home, Inverness	6
Fort George Families Hospital	3
Ian Charles, Grantown on Spey	5
John Martin, Uig	7
Ross Memorial, Dingwall	3
Cromarty Hospital	8
Pope, Helmsdale (closed 1939 - 49)	6
Henderson, Wick	8
Dunbar, Thurso	3
Nairn Town and County	5
Belford, Fort William	2
Maternity beds in former poorhouse	
Arthurville, Tain	2
Balblair Home Nairn	2
Latheron Town and County, Caithness	1
Muirfield, Inverness	2
Ness House, Fortrose	4
Swordale, Bonar Bridge	3

Table 7 Maternity Beds in Highland in 1940

Fig 7 Nairn's World War 1 VAD Hospital at Ivybank

War Time Hospitals

Mention has been made of Inverness's 17th century military hospital. In the 1760s, Fort George, Ardersier was opened and held over 2000 men as well as families. It had a military hospital, as had Cameron Barracks in Inverness when it opened in 1886. During the First World War, many large Highland houses, such as Dunrobin Castle, became temporary military hospitals and several towns had Red Cross hospitals run by Voluntary Aid Detachment groups. All had closed by 1919, as had the large hutted military hospital at Cromarty of which no trace remains. Across the Firth, the Admiralty built a hospital at Invergordon which, in 1921, was purchased by Ross and Cromarty as its County Hospital for infectious diseases. During World War 2, Wick lay at the centre of four military airfields and the RAF took over Bignold Hospital, with Lybster High School becoming the civilian hospital. Of the large country houses taken over, Forse House in Caithness continued as a residential home and Glencoe House in Lochaber became first a maternity facility and later a geriatric hospital, finally closing in 2009. The major development of World War 2 was of course the new state run Emergency Medical Services hospital at Raigmore, Inverness, one of seven in Scotland, which more than doubled the number of Highland hospital beds.

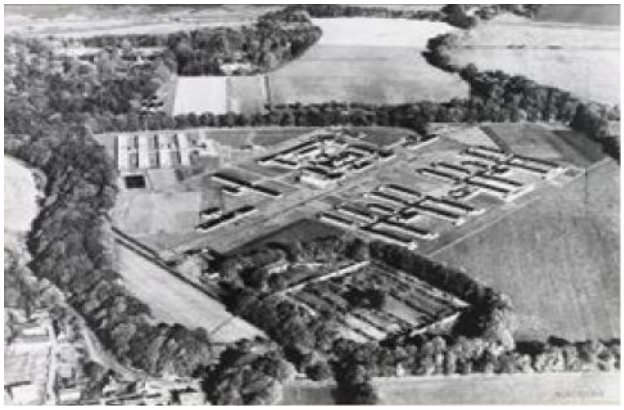

Fig 8 Raigmore EMS Hospital, opened 1941

Later developments

Despite increased provision of hospitals and doctors in the early 20th century many in Highland had poor access to medical aid. The 1912 Dewar Enquiry[xxi] found that medical services were 'near to collapse' and, in 1914, the state funded Highlands and Islands Medical Service set up a comprehensive GP and district nurse service, a forerunner of the National Health Service. Dewar thought that better access to hospital services was essential but initial support for hospitals was limited to essential grants to the financially challenged Mackinnon Memorial and Belford hospitals. In 1928, a visiting consultant surgeon service was established but it required additional state funding in 1929 to afford posts such as consultant surgeons in Caithness, Sutherland and Fort William[5] and a visiting consultant physician. The Northern Infirmary, now established as Highland's main hospital, was the base for consultants with a regional remit. Those consultants who, from 1944, included the new orthopaedic surgeon from Raigmore, ran clinics locally, where GPs, who largely ran the cottage hospitals, and their patients, could benefit from their treatment and advice.

In 1948, the new Northern Region Health Board inherited a large variety of establishments, including Meadowside Fever Hospital at Kincraig which had apparently closed in the 1930s and which never reopened. Some were in a poor state, such as the remote Inverness-shire Sanatorium at Invergarry, and were destined to close just as soon as more appropriate facilities could be developed. Most hospitals, even the outstandingly successful Royal Northern Infirmary, were struggling against increasingly difficult financial positions. What the National Health Service provided was regional coordination, something which had eluded previous managements, and this allowed

[5] Meanwhile GPs did major surgery at Dingwall and Skye (Broadford and Gesto).

establishments in favourable areas to expand at the expense of the less advantaged. The NHS also, eventually, provided a source of much needed revenue and capital. Final decision making was firmly in Edinburgh and this had its advantages, for example, in apparently freeing the Highland Board from some of the local pressure over hospital centralisation in Skye. However, decision making in Edinburgh reduced the potential for sensible local management so that, for example, the Ian Charles Hospital in Grantown on Spey, clearly within the Inverness sphere of influence, was kept within the Aberdeen-centred North East Region until 1974. With the new NHS, certain features of the existing service became redundant, such as the hard working Nursing Associations, several nursing homes and the largely forgotten, but apparently very effective, Forbes Dispensary in Inverness which opened in 1832 and, by 1926, had dispensed free medicine and treatment to over 100 000 Invernesians.

Post-war social change made maternity and geriatric services prominent concerns for health managers. There were considerable efforts to find convalescent beds in the early years of the Health Board, which were then seen to be an urgent need. Many large houses were considered, such as the Inverness properties of Carrol, Rossal, the former Forbes Dispensary and Rosedene - all to be rejected after survey or by the spending stringencies of the Department of Health. Strangely, given the priority of providing convalescent facilities and freeing up hospital beds, Nairn Convalescent Home (1882 – 2000) was rejected as part of the NHS but over the next 40 years received most of its patients from the Health Board. By the mid-1950s, the demise in fever cases, particularly tuberculosis, was matched by the rise in the need for geriatric care. The privately owned St Vincent's in Kingussie, in response to social need, radically changed its function in the mid 1950s going from entirely tuberculosis to entirely geriatric cases. Other fever establishments, such as Cambusavie in Sutherland, made a similar, if not quite so sudden, change from infectious disease to geriatric care.

Lack of capital prevented much initial change until the 1960s, when major projects included the new Portree, Caithness Central and Belford hospitals. These were followed in the 1970s and 1980s by major development at Raigmore Hospital. As finance became more readily available, smaller peripheral hospitals, or ones where expansion was difficult, gave way to more favoured sites but it was not until the 1990s that NHS Highland was able to close some hospitals which had been regarded as temporary 40 years previously. By then, the perception of people power and the perceived value of local institutions had grown and closure was not the straightforward process it had been in the early 1950s, the Gesto in Skye being a notable example.

Conclusion

The debate over centralisation of specialist facilities against maintenance of local general provision is a long and ongoing one. While local communities want facilities as close to home as possible, the need for access to specialised facilities elsewhere has long been recognised. Inverness was not, as noted above, the obvious choice for many parts of the Highlands despite the dominance of the Royal Northern Infirmary over the years. Links with Glasgow continue from Lochaber westwards although the northern link with Edinburgh seems to have been broken as Inverness continues to be the natural focus for much of the eastern and northern Highlands.

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With this meeting in Inverness, the 2012-2013 session of the Society came to a close.

The Scottish Society of the History of Medicine

REPORT OF PROCEEDINGS
SESSION 2013-2014

THE SIXTY FIFTH ANNUAL GENERAL MEETING

The Sixty Fifth Annual General Meeting was held at the Edinburgh Academy on 2 November 2013. The President, Dr David Boyd, was in the chair. The Secretary, Mrs Carol Parry, presented her report and the Treasurer, Mr Iain Macintyre, presented the Treasurer's report, which was accepted. Dr Boyd then handed over the chain of office to the incoming President, Dr Tony Butler. Dr Morrice McCrae was elected as Vice President. Mrs Fiona Brown retired from Council and was thanked for her contributions and three new members were elected to Council, Mr Geoffrey Hooper, Dr Malcolm Kinnear and Dr Gordon Lowe.

THE ONE HUNDRED AND NINETY SEVENTH ORDINARY MEETING

The One Hundred and Ninety Seventh Ordinary Meeting of the Society was held at the Edinburgh Academy on Saturday 2 November 2013 and followed the Sixty Fifth Annual General Meeting. There were two papers, Mr Geoffrey Hooper talked on Andrew Murray and the Hand Clinic at Leith Hospital in the Second World War and Professor Andrew Calder talked on Scotland's contribution to obstetric progress.

THE HAND CLINIC AT LEITH HOSPITAL IN THE SECOND WORLD WAR

The Second World War was a time of great activity in Leith. The factories, docks and shipyards were at full stretch in the war effort. Not only that, Leith was touched by other aspects of warfare. February 1940 saw the denouement of the *Altmark* Incident. In the early months of the war the pocket battleship *Graf Spee* had raided merchant shipping, transferring captured merchant seamen to the *Altmark*, its support vessel. When the *Graf Spee* was scuttled off Montevideo after the Battle of the River Plate, the *Altmark* fled for Germany and sheltered in a fjord in neutral Norway. There the captured seamen were rescued in a daring raid by the Royal Navy, led by Captain Vian,

and landed in Leith from his ship *HMS Cossack.* The raid was a breach of Norway's neutrality and the triumph of the rescue must be balanced against the likelihood that it helped to precipitate Hitler's invasion of Norway shortly thereafter. In July 1940 Leith was one of the first places in Britain to be bombed by the Luftwaffe, before the Blitz began in earnest in September, and several people were killed.

The inevitable accompaniment of the industrial activity in Leith was an increase in the number of injuries at work. The general lack of guards on machinery, and the handling of heavy loads, meant that hands were particularly prone to injury. Cuts and penetrating injuries to the hands were very likely to become infected at a time before antibiotics were available and when there was little expertise in the management of hand injuries. The operation books of Leith Hospital from this time[1] record that each day several operations were done for drainage of infections from the hand, nowadays a very uncommon type of procedure.

The records of the hospital show that a special clinic for the treatment of hand conditions was set up in 1942.[2] Later in the war special hand clinics were developed for treating hand injuries in military personnel, notably by Sterling Bunnell for the US Forces, but I have not found any record of an earlier hand clinic than the one established at Leith Hospital for the treatment of civilians. At that time the surgeons of the hospital were temporary assistants who were standing in for the established consultants who had been called to active service. In 1941 an Australian, Andrew Murray, was appointed to stand in for Mr Selby Tulloch (also an Australian). He was given the title of "temporary associate assistant surgeon-in-charge of the hand clinic".

Murray (always known as "Ben") was an exceptional man. He was born in Tasmania in 1910. As a child he had lost a leg in a shooting accident and another accident caused total loss of function in the ulnar nerve in his left arm. He studied medicine at the University of Melbourne and despite his injuries he became an accomplished ballroom dancer and cricketer during his university career, which was described as a full one, if not particularly distinguished academically.[3] He graduated in 1936 and began his career in surgery, seeking further training in London and Edinburgh. He used trick movements to overcome the partial paralysis of his left hand and became an excellent surgeon with a quick, deft and exact technique. Despite his wish to serve, Murray was rejected for military service but his skills were put to good use at Leith Hospital. Reminiscences of those who knew him at this time paint a portrait of an unforgettable person of great determination, who was a leader and an example to all.[4]

In 1946 Murray published a paper in the *British Journal of Surgery* about his surgical experience in dealing with hand problems.[5] This paper is remarkable and important in many ways. The principles of dealing with the patient with a severely injured hand that he expounded are now standard practice. Murray recognized that reconstructive surgery is only part of the treatment and that the outcome depends very much on skilled physiotherapy and rehabilitation by vocational training. However, the ingenious techniques of reconstructive surgery that he described in six representative case histories are what is most striking, since several of them had never been described previously. Among the techniques that he used were: pollicization (restoring a missing thumb by a one-stage transfer of the index finger on its neurovascular pedicles); transfer of the ring finger from the other hand to provide a digit on a hand with no fingers; the use of compressive interosseous wiring in arthrodesis of small joints in the hand (always difficult to achieve before this technique became available); and total replacement of small joints in the hand using stainless steel hinge joints. (It would be fascinating to discover how these pioneer artificial joints were developed, possibly in some small workshop in Leith.)

It is astounding to realize that the pioneering procedures described in the article were developed by a young surgeon working essentially on his own in a small, busy hospital in wartime. One of the patients described in the paper was a young lad who had picked up a metallic object when Polish troops were camping on Musselburgh racecourse. He had struck it with a hammer, not realizing that it was an explosive device, losing most of his non-dominant right hand in the explosion that followed. A prolonged and gruelling series of innovative operations by Murray achieved a hand with a functioning grip. The author examined the patient nearly 50 years later. The function in the hand had been retained and he had become a gardener and part-time gravedigger in adult life. He remembered Murray as “more like an uncle than a doctor”. A detailed report on this follow-up and the pioneering nature of Murray’s surgical procedures and his priority over their description in subsequent reports by others has been published [6].

At the end of the war, Murray had high hopes of continuing his surgical career in Edinburgh, but the temporary nature of his position became very clear. Priority in appointments was given to those who had served in the armed forces. The hand clinic was closed in 1946. After a period in the accident service in Oldham, Murray returned to Australia in 1948, where his career began to flourish again. He worked as an orthopaedic surgeon in Brisbane, where his senior colleague was Arthur Meehan, a former president of the Australian Orthopaedic Association. Like Murray, Meehan was a lower limb amputee, having lost his right foot at Passchendaele in 1917, and he had also

trained in Edinburgh. Murray continued to publish papers on hand surgery and other orthopaedic topics in the *Medical Journal of Australia.*

Had he lived longer, Murray would undoubtedly have been one the leaders of Australian hand and orthopaedic surgery, which for many years now have not needed to look elsewhere for excellence. However, this was not to be. On 1 December 1955 the tragedy known as the "Brisbane Medical Massacre" occurred.[7] Murray and Meehan were shot dead in their consulting rooms by a disgruntled patient, Karl Kast. Another partner, M.J. Gallagher, was injured by gunfire; a fourth, J.R.S Lahz escaped, but never recovered from the shock of the event and died in 1959 after several years of ill-health. Kast was a German national who had jumped ship in 1939 in Brisbane and had been interned during the war. He had sought a medical certificate to claim government payments for an alleged back injury, but had been refused by several orthopaedic surgeons, including all those involved in the fatal incident. Kast had gone on his murderous rampage armed with bombs strapped to his chest. After killing the surgeons, he ignited the bombs and shot himself in the head, dying later the same day. Earlier in the incident he had ignited another bomb in the foyer of one of the consulting rooms. In a final twist of fate, a patient who tried to put out the fire had several fingers blown off.

Although Murray was never forgotten by his colleagues and patients, his pioneering work certainly was. His paper of 1946 has been cited only 16 times since it was published nearly 70 years ago. The credit for introduction of pollicization, interosseous wiring and total joint replacements in the hand has been given to others, who described the procedures later.[6] Truly Ben Murray was a surgeon who was 20 years ahead of his time. Leith Hospital closed in 1988,[8] but the buildings still exist as housing; within their walls a remarkable story in the history of reconstructive surgery was written.

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FOOTPRINTS ON THE SANDS OF TIME: SCOTLAND'S CONTRIBUTION TO OBSTETRIC PROGRESS

It was often observed, perhaps with only slight hyperbole, that for much of the 19th and 20th century the Chief Engineer on every ocean going vessel was bound to be a Scot. It would be inaccurate to observe that during the same period every obstetrician in Britain was a Scottish medical graduate but a remarkable number were. The medical profession as a whole was heavily over-represented by Scots graduates, the reason for which lay to a large extent in the wider access to medical studies afforded by Scottish medical schools in the 18th and 19th centuries than was the case in England. That said, the specialty of obstetrics and gynaecology undoubtedly held a greater attraction than did many other disciplines, with the result that Scots have made an exceptional impact on the development of that specialty. This paper attempts to examine the reasons for this.

The ancient history of childbirth practices stretches back almost to the origin of our species. Midwives and the use of birth-stools are mentioned in the book of Exodus (i, 15-20) and there are frequent illustrations of birth scenes to be found from ancient Egypt, Greece and other civilisations. As far as Scotland is concerned, however, I take as my starting point the events which led, almost exactly seven hundred years ago, to the birth of King Robert the Second of Scotland. At the time of the battle of Bannockburn the second wife of King Robert (the Bruce), Queen Eleanor, and the daughter of his first wife Isabel, the Princess Marjory, were in captivity in England. Negotiations after the

Scots' victory led to their release and Bruce dispatched his lieutenant, Walter the High Steward of Scotland, to escort the royal ladies back home. Perhaps it was during that journey that Walter and Marjory became romantically linked but in any event they married soon after and in 1316 Marjory conceived. Lacking sound obstetric advice, she apparently went hunting in the last stages of her pregnancy and died after falling from her mount. The supposed spot where she fell is now marked by a cairn to be found in a housing scheme just south and east of where the Paisley to Renfrew road crosses over the M8 motorway. An inscription on it reads: 'Near this spot the Princess Marjory Bruce was fatally injured by falling from her horse, 1316. Her son, born posthumously, became Robert the Second, first of the Stewart Kings of Scotland.' Marjory's tomb and memorial tablet are in Paisley Abbey where it seems she was carried and (as Stewart records in his 'History of the Stewarts') 'Their (Walter and Marjory's) wedded life was short. It lasted barely a year and sometime in 1316 Abbot Roger had a grave to dig in the Abbey for Marjory.' The offspring Robert would be in his fifties before he succeeded his half-brother David, the son of Bruce's first wife, on the throne of Scotland in 1372. But thus did Marjory become the progenitor of the Stewart line, which took its name from Walter the Steward, and which lasted through Jameses, Marys, Charleses and Williams only petering out with the death of Queen Anne in 1714.

Why should any of this matter in the context of Scottish obstetrics? The reason, certainly speculative and possibly fanciful, lies in the circumstances of Robert's birth. The impact of Marjory's fall might have provoked labour and delivery, but in a first pregnancy that would have been likely to take several hours and if she was indeed moribund it is hard to see how this, if it did happen, would have resulted in a live birth. The alternative explanation, which perhaps for romantic reasons is an attractive one, is that the prompt actions of someone (Abbot Roger? Was he perhaps the first of the Scottish man-midwives?), achieved the delivery by means of an intra-mortem or post-mortem caesarean operation. In support of such a proposal is the knowledge that Robert was nicknamed 'King Blearie E'e' on account of scarring to his cornea. This has been considered possibly the result of damage inflicted by the surgeon's knife. Members of SSHM can be forgiven for feeling that this account is flimsier history than that to which they are accustomed but I have included it, partly because I am so fond of the story, but also because caesarean section forms such an important part of the rest of this narrative. The remainder of this paper rests on more solid ground and concerns eight notable obstetric men and one obstetric woman.

William Smellie, the first and arguably the greatest of the man-midwives of the eighteenth century was born in Lanark in 1697. He studied in Glasgow with the aim of becoming an apothecary and surgeon and established a practice as such in Lanark in 1720. Over the ensuing years his interest in midwifery blossomed and he acquired considerable skill in manipulative techniques including the use of forceps. In order to broaden his experience, in 1738 he travelled to London and continental Europe but was disappointed in what he was able to learn there. Returning to London he established a busy practice mainly caring for the poorer sections of the community. He quickly earned a reputation as a skilled practitioner and a teacher of great renown. The insights he gained into the processes of human childbirth allowed him to describe for the first time the 'mechanisms of labour', those contortions the fetus has to perform in order to pass through the birth canal. He recognised that the fetal head is far from globular and the maternal bony pelvic cavity far from cylindrical. He invented complex machines in order to demonstrate the necessity for the fetal head to be well flexed and to undergo internal and external rotations in the course of delivery. These also allowed him to demonstrate the operative manipulations required in complicated pregnancies and labours. He used these in the many courses of instruction he delivered to medical and midwifery colleagues leading to his establishing his reputation as the foremost teacher of midwifery of his day, one that has probably never been surpassed. He made important improvements to the obstetric forceps, including his invention of 'the English lock' which remains a vital feature of this instrument. These and other contributions earned him the sobriquet 'the Master of British Midwifery', a title richly merited, since his insights, clinical recommendations and publications have stood the test of time unchallenged. The latter include his '*Treatise of Midwifery'* published in three volumes from 1752 and supplemented in 1754 by his '*Atlas of Midwifery*'. While it is accepted that Smellie lacked refinement, this was more than compensated by his intelligence and drive, and in his choice of those he sought to help him in his published works. Thus in preparing his '*Treatise*' for publication he enlisted the help of Tobias Smollett (himself a Scottish medical graduate) to ensure the grammatical accuracy of the text. More importantly he employed the Dutch artist, Jan van Rymsdyke, to draw the twenty-five dissections he prepared to illuminate his '*Atlas*'. Eleven of the other illustrations were made by his colleague Dr Pieter Camper, while a further two were credited to 'another hand'. That hand undoubtedly belonged to Smellie himself and testifies to his skill as an artist: much greater evidence for this is seen in his wonderful self-portrait which hangs in the Royal College of Surgeons of

Edinburgh and gives the lie to his supposed want of refinement. He spent his latter years back in Lanark and died there in 1763.

Less than twenty miles from Smellie's birthplace in Lanark, Long Calderwood near East Kilbride was the home of the Hunter family. The eldest brother, William Hunter, (1718-1783), the second of the great man-midwives), followed a similar career path to that of Smellie but if his predecessor may have been coarse and unrefined, Hunter was the epitome of style and refinement. He became apprenticed to the great William Cullen in nearby Hamilton and studied at the medical schools of both Glasgow and Edinburgh but he too ultimately based his career in London. He established a renowned school of anatomy (assisted by his brother John) in Great Windmill Street. He was appointed Professor of Anatomy in the Royal Academy, where he became the close associate of several of the great artists of the day, including Gainsborough, Reynolds and Zoffany. His greatest published work was the magnificent Anatomy of the Human Gravid Uterus (1774) based on his own dissections. The drawings were by the same Jan van Rymsdyke, engraved on copper by Sir Robert Strong and printed by William Baskerville of Birmingham. This collaboration, which gave the first really accurate insight into the fetus in utero, is widely regarded as one of the most outstanding published works in all of medicine.

Meanwhile he had built a fashionable obstetric practice among the great and the good of London, including his appointment as Accoucheur in Ordinary to the wife of George III, Queen Charlotte, attending many of her thirteen confinements. A highly regarded teacher, he tended to conservatism and had reservations about the use of forceps which 'may on occasion serve its purpose well, but used without skill it has killed five, I may say ten, for every one it has saved'. [This was almost certainly a valid and timely caution but may also have contributed to an unfortunate tendency to avoid their use when circumstances cried out for them.] Ironically, a sensible use of forceps would almost certainly have saved the life of Charlotte's granddaughter, the Princess Charlotte of Wales, who perished along with her stillborn son in 1817. Poor Charlotte laboured for fifty hours, 26 of them in the second stage during which assistance with forceps could almost certainly have saved both mother and child. Had the boy survived it is highly likely that we would have had no Queen Victoria. It would be wrong to lay all the blame for this on Hunter. The clinical attitudes of those early years of the 19th century were certainly conservative and the third victim of this tragedy was the obstetrician, Sir Richard Croft, who, subjected to widespread vilification, took his own life.

The University of Glasgow was the principal beneficiary of William Hunter whose collection of art works, coins and anatomical specimens are, together

with the original drawings for the great atlas, among their most prized possessions, housed in the Hunterian Museums and Art Gallery. He and his brother John are commemorated in a splendid memorial stone and the Quincentenary Gates of the University.

The great scourge of childbearing in the eighteenth century, (and indeed well into the twentieth), was 'childbed fever', more recently known as puerperal sepsis. The mystery of this appalling disease was revealed in a series of milestone insights, one of the most vital being that provided by Alexander Gordon of Aberdeen in 1795. It is an occasion for great regret that the most telling contribution of Gordon's short life (1752-1801) was cruelly ignored for more than half a century until another, Ignaz Semmelweis of Vienna, gained almost exactly similar insights and ultimately greater fame. During the time that it took for the lessons provided by these two to be accepted by the obstetric and midwifery establishment, countless parturient mothers went to their deaths. While Hippocrates recognised the condition, and William Harvey attempted to treat it with some limited success, it reached the height of its devastation in the eighteenth century, with frightful rates of mortality, particularly of women confined in the lying-in hospitals. The first detailed account of such an epidemic was recorded in 1746 from Hotel Dieu in Paris. John Burton of York, the obstetrician who was the object of Laurence Sterne's lampooning as Dr Slop in Tristram Shandy, suggested in 1751 that the disease might be contagious. Others proposed that afflicted patients should be isolated and wards disinfected but Gordon was the first to call for the hands and clothes of doctors and midwives to be disinfected. His Treatise on the Epidemic Puerperal Fever of Aberdeen was published in London in 1795 but largely ignored for many decades. Oliver Wendell Holmes (1809-94), of Boston, incidentally author of the hymn *'Lord of all being, throned afar'*, wrote of the contagious nature of the disorder in the New England Journal in 1843. It was however 1861 before Semmelweis published '*The Etiology, Concept and Prophylaxis of Childbed Fever*' and a further 18 years before Pasteur confirmed the presence of microbes in blood from a victim of the disease. Two years later streptococci were isolated and more than half a century passed before any effective antimicrobial therapy was developed.
Nineteenth century obstetric history was dominated by James 'Young' Simpson (1811-70). He adopted the middle name seemingly to emphasise his youth or possibly to distinguish himself from another of the same name. In any event he was exceptionally young when elected, shortly before his 29th birthday, as the sixth Professor in the Edinburgh Chair of Midwifery (as it was then styled) in 1840. Thus the oldest chair in the specialty was graced by its

youngest occupant and over the remaining thirty years of his life he built a reputation throughout the developed world as the greatest obstetrician of his age. Best remembered for his search for effective methods of relieving what he saw as the agonies of labour and delivery, in particular for pioneering the use of chloroform for that purpose and for anaesthesia in surgery, he made numerous other telling contributions. He improved the obstetric forceps to the extent that his design remains essentially the one in common use to this day. He also made the first attempt to develop a vacuum extractor as an alternative to forceps and, while his efforts were hampered by the lack of suitable materials and methods of establishing adequate negative pressure, his concept led eventually to the instruments widely used today. The excellent biography of Simpson by Morrice McCrae, published in 2010, provides a fascinating insight into the complex character of the man who was arguably the most notable medical man of his time, a reputation challenged only by Lister. Both were ennobled by Queen Victoria and both were accorded the possibility of burial in Westminster Abbey although the families of both men declined this. Simpson's obituary in the Lancet in 1870 acclaimed him as a 'Prometheus among physicians'. It may seem strange to devote a single paragraph to Simpson in this account of the Scottish giants of obstetrics but his fame and the importance of his contributions are more widely acknowledged than others described in this paper.

One such comparatively unsung hero is Murdoch Cameron (1847-1930). The advances in anaesthesia and antiseptic surgery, to which Simpson and Lister had contributed so much, opened wonderful new horizons for surgery towards the end of the century. Caesarean procedures had been performed in desperate circumstances for several centuries but the mortality associated with the operation was horrendous. In 1888 Murdoch Cameron was employed as First Assistant to the Regius Professor of Midwifery, whom he later succeeded at the Glasgow (later Royal) Maternity Hospital in Rottenrow. The hordes of Highland and Irish immigrants to the city over the previous fifty years had produced some of the worst living conditions and squalor in Europe. Vitamin D deficiency due to substandard nutrition, together with the lack of exposure to sunlight in the grossly overcrowded slum tenements, meant that skeletal rickets was rife. For pregnant mothers that often amounted to a death sentence. The alignment of the maternal pelvis and the upright bipedal gait often resulted in a gross reduction in the antero-posterior diameter of the pelvic brim, so that in many cases passage of the fetal head was impossible. The options for pregnant rachitic dwarves were either inevitable death from exhaustion, sepsis or rupture of the uterus in obstructed labour or, if feasible, a destructive operation with the use of a cephalotribe to crush the head to the

extent that the fetus could be extracted through the greatly diminished pelvic space. The horrors of such situations can hardly be imagined. In some, but not in all, the fetus might already have succumbed. [Laurence Sterne equipped his Dr Slop with, along with his crochet and his 'new found forceps', his 'squirt'. This was a baptismal syringe wherewith holy water could be directed on the fetal head while still in utero. The rationale for this was to prevent the offspring dying un-baptised, thereby being ineligible to receive the last rites of the Roman Catholic Church and thus condemned to perpetuity in limbo. Once so baptised it could be sacrificed in favour of the mother's survival.] Murdoch Cameron, faced with a steady stream of these poor wretches, took courage and, in face of the doubts and often the hostility of his colleagues, embarked on a remarkable series of deliveries by 'classical' caesarean sections. The first of these was performed on 10th April 1888. This was reported in the British Medical Journal, as were a series of around two dozen similar successes over the ensuing two years. All the offspring and all but one of the mothers survived. The BMJ observed that '*such amazing success had not been achieved anywhere else in the Empire*' The 'classical' operation consisted of a vertical incision through the anterior aspect of the uterus, where the myometrium is thickest and particularly vascular. A number of factors account for Cameron's success. Firstly, remarkably, in previous (usually fatal) cases no attempt was made to suture the uterine wound, something he recognised as essential. Secondly, in order to minimise blood loss, he employed a vulcanised rubber ring rather in the manner of a tourniquet around the lower part of the uterus while he sutured the wound. Thirdly, and perhaps even more important, he performed the operations electively before the survival of the mother had been compromised by exhaustion, dehydration and perhaps also infection in an obstructed labour.

John Martin Munro Kerr (1868-1960), who was the foundation Muirhead Professor of Obstetrics and Gynaecology in Glasgow University in 1911 and later followed Cameron in the Regius Chair, was a Glasgow medical student at the time of Cameron's innovative caesareans. This may well have been the reason for his choosing that discipline. Kerr recognised the difficulty of predicting with certainty in cases of contracted pelvis that vaginal delivery was impossible. He introduced the concept of 'trial of labour' to put the issue to the test before resorting to caesarean, after sufficient dilatation of the cervix allowed a meaningful assessment. His reputation, however, rests more on two important bases. He advocated an extraperitoneal incision through the much less vascular lower segment of the uterus. This had two great advantages. It was much less prone to infection and healed much better, affording the safer possibility of allowing labour in subsequent pregnancies (not, of course, in

cases of contracted pelvis). Although he had to fight bitter battles to persuade the traditionalists among his British colleagues, the procedure became known as 'Kerr's Operation' across much of Europe. It has remained the operation of choice ever since, as it has steadily moved from one of last resort to the commonplace it occupies today. (To the regret of many of us, much of the skill and artistry of twentieth century obstetrics has become obsolete as caesarean section has too often become the operation of first resort.)

As important, were Kerr's prolific published works. He may reasonably be regarded as the father of obstetric audit. His monumental study,' *Maternal Mortality and Morbidity'*, published in 1933, laid the foundations of what became the nationwide triennial Confidential Enquiry into Maternal Deaths and was ultimately the basis for audit of perinatal mortality. He produced several influential textbooks, one of which, Operative Obstetrics, has been preserved by a succession of torchbearers for more than a century through twelve editions.

Dugald Baird (1900-80) attended Greenock Academy and the Glasgow Medical School. He was assistant to Munro Kerr in Glasgow before his appointment in 1937 to the Regius Chair of Midwifery (as it was then still called) in Aberdeen. Over the next four decades he conducted ground breaking studies of the epidemiology of obstetric pathology. Just as Simpson had seen the need to relieve the suffering of labouring women, Baird recognised and demonstrated the huge impact of social conditions on obstetric outcomes. Against often strident opposition he advocated family planning services and, recognising the fallibility of the methods available as well as the misery resulting from unsafe illegal abortion, he worked to persuade legislators and, (with much greater difficulty), the medical establishment, of the need to legalise medical termination of pregnancy. In 1965, the year he retired, he published his famous paper, A Fifth Freedom, in the British Medical Journal. Building on the four basic human rights enunciated in 1941 by Franklin Roosevelt (Freedom of speech, freedom to worship, freedom from want and freedom from fear) Baird's fifth was 'Freedom from the tyranny of excessive fertility'. Two years later David Steel's bill legalising medical abortion in Great Britain received the Royal Assent. It remains an occasion for regret that the diametrically opposing views of the other great figure of Scottish obstetrics in the latter half of the twentieth century set him in such bitter enmity with Baird.

Ian Donald (1910-87), was born in Cornwall. Descended from a Paisley medical family he was educated in Moffat, at Fettes (which he thought to resemble a Japanese war prison!) and in South Africa. He graduated BA from the University of Cape Town and was 21 before embarking on medical studies

at St Thomas's Hospital in London. He served in the Medical Branch of the Royal Air Force from 1942-46 and was decorated for gallantry for going into a burning bomber, still replete with bombs, to rescue injured airmen. It was however a different aspect of aviation which was to have the most profound influence on his career. He had observed at first hand the use of high frequency sound waves, 'sonar', for navigational purposes and therein lay the basis for his pioneering introduction of ultrasonic imaging in medicine. Soon after his appointment to the Regius Chair of Midwifery in Glasgow in 1954 he published his wonderful text '*Practical Obstetric Problems'* which was to inspire generations of medical students by its highly personalised style. He was a very practical man, who in time was to build his own boat in his garage in Queen Margaret Drive, although his practicality did not extend to recognising how he might get the full term production through the door. A complicated series of manoeuvres was required to accomplish its delivery! He came to be regarded as a medical 'boffin' who was always exploring novel devices, some of which attracted derision, but the perseverance with which he pursued his vision of ultrasound as a diagnostic science deserves eternal credit and merited the highest honours. It is now acknowledged that his opposition to therapeutic abortion, based on his very strong religious convictions, did not find favour with the prevailing political priorities and probably denied him the knighthood which many believed he richly deserved. A Nobel Prize was even considered by many to be wholly appropriate. At his memorial service the eulogy contained the words: 'If you seek his memorial, look around you. In every maternity hospital you will see ultrasound in daily use. A great discovery by a great man'. Almost three decades later that accolade can be extended to embrace imaging in almost every branch of medicine. Although newer technologies are bound eventually to overtake ultrasound it remains a cornerstone in clinical obstetrics and many other fields.

The title of this paper is taken from Longfellow's verse: 'Lives of great men all remind us we can make our own sublime, and departing leave behind us footprints on the sands of time'. These eight giants left very large footprints across three hundred years of obstetric history and in doing so placed Scotland at the very forefront of world obstetrics. They are, I contend, the principal reason Scottish graduates have continued to play such a prominent role in the discipline. All were outstanding teachers and the enthusiasm they brought to their subject has had an enduring impact. But all were men. Until recently it was widely held that obstetrics was a specialty unsuited to female practitioners. The past twenty-five years have given the lie to such an assertion. Within that time women have come to dominate or at least equal the impact of men on the work of the National Health Service and our university

medical schools, and who can say the discipline is not the better for it. The Clydesdale Bank recently issued a £50 banknote bearing the portrait of Elsie Maud Inglis. No other obstetrician, far less any other Scottish doctor, has been afforded such an honour. Her tireless efforts in organising the Scottish Women's Hospitals in France and elsewhere during the Great War are recognised as an example of medical devotion of the highest order. She was however principally an obstetrician and in time richly deserved to have a maternity hospital named in her memory. One of the earliest female Scottish medical graduates she, along with such as Sophia Jex-Blake, had to fight mightily to gain access to medical teaching (and might not have had such hurdles to overcome had Simpson, a minority voice in support of the medical education of women in Edinburgh, not died at the age of 59). Nevertheless, the rightful place of women in Scottish medicine now seems assured. There will surely be many more footprints on the sands of time in years to come and while many will be more delicate ones than those of the Scottish obstetric giants, their imprint will undoubtedly be considerable in maintaining a proud tradition.

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THE ONE HUNDRED AND NINETY EIGHTH ORDINARY MEETING

The One Hundred and Ninety Eighth Ordinary Meeting of the Society was

held at Glasgow Academy on Saturday 8 March 2014. 27 members and friends attended and listened to three excellent papers. The first two speakers were Dr Alexander Pollock, who talked on the history of Peptic Ulcer Disease and Dr Iain Hutchison, whose subject was the founding of Glasgow's Royal Hospital for Sick Children. The third speaker was Sita Elsaesser, whose talk on methods of treatment of Scoliosis has now been published in the Journal of the Royal College of Physicians of Edinburgh and can be accessed online at https://www.rcpe.ac.uk/sites/default/files/butler_2.pdf

A SHORT HISTORY OF PEPTIC ULCER DISEASE

People have always suffered from painful stomach complaints, but, until the 19th century, little was understood of the nature of peptic ulcer disease (PUD). Despite this they generally found ways to live with their symptoms, and treated them by various means, but on occasions, sufferers did die dramatic and painful deaths from stomach disorders. Indeed, one of the earliest examples of a death caused by a perforated gastric ulcer is to be found in the autopsy report of the exhumed body of a Chinese man who died in 167 BC.[1]
From the times of Hippocrates and Galen, humoural theory taught that disease processes were related to a patient's personality, lifestyle choices and circumstances but it was the acceptance of the practice of autopsy which began to displace it from the late eighteenth century as an explanation of disease**.** From this time, autopsy was increasingly practised in Europe, but after the French Revolution, the concept that disease was lesion-based began to be accepted more widely. In Paris, autopsy had become the major tool for the understanding of disease and, in its hospitals at this time, physicians and surgeons were able to dissect the bodies of their deceased patients in order to discover the causes of their deaths. This approach was called the clinico-anatomical method and in the first half of the nineteenth century, the autopsy occupied a pivotal position in the understanding of diseases in general, and of PUD in particular. In Britain, there was a spirit of public revulsion at the thought of human dissection and it took most of the first half of the nineteenth century for the population to readily give consent for post mortem examinations of their dead relatives. Nevertheless, despite public antipathy, many autopsies were done and their results published in the literature of the time and many anatomical and pathological specimens were obtained and preserved in specimen jars for teaching purposes. As an aside, there are excellent anatomical dissection specimens prepared at that time by William Hunter still to be seen in the Anatomy Museum of Glasgow University which is open to the public.

While diseases were being investigated in the post-mortem room, in the laboratory, chemists analysed body fluids and physiological experiments were being performed on animals so that the workings of the human body were slowly becoming understood in health and illness. After the advent of anaesthesia, surgeons began to make discoveries in the living body which further changed thinking about both anatomy and pathology. Almost no new idea capable of producing change in the history of medicine has ever been readily accepted without being contested in its time and I hope my talk will not appear to give the impression that changes of practices and concepts of disease were smooth, progressive and inevitable.

The modern history of peptic ulcer disease began in the eighteenth century with the study of patients with stomach conditions, whose symptoms included abdominal pain, vomiting, eruction of wind, sour mouthfuls and general debility at times. In Edinburgh, in 1788, William Cullen's writings included lectures giving detailed descriptions of gastritis, pyrosis and dyspepsia, with their associated symptoms.[2] 'Pyrosis' disappeared as a medical word in the early twentieth century but gastritis and dyspepsia are still used today. In the nineteenth century, doctors thought that they could discern different diseases in the stomach and their diagnoses were mainly based on symptoms or perceived patterns of symptoms. Although gastric and duodenal ulcers had been described in pathology works for over a century, they only found their way into the Registrar General's nosologies of causes of death in 1881 for gastric ulcer and 1911 for duodenal ulcer. The first person to tie together the symptoms and post-mortem findings in cases of gastric and duodenal ulcers was the Edinburgh physician, John Abercrombie, who adopted the clinico-anatomical method in the 1820s to evaluate dyspepsia as a disease affecting his patients. Abercrombie recorded careful case histories, and when patients died, he was able to associate the symptoms of peptic ulcers in life with the lesions found after death. In Paris, Jean Cruveilhier was doing the same thing but he published slightly later in 1829 and his work is better known than Abercrombie's to the extent that gastric ulcer became known as 'Cruveilhier's ulcer'.

Of the many possible important landmarks in the nineteenth century history of peptic ulcer disease, I have chosen three examples which came from the work of surgeons. The first was the work of William Beaumont and his patient Alexis St Martin in the 1820s, which opened the window to understanding of how the human stomach worked in a living person. Then I select the early elective surgical work on the stomach after 1879 by surgeons such as Pean, Rydigier and Billroth, which taught surgeons that the stomach could be successfully operated upon. Finally, I mention the successes achieved in

saving the lives of patients with gastric and duodenal ulcer perforations in the last decade of the century which completely changed medicine's ideas about upper gastrointestinal disease prevalence. It should be said that none of the extensive surgery on the stomach which was done in the second half of the nineteenth century would have been possible without the introduction of anaesthesia. The part played by Pasteur, with his particular slant on the germ theory, and the work of Joseph Lister which was based on his understanding of it must also be acknowledged. At this time, surgeons devised many different ways of operating on the stomach and many of the techniques used today in cancer surgery were developed then. Sadly, much surgery was accompanied by high mortality, mainly caused by hospitalism (hospital acquired infection).

Germ theory was very differently understood by doctors and surgeons in the second half of the nineteenth century and ideas were strongly debated. By around 1880, the microscope was improving to the extent that bacteria could be more clearly seen and, from the work of Robert Koch and many others, the battle to affirm and define the germ theory, was slowly won.

In 1875, bacteria were seen in the margins of peptic ulcers and after some initial interest, they were forgotten about until 1913 when American bacteriologist Edward Rosenow**,** experimentally produced ulcers in dogs' stomachs by injecting bacteria into the sub-mucosal layer of the dogs' stomachs. Based on his experiments, doctors began to believe that bacteria were somehow implicated in causing ulcers. This was the start of a period which lasted approximately 20 years when the concept of 'focal infection' became prominent and this allowed doctors to treat peptic ulcers by using vaccines and removing what they believed were foci of infection. These foci included teeth, tonsils and other parts of the body which surgeons deemed to be harbouring infections. Focal sepsis theories influenced most branches of medicine at this time but by the mid-1930s the idea had largely run its course and was gradually abandoned by mainstream medicine.

I mentioned elective gastric surgery at the end of the nineteenth century, so what was happening to emergency surgery in the management of haematemesis and perforation?

In the nineteenth century, most patients with haematemesis were managed at home, usually quite successfully and surgery was not employed to treat them. There was universal surgical failure to save any perforation cases despite repeated attempts until 1892 when the first patient with a gastric ulcer perforation survived surgery and two years later a patient with a duodenal ulcer perforation also survived surgery. These successes were the trigger for more surgeons to begin to operate on patients with perforated peptic ulcers

despite very high initial mortality rates. The outcome of more exploratory surgery was a major shift in the understanding of upper gastrointestinal disease, because doctors had begun to see in living patients the diseases which would previously have been fatal.

In 1907, Berkeley Moynihan coined the phrase 'the pathology of the living' in a lecture which he published in the *British Medical Journal* to counter much that had been taught about the actual prevalence of diseases to be found in the abdomen. Until that time gallstones and duodenal ulcers were both believed to be rare but were now commonly found at operation. In the first two decades of the new century, surgeons everywhere were finding that most perforations were due to duodenal ulcers, a condition hitherto believed rare in the extreme and rarely recorded in the medical literature. There are many possible reasons for this but Berkeley Moynihan bluntly made the point that most of the physicians of the previous century had got it wrong, the gastric ulcers they were treating were in fact duodenal ulcers.

The development of opaque meal X-rays and endoscopy would eventually play a part in improving pre-operative diagnosis of upper gastrointestinal conditions. Initially the contrast media used for opaque meals was bismuth but later it was replaced by barium which was relatively non-toxic and cheaper. When first invented, endoscopes to examine the inside of the stomach were totally rigid but in 1932 the Wolf-Schindler endoscope was produced with a moveable end and by the mid-1930s both endoscopy and barium meal examinations were capable of detecting most of the stomach lesions which could be found.

As before, physicians continued to develop dietetic regimens to treat acute and chronic ulcers using milk, alkalis and best rest. Two specific hospital based treatments arose out of this, with variations of them being used until the late 1960s. These were the Sippy diet, in 1924, and the milk drip in 1932. The idea of these two measures was to keep the acid in the stomach constantly neutralised so as to allow ulcers to heal. From the beginning of the twentieth century in the UK, surgeons treated ulcers electively by performing gastro-enterostomies with or without ulcer excision, but after a few years this operation was shown to be ineffective in preventing ulcer recurrence. In Germany partial gastrectomy was the operation of choice and gradually from the early 1930s, British surgeons treated chronic stomach and duodenal ulcers with sub-total gastrectomies. Many physicians were opposed to surgery, because they saw it as a personal failure to heal their patients' ulcers and because it was they who saw and treated the increasing numbers of patients who had surgery-related morbidity. It was also found that some of the new alkali-based intensive medical treatments could be dangerous and the ulcers

almost invariably recurred some time after completion, when most patients had to return to their old ulcer diets which were restrictive and uninteresting. These were not easy times for patients with peptic ulcers, although they were much better than fifty years previously.

There are other important points about the medical treatments of haematemesis: Patients with bleeding from the stomach in the twentieth century were treated by general practitioners and physicians but, in the hospital, there was considerable disagreement as to how patients should be managed, especially with reference to feeding. In 1906 in Hamburg, Hermann Lenzhartz first advocated early gradual feeding of haematemesis patients and in 1933 in Copenhagen, Einar Muelengracht fed such patients with a normal diet from the time they came into hospital. Both regimens were published in *The Lancet* and despite results being demonstrably better than those of existing treatments, most British physicians continued to use a policy which starved their patients until the bleeding stopped, before slowly introducing a bland food diet. Blood transfusion was another major bone of contention in haematemesis management because, for many years, it was believed that when the blood pressure of bleeding peptic ulcer patients was restored by transfusion, the protective clot on the bleeding artery would blow off and the patient would re-bleed. Most fatalities were recognised as being in the re-bleeding category. It also should be said that blood transfusion was not particularly safe in the 1930s, being associated with serious reactions and deaths.

I have now mentioned the main points in the history of peptic ulcer disease up to WWII and in one sense, nothing new appeared in the rest of the century, for all developments which did occur were refinements or improvements of what had been available by the 1930s. What I propose to do now is to briefly cover the rest of the period by looking at what surgeons and physicians achieved after the NHS came into being in 1948.

I will start with surgery. By the mid-century, surgeons were operating more safely than at the beginning of the century but death rates in emergency cases were still high by today's standards. In the field of curative surgery, Lester Dragstedt had been working on the revived concept of vagotomy since 1936, which first had been performed by the French surgeon André Latarjet in 1921. By the early 1950s, vagotomy operations were beginning to compete with sub-total gastrectomy as elective operations for peptic ulcer and, by the end of the decade, a vagotomy and drainage procedure became the standard operation performed for peptic ulcers in the UK. This was despite the problem of stomal ulcers, which affected up to 6% of patients. At the end of the 1960s, David Johnston and Alan Wilkinson working in Leeds and Erik Amdrup in

Copenhagen devised a new operation, the highly selective vagotomy, which promised to avoid the long list of post-surgery complications of existing operations. It began to be trialled in the early 1970s.

On the medical side, from the 1950s onwards, many medical regimens that had been widespread were shown to be ineffective, as the work of Richard Doll and colleagues led to the acceptance of clinical trials as the basis of assessing the worth of any procedure or drug.

A list of some of the treatments prescribed over this period to treat peptic ulcers includes antacids, atropine and like substances, barbiturates, oestrogens, cabbage juice, enterogastrone, urogastrone, ascorbic acid, milk drips, bed rest, radiotherapy, gastric freezing, brain surgery, and finally carbenoxolone which appeared in the early 1960s. Carbenoxolone, the last drug mentioned, was shown to heal gastric ulcers effectively but it caused serious side effects in some patients and many ulcers later recurred. The real break-through came in 1976 with the development by James Black's team, of the H2 blocker group of drugs and the first of these to be marketed was cimetidine. They seemed to work well and were virtually free of side-effects but again they did not cure ulcers and had to be continuously taken. Within ten years, elective surgery for peptic ulcers became a rarity, reserved for the small number of patients who were not helped by H2 blockers. The first proton pump inhibitor, Omeprazole, was marketed in the USA in 1989, two years before appearing in the UK and was found to be superior in effectiveness. In 1983, Robin Warren and Barry Marshall revived the germ theory of ulcer causation which took approximately ten years to be fully accepted and implemented. Warren and Marshall discovered that a bacterium caused most peptic ulcers and that when it was eliminated from the stomach, ulcers were cured, not simply healed. This bacterium was eventually called *Helicobacter pylori.* Its discovery changed working practices and surgeons eventually were able virtually to give up operating electively for peptic ulcers. In the meantime, over the period from 1970, gastroenterologists were becoming established in the NHS and the use of the new generation of thin flexible endoscopes began to change the understanding of upper gastrointestinal pathology as had happened after surgeons began operating on perforations at the turn of the 19th century.

A few concluding comments.

This history could be told as a triumphant tale of medical progress with wonderful medical geniuses applying themselves to high power research and eventually ridding the world of a curse which had affected people for millennia. However, this would not be historical for two reasons.

The first is that each step in what we call 'medical progress' in the history of peptic ulcer disease was contested by powerful members of the medical

profession if it challenged their interests and, although many discoveries are now associated with the names of celebrated individuals, many were the product of serendipity and did not only emanate from one source. Had one particular person not invented or discovered a particular thing at a particular time, then it is likely that someone else would have, either at the same time or later. Nowhere is this tale better told than in the *H pylori* story when other workers were making the same observations as Warren and Marshall were, at approximately the same time. Their fame is the result of their being the first to publish their ideas which, although by itself is no guarantee of success, when backed up by the determined promotion of Barry Marshall, it stood a far better chance of becoming accepted. The second reason why all the credit cannot be given to the high power researchers of peptic ulcer is to be seen in the two graphs below:

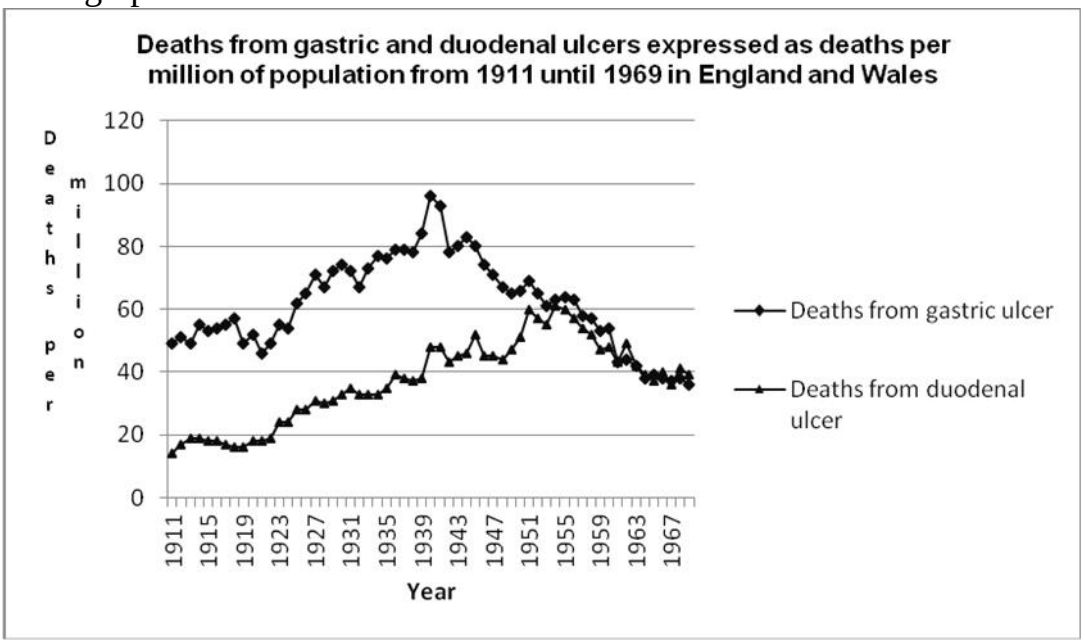

Figure 1: Crude death rates per million of population. Data extracted from the causes of death statistics of the Registrar General of Births, Marriages and Deaths in England and Wales from gastric ulcer and duodenal ulcer for the period 1911-1969

This graph shows the recorded deaths in England and Wales from gastric and duodenal ulcer from 1911 until 1969. We can see that doctors certified gastric and duodenal ulcers as causes of death more frequently from 1911 with death rates for gastric ulcer peaking at 96/million of the population in 1940 and then steadily declining until 1969 to 36/million. For duodenal ulcer a similar pattern is seen with a peak of 61/million in 1954 falling to the same as gastric

ulcer by 1969. Thus both gastric ulcer and duodenal ulcer were steadily declining as causes of death at a time when medical intervention was seen to be less than sufficiently effective to claim the credit for the reductions in deaths.

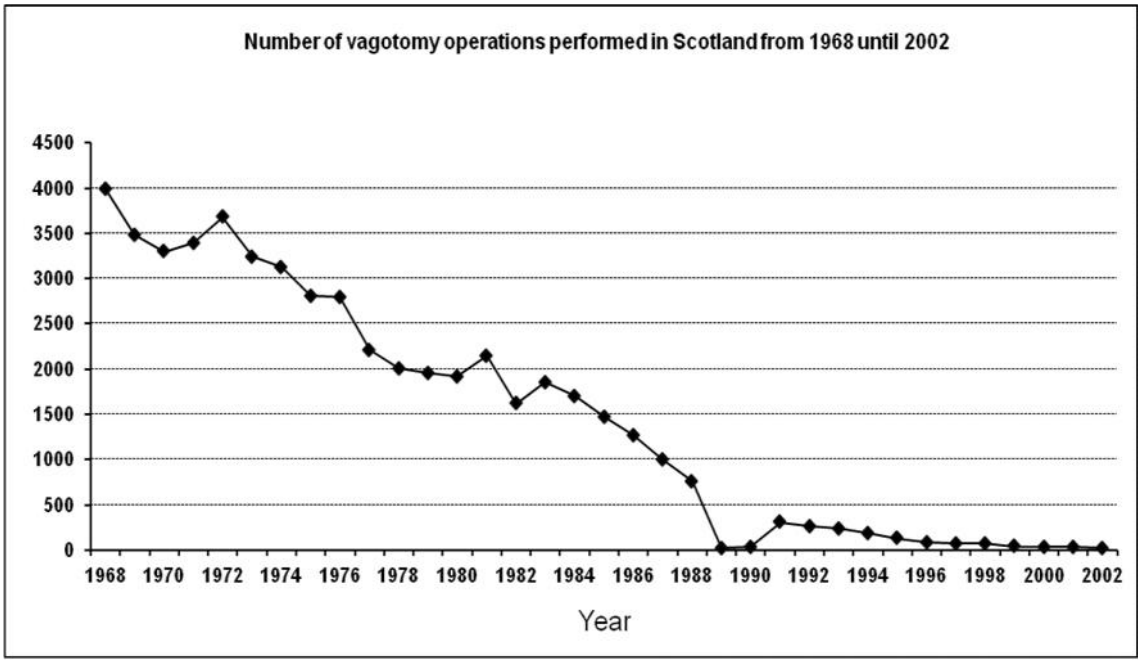

Figure 2: Data provided by Information Statistics Division of the Common Services Agency of the National Health Service in Scotland

The second graph makes a similar point in a different way. In 1968, the decision was taken by the NHS in Scotland to monitor vagotomies, presumably to get an idea of the extent of the problem of peptic ulcer in Scotland. This graph shows that from the start of the period under review and for most of it, fewer vagotomies were performed each year, which at least suggests that either GPs and hospital specialists were getting better at treating it using traditional drug regimens or the disease itself was in decline. The numbers of vagotomies fell by a quarter between 1968 and 1976 and thereafter the numbers of operations steadily fell to the extent that by the year 2000, vagotomy was a very rare procedure.

It is quite ironic that in the early 1970s, as the NHS was pouring large sums of money into creating new posts in gastroenterology, mainly to tackle the problem of peptic ulcer disease, the disease itself was firmly on a downward path and perhaps would have eventually disappeared naturally as other bacterial illnesses have done and this was not noticed by those who were most closely involved. For a similar example of a disappearing illness, we need

only think of streptococcal diseases over a similar time scale. We could argue that had the germ theory not been revived then we would be no further forward in understanding peptic ulcer disease but we nevertheless would have had very satisfactory ways of treating it without curing it. Interestingly, now that gastric and duodenal ulcers can be cured, they have been replaced by another form of dyspepsia in the workload of the gastroenterologist and the general practitioner, that of gastro-oesophageal reflux disease. Although a great deal is known about it, we do not appear to be near to finding the kind of cure regimen which was found for gastric and duodenal ulcers.

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POVERTY, PHILANTHROPY AND PAEDIATRIC CARE:

THE FOUNDING OF GLASGOW'S ROYAL HOSPITAL FOR SICK CHILDREN

Glasgow's Hospital for Sick Children opened on Scott Street, Garnethill, in December 1882. This was fully twenty-one years after the idea of a children's hospital for the city was first mooted in 1861. A dispensary and outpatients' department opened in West Graham Street in 1888 and a Country Branch was established in then-rural Drumchapel in 1903. The Sick Children's Hospital was granted a royal charter in 1889, and in 1914, as the Royal Hospital for Sick Children, moved to a new site on a former country estate at Yorkhill.

This paper examines two phases in the life of the early hospital. Firstly, it considers two decades of discussion and frustration before the hospital became a reality. Then it considers the three-decades of the hospital on Garnethill. The initial deliberations on creating a children's hospital for Glasgow were prompted by the opening of a Children's Hospital in Edinburgh. By the time Glasgow's children's hospital eventually opened, it had also been overtaken by Aberdeen. Why it took so long for the Empire's second city to have a children's hospital will be discussed in the first half of this paper.

The limited capacity of the new hospital quickly became apparent. This resulted in various initiatives – expansion of the hospital building, the opening of an Outpatients and Dispensary and the establishing of a Country Branch. The Hospital itself was moved from Garnethill to Yorkhill in 1914. This will

be reviewed in the second part of the paper. The illnesses of children presenting at the hospital and at the dispensary were often prompted or aggravated by poverty.

The facilities provided to treat the children were a direct consequence of philanthropy. The paper therefore also touches upon the roles of poverty and philanthropy in late Victorian Glasgow and its hinterland and concludes with some brief comments on the under-recognised role of its women supporters.

The struggle for a children's hospital

On 23 January 1861, various members of the medical profession and city elite met to discuss their alarm at the high rate of infant mortality in Glasgow, this being highlighted by the most recent reports from the Registrar General. While a measles outbreak that had killed twenty-four children in Bridgeton in 1860 had attracted some publicity, a long-term trend of infant and child mortality had already been recognised. The gathering agreed that 'the most efficacious means of diminishing this mortality, [was] the institution of an hospital for the reception and treatment of sick children similar to those already established on the continent of Europe and in this country'[1] A twenty-bed Hospital for Sick Children had opened the previous year at 7 Lauriston Lane, Edinburgh.[2] Glasgow, it was felt, had to act.

A committee of twenty-three was formed and a further meeting took place two days later. At the second meeting a motion was proposed by Dr J B Cowan that the medical members of the committee form a sub-committee to determine the running costs of existing children's hospitals and to seek temporary hospital premises. Plans were put in motion to raise financial support from public subscription[3] and the sub-committee proposed creation of a facility with fifty beds. The group had a clear vision of its goal and estimated that it could be achieved with an outlay of around £1,500 per annum[4]

However, the directors of Glasgow Royal Infirmary had been observing these events with alarm and their concerns were expressed in an article in the *Glasgow Herald* on 2 March 1861. The Royal Infirmary asserted ITS commitment to children. It had mounted smallpox vaccination following an epidemic in 1857. It had started accepting children under five. And it boasted that in 1860, '171 children, ranging from a few months to ten years, were admitted into the medical, surgical, and fever wards … and in no case is any patient refused admission on account of age.'[5] The Royal claimed that it could provide '100 beds or more for the treatment of children', but proposed that the children be integrated within adult wards to 'obviate the acknowledged evils arising from the collection of great numbers of diseased children together.'[6] However, James Christie, Medical Officer of Health for Hillhead, counter-

argued that ‘the petulance and crying of sick children’ would be disturbing to recuperating adults. He also claimed that the children currently treated at the Royal were almost all surgical cases.

The Royal was a charitable hospital and its concern was that subscriptions might be deflected from its coffers to those of the proposed children’s hospital project. Similar reactions by general hospitals to proposed specialist institutions were occurring across Britain. The medical members of the Children’s Hospital Committee were indignant at the tone of the Royal Infirmary directors’ statement, which they felt had ‘been constructed more to dampen the[ir] energy…than to serve any other purpose’. They rejected suggestions that the proposed children’s hospital was antagonistic to the Infirmary.[7] The Committee advanced both a moral agenda and practical reasons for its proposals for a Children’s Hospital. The moral concern was the exposure of ‘sensitive patients’, as it described children, to an adult environment through placing cots between the beds of adult patients. The practical concern expressed was ‘the annoyance which sick children would cause to sick adults’[8] The Committee expressed their astonishment at the Royal’s opposition, suggesting that, in reality, the Royal Infirmary was ‘constantly compelled to dismiss the slighter cases to make room for the graver’. While the Children’s Hospital committee averred that the discouragement from the Royal Infirmary would not detract it from its aims, no further meeting took place for four years.

The Children’s Hospital promoters had however gathered £1,414 by 1 May 1861 and this had grown to £5,025 by December 1866, aided by £2,916 from a grand bazaar.[9] The Bazaar had been promoted by the philanthropist, Miss Beatrice Clugston (1827-1888), who was also active in supporting needy Royal Infirmary patients through her formation of the Dorcas Society in 1863. However, in 1867 there was a trade depression and this stalled progress still further. The committee did not meet again until October 1870 even although, in 1867, Glasgow University had authorised its committee for a West End infirmary to allocate an area of ground at Clayslaps, near where its infirmary was to be built, for a children’s hospital.[10] This was part of the wider planning for the University’s move from its location on the High Street to Gilmorehill.

An agreement was quickly concluded whereby the Children’s Hospital would be built on land provided by the Senate of the University, and ‘in return for the ground to be allocated … medical students of th[e] University shall have full advantage of [the Children’s Hospital] for the purpose of clinical instruction.’[11] The land at Clayslaps, on which the infirmary to serve the West End of Glasgow was to be built, was later deemed unsuitable. Land at Donaldshill, previously disposed of by the University to Glasgow Corporation

as surplus to its needs, was re-acquired in exchange for the Clayslaps site.[12] The arrangement, whereby land was provided by the University Senate in exchange for a children's facility and allowing the clinical instruction of medical students, was re-affirmed at a meeting between the two parties on 12 June 1872.[13]

However, by 1874 complications were apparent. The University Senate, which had concluded an arrangement with the Children's Hospital committee for a one and a quarter acre site, had subsequently passed title to the land to the new Western Infirmary. Basically, the Western Infirmary wished full control of any Children's Hospital on its land, while the Children's Hospital Committee asserted its need for independence and was aggrieved at breach of previous agreements. The University and Infirmary authorities prevaricated over the issue of where authority lay for the granting of land to an outside body (the Children's Hospital), while it was apparent that there were power tussles going on behind the scenes.

Construction of the Western Infirmary had commenced in 1871 and it was formally opened on 27 October 1874.[14] A day earlier, a Deposition by the University to the Western Infirmary had been signed and this specifically included contingencies for the managers to:

> … have power to agree to or arrange for the establishment of a Sick Children's Hospital on the grounds of the Western Infirmary of Glasgow, either in connection with the Western Infirmary or under separate management and control, on such terms as they may see fit.[15]

Inconclusive contacts between the Children's Hospital Committee and the Western Infirmary rumbled on until 1878, but on 7 November 1879, the Children's Hospital Committee announced that 'a large house with a considerable extent of ground', along with an adjoining house also with ground, had been identified at the corner of Scott Street and Buccleuch Street.[16] In contrast to the protracted intercourse with the University, four weeks later the Sick Children's Hospital Committee resolved 'to purchase the corner house at a price not exceeding £2,500 over and above the feu duty, and the house immediately to the west at a price not exceeding £2,200 over and above the feu duty.'[17] Trustees for the purchase were Archibald Orr Ewing, James T Whitelaw, Robert Scott Orr, Henry Simson, and Charles Alston, while William Tennant Gairdner, Regius Professor of the Practice of Medicine (1862-1900) and former part-time, unsalaried MOH for Glasgow (1863-1872), was one of the committee members who reached this momentous decision.[18]

Hospital for Sick Children, Garnethill

There had been eighteen years of intermittent discussion and negotiation towards establishing a children's hospital. Now, within a few weeks, a hospital site and buildings had been identified and acquired. The cost of converting the Scott Street property into a hospital was estimated at three times the purchase price, while unexpected work, such as disposal of a large well that had been uncovered during excavations, had to be absorbed.[19] This work progressed through 1881 and, in 1882, recruitment of staff commenced.

Mrs Louisa Harbin, formerly of London's Great Ormond Street Hospital for Sick Children and of Leicester Infirmary, was selected from thirty-four applicants for the post of Lady Superintendent at an annual salary of £80 plus board, lodging and laundry expenses. Her post would encapsulate 'general management of the hospital'. It included attending all surgical operations, engaging, supervising and dismissing nurses and servants, managing all stores and linen, and ensuring 'the good order of the house and welfare of the hospital.'[20] The candidate criteria had been specific: the successful applicant would be 'an educated lady' with experience as a nurse, lady superintendent and housekeeper; she had to be aged thirty but not more than forty; and ideally she should have experience in a sick children's hospital.[21] Louisa Harbin was thirty-four and had the requisite experience. Informal enquiries revealed that she was highly regarded. Perhaps surprisingly, the criteria made no stipulations about marital status – Louisa Harbin was shown as a widow on the 1891 and later census returns, but research by Sue Hawkins indicates that, at the time of her appointment, she was not widowed. Instead, she was a divorced mother of two children, having been deserted by her husband. There is no indication if the Directors of the hospital were aware, or unaware, of this.

The role of Dr W S H Walker as the resident medical officer, at £60 per annum, was clearly stipulated as being restricted 'to medical duties only'. Specifically, he was to:

> …attend the wards with the [honorary] visiting staff, to take all instructions from them and see to these being carried out … dispense the medicines, receive and examine applicants for admission, keep a book containing a record of all particulars of patients admitted and make out medical reports for general meetings.[22]

Honorary visiting personnel consisted of physicians Professor William Leishman and Dr James Finlayson, with Dr Samson Gemmell as the 'extra' physician, while Dr Hector C Cameron and Dr William Macewen were the

visiting surgeons, with Dr William James Fleming as the 'extra' surgeon. Specialist appointments were Dr Joseph Coats, pathologist; Dr Thomas Reid, oculist; Dr Thomas Barr, aurist; and Mr Rees Price, dentist.[23]

Garnethill

The Hospital for Sick Children, located at 45 Scott Street in Garnethill, was formally opened on 20 December 1882 and admitted its first patient three weeks later[24] Belvidere Infectious Diseases Hospital had opened with 250 beds in 1871.[25] The policy of the Sick Children's Hospital was therefore not to knowingly accept infectious cases. The first admission was five-year-old John Shields on 8 January 1883. He was diagnosed with spinal curvature, which his casenotes recorded as having 'disappeared on suspension'. He was discharged 'improved' three weeks later.[26]

Surgical cases during January 1883 included excisions of hip joints and elbows, and osteotomies to correct deformities caused by rickets. The need for the hospital is highlighted by the case of eight-year-old Daniel Murchie, admitted on 22 January 1883. Murchie's back had been observed to be bent when he was four, and at age six an abscess had been opened at the Western Infirmary. At Scott Street he was diagnosed with hip joint disease. Four days after his admission to the new children's hospital, he was operated on:

> 'Today Dr MacEwan [sic] cut down and removed the head of the femur with a chain saw … The limb was put up with extension (4lbs). The old sinuses being scraped with Rothman's sharp spoon, bone dusted with Ioxoform. Considered an unfavourable case.'

Despite the poor prognosis, within a month Murchie was apparently looking healthy, getting 'fat' and had colour in his cheeks. By 2 April he was 'up walking with aid of a "Go Cart".' Daniel Murchie was discharged, after a four-month stay, to the Poor Law facility for Barony parish at Barnhill.[27] Of osteotomies, Charles Duguid (1884-1986), who served under Macewen in various roles from student to private assistant between 1906 and 1924, wrote:

> Macewen was not the pioneer here, but it was he who devised the operation which became universally adopted. It was worked out only after the most careful investigation of the bony deformity and by experimentation. The deftness with which he used scalpel, osteotome and mallet, and finally his hands, in breaking and straightening of these deformed bones was thrilling.[28]

Archibald Young (1873-1939), Macewen's successor as Regius professor of surgery, wrote that 'to witness a supracondyloid osteotomy of the femur done

by him for genu valgum, was to witness a finished work of art – a thing never to be forgotten.'[29]

The case notes for the early admissions provide an insight to the general health of families and their living conditions. Four-year-old Elizabeth Welsh was admitted on 18 January 1883 with spinal curvature that had already been apparent for a year. During her infant years she had already survived measles, whooping cough and chicken pox. While her four siblings were reported as healthy, upon her readmission following 'suspension and fitting of a paraffin jacket', she was found to be in pain from her right side and had a discharge, 'the most offensive smell [being] the result of uncleanliness.' She was treated with oxide of zinc, 'the jacket was put on again (laced down the back), [and] the child was discharged.'[30]

In the home of seven-year-old rickets case, Charles McBeth, there were two siblings 'with legs the same description'.[31] Two-year-old Georgina McCaeadie had 'been in ill health for 17 months since she was weaned,' two spells of enteritis occurred while she was in the care of a wet nurse, and she was described upon admission as ill-nourished and 'in a very weak state'. She was discharged 'cured' after a stay of seventeen weeks.[32] These were just a few several examples which demonstrate a variety of unfavourable home circumstances.

Poverty and ill health went hand in hand, as is well illustrated by seven-year-old bronchitis patient George Smith on 18 January 1883:

> On admission, the patient was in a great state of exhaustion and while in the reception room had a shivering fit. He was in a very filthy condition, his clothes barely covering his body, and his head in such a condition that the hair had to be clipped close before it could be cleaned.[33]

The Sick Children's' Hospital Dispensary

Andrew Macgeorge, the hospital's Honorary Secretary, observed: 'The number of children who can be treated in a hospital is necessarily limited: the number who can be treated in a dispensary is practically without limit.'[34] In many cities with a children's hospital, its creation had been preceded by a children's dispensary. Glasgow was an exception as was noted by James Christie, MOH for Hillhead. In 1888, Christie deputised in Glasgow for James Burn Russell during a period of ill health. Christie commented on the imminent opening that year of the Sick Children's Dispensary.[35] He stated:

> A very large proportion of the ailments of children, especially at the earlier years, can be better and more economically dealt with in the out-patient department, and a selection of suitable cases, only possible

> from the large field of out-patients, would make the treatment of cases in the wards more profitable in every sense.

As well as the practical advantages of being able to treat a much greater number of children as outpatients than inpatients, outpatient treatment was considerably cheaper. This had been recognised by the Directors, but their attention was brought into clearer focus in December 1883 when the Duchess of Montrose indicated that she was:

> desirous of having an idea from the Directors as early as possible of: (1) in which locality they thought the Dispensary should be placed; (2) the amount of accommodation required, and (3) the extent of ground required and probable total cost of the Dispensary.

Several possible sites for a dispensary were quickly identified, mostly around Garnethill, and on 6 February 1884 it was agreed to purchase land between West Graham Street and Buccleuch Lane. Meanwhile, the Duchess had presented the Directors with a cheque for £10,000 from the proceeds of a Fancy Fair. Bringing the Dispensary to fruition progressed with what Derek Dow described as 'a speed which is bewildering to the twentieth-century mind resigned to bureaucracy and planning impasses.'[36] As its opening day approached in 1888, James Christie waxed lyrical about the amenities it would offer:

> The patients are to be admitted by a court or covered way, where perambulators may be left protected from the weather, and this leads to a vestibule where they are to be registered and then transferred to the waiting-room, which is a large and airy apartment'[37]

The West Graham Street facility was designed to receive a large number of patients daily and its layout was planned for operation with Ford-like efficiency, children and their escorts proceeding from the admission door via the west side of the building to the rear of the premises where, upon registering, they were divided into surgical cases on the left of the central waiting area, and medical cases on the right. The surgeons' and physicians' consulting rooms were situated off either side of this segregated waiting area, while an isolation room was located at back of the building, beside Buccleuch Lane, for any infectious case that was presented. At the north-west apex of the building, the Dispensary was located in the building's round tower and, consultation complete and medicines dispensed, was conveniently located to disgorge the treated patient through a separate exit door on to West Graham Street. The building was designed with almost perfect symmetry across a diagonal axis to facilitate the efficient free flow of juvenile humanity, a production line from reception through examination, diagnosis, treatment and dispensing of medicines.

The establishment of the Dispensary and Out-Patients Department did not occur without some disharmony. The Ladies Committee, which had raised large sums of money through the Fancy Fair or Bazaar under the patronage of the Duchess of Montrose, requested to see the design proposals submitted by the three tendering firms of architects before any decision was reached. The Directors agreed but made it clear that they expected to Ladies to endorse their own choice of design. The ladies responded with a robust rejection of the implied *fait accompli*. Mrs Grace Paterson, Vice-President of the Ladies Committee, wrote to James Whitelaw, Chairman of the Directors, on 30 May 1885:

> I expressed to you the wish of the [Ladies] Executive Committee that the plans should be submitted to the Duchess of Montrose for her consideration. After your discourteous refusal the ladies will not discuss the matter further. As you have intimated that the Duchess will only be allowed to look at them *after* the Directors have decided which plans they have selected, the ladies will not trouble you to show them.'[38]

The Directors quickly backed down. A more serious incident occurred in February 1887, occasioned by the rejection of a Dispensary design that had been proposed by Sir Archibald Orr Ewing MP, longstanding President of the hospital. Ewing was stridently critical of the architectural plan that had been accepted, which he thought was 'very expensive and unsuitable' and calling it 'that extravagant monstrosity.'[39] He resigned in protest and indignation.

At the opening proceedings, Andrew Macgeorge conveyed a message from Regius Professor of Surgery, Sir George Macleod (1828-1892), expressing an objective that might now be recognised as preventive medicine. It was his belief that the Dispensary 'will meet the requirements of many cases which are unfitted for admission into the wards [being] ailments which are as yet slight, but which, if not attended to, would soon become aggravated and confirmed, [and] can be here seen and treated.'[40]

Female power and philanthropy

The Dispensary was only one solution to the limited space and slow throughput of the hospital. Matron Louisa Harbin spurred the directors into action when neighbouring property became available, diplomatically urging them to 'see their way to purchasing the next house which could with little expense be made useful in various ways.'[41] The directors acquiesced and this enable expansion to four wards, two medical and two surgical.

The powerful Ladies Committee worked vigorously at fundraising through its network of Lady Collectors while also making their presence felt

in the hospital by visiting the children and overseeing the activities of the nursing staff. The Committee arranged convalescent facilities, for example Dundonald Home which in 1891 received 108 children, and Eaglesham which received 114. They organised entertainment such as a magic lantern exhibition, and they enrolled charitable support from the likes of the Band of Hope. The Ladies Auxiliary Association supplied knitting patterns to its Clothing Guild, each member being expected to produce at least two items of clothing every year.[42]

Although by 1894 structural alteration and expansion at Scott Street resulted in the provision of a total of seventy-four cots in general wards, the demands on the hospital were such that, by 1900, each month ended with about eighty children on a waiting list while further children requiring hospital treatment were being turned away by the Dispensary 'owing to there being no available beds.'

Some relief was provided following an offer from Miss Margaret Montgomery Paterson to build a 'country branch' in memory of her parents, and encouraged by Mrs J L Mackie of the Ladies Committee who offered £1,000. This facility was intended to receive 'those children who … occupy beds at the Hospital and yet do not require much active treatment,' and it was considered 'that the change to the country will be highly beneficial to the more lingering class of cases.'[43] In 1901, by which time the demand for hospital beds was even more acute, Miss Paterson had committed £6,000 to the building of a Country Branch and a one and half acre site had been identified close to Drumchapel station on the North British Railway. Here it was proposed to build a two-ward facility with twenty-four beds and with accommodation for 'staff and servants'.[44]

The Country Branch opened in 1903, with Visiting Surgeon Robert Parry commenting that 'the advantage to be gained by the treatment of many classes of cases in the fresh country air could not be over-estimated.'[45] The additional number of beds at Drumchapel was modest, while the Hospital already had previous experience of sending children to country convalescent institutions. However, the Drumchapel Country Branch was different in that it was a direct extension of the Hospital, one which increased the beds at its disposal by twenty-five percent. It had also been achieved in a remarkably short time period without the indecision and acrimony that had frustrated the original creation of the Hospital and the founding of the Dispensary.

Arguably, the opening of the Country Branch was merely delaying the inevitable. In 1901, it has already been noted that the hospital in Scott Street had reached 'the maximum number of patients with which [it] is competent to deal.'[46] In particular, at the 1903 annual general meeting, Sir

Hector Cameron, vice-president of the hospital, highlighted the problems confronted by parents of children with hip joint disease and tubercular diseases:

> What happened if a poor child had one or other of these diseases? The parents took their child to the Children's Hospital and were told that if any good were to be done to their child he would require to remain in the Hospital for several months; that the wards were already full of acute and urgent cases, while many others were waiting to get admission, and there was little or no chance of a bed being available for their child. The parent then tried the general hospitals, and received very much the same answer, and so it had come about, he was sorry to say, that cases of that sort were fast becoming outcasts in surgical practice, the reason being that they required such prolonged treatment that it was impossible with our present accommodation in Glasgow to undertake any more than the very few who were fortunate enough to gain admission.[47]

Cameron reiterated that the hospital should be open to everyone who required treatment, an ideal that was not being achieved and was becoming increasingly impossible to fulfil in Scott Street. It was at this time that the need for a new hospital, with accommodation for at least 200 children and situated in a healthy location, was mooted. Just as the deficiencies of Glasgow in its provision of a hospital specifically for children were highlighted in 1861 in comparison with other major cities, it was now noted that children's hospitals elsewhere were ahead of Glasgow in their ratio of bed provision to the size of population they served. These included Aberdeen with 85 beds, Edinburgh – 120, Liverpool - 123, and Manchester – 190, while in North America Boston had 120 beds, Toronto had 200 beds and New York offered 750 beds.[48]

The directors were under the double pressure of providing for the children of an expanding population in Glasgow and the surrounding counties, and of treating a wider range of children by including the under-twos as a matter of course (instead of as exceptions to the Rules). The solution, they argued, was a new 200-bed hospital and expansion of the Country Branch at Drumchapel.[49]

Four prerequisites for a new hospital were announced. It should be located so as to gain the maximum of sunshine and fresh air. It should be capable of receiving 'if not all, then a great proportion of cases requiring hospital treatment' sent from the dispensary and other sources in Glasgow and the west of Scotland. Nursing accommodation should be provided so that nurses 'will not live practically in the atmosphere of the wards day and night

as at present.' Finally, echoing the debates of the 1870s, it must be within easy reach of the university, so that it might become a teaching centre and thus fulfil one of the most important functions of any public hospital.

Speedy progress to achievement of the first and last of these aims was announced by Professor Samson Gemmell on 29 January 1909 when he intimated that the directors:

> … had purchased a considerable extent of ground at Yorkhill … [which] lay high, afforded abundant space, was open, sunny and airy … [and was in] proximity to the University and the Western Infirmary which would enable the Directors to advance one of the express objects of the Hospital, viz., the education of successive generations of medical students in children's diseases.[50]

Despite concerns about progress on both the construction of the new hospital and raising funds so that it should open free of debt, in the annual report for 1914 the directors were able to record with considerable satisfaction that:

> … in the time taken from the cutting of the first sod in digging the foundations until the day the buildings were opened, was slightly over three and a quarter years [so that] on the opening day the Hospital was practically finished.[51]

Occupation of the new hospital at Yorkhill took effect from 14 September 1914.[52]

Conclusion

The initial plans for a children's hospital were thwarted by the Royal Infirmary protecting its interests, and then by protracted negotiations with the university and the Western Infirmary where, again, perceived conflict of interest resulted in considerable delay.

When the Children's Hospital committee decided to act independently, a hospital was quickly established. So too was the Dispensary, although not without some acrimony, while the Country Branch was also quickly built and put to use. These enterprises were all dependent on philanthropy and the children's hospital was a popular cause. The initial proposal in 1861 was called by 'a meeting of gentlemen', but the women should not be forgotten. These included high profile philanthropists such as Beatrice Clugston, the Duchess of Montrose and Margaret Montgomery Paterson; legions of lady collectors who fundraised the length of Scotland; and the matrons who commanded all they surveyed in the day-to-day running of Garnethill, the Dispensary and the Country Branch.

Appendix

Annual Reports amassed statistics to illustrate that philanthropic support was well-deserved by detailing the wide range of medical conditions which had been treated, and indicating lengths of stay in the hospital and their outcomes. In 1891, 481 cases had been treated in the hospital, 280 medical and 201 surgical; 244 of these had been 'cured', 113 'improved', 73 'unimproved', while 51 had died.

The most prevalent hospital cases included Diseases of Joints (74), Tubercular diseases (44), Pneumonia (25), Bronchitis (24) Spinal Caries (21) Phthisis Pulmonia (19) and Chorea (17).

Of the dispensary's 5,249 'first visits', those of high prevalence were Bronchitis (453), Gastro-intestinal Catarrh (345), Eczema (325), Rickets (283) Diarrhoea (245), Bronchial Catarrh (221), Abscess (218), Debility (190), Affections of the Ear (185), Whooping Cough (175), Affections of the Eye (170), Affections of the Teeth (159), and Atrophy (113). Figures for the dispensary clearly showed the valuable support role being played by this facility. The dispensary recorded 19,109 attendances split between 5,249 first visits and 13,860 subsequent attendances, while nursing sisters made 1,459 home visits.[53]

References

1 RRHSCG, "Minutes of Board of Management 1861-1884, YH1/2/1, pp. 2-3.
2 See Douglas Guthrie, (Edinburgh; E & S Livingstone, 1960. *The Royal Hospital for Sick Children*
3 RRHSCG, "Minutes of Board of Management 1861-1884, YH1/2/1, p. 5
4 *Ibid*, p.6
5 Glasgow Royal Infirmary, Medical Treatment of Children, Glasgow Herald, 2 March 1861, p.3.
6 *Ibid.*
7 RRHSCG, "Minutes of Board of Management 1861-1884, 9 March 1861, YH1/2/1, pp. 12-13.
8 *Ibid*
9 RRHSCG, "Minutes of Board of Management 1861-1884, 23 October 1867, YH1/2/1, p. 26
10 Ibid 7 January 1874, pp.65-66; University of Glasgow Minutes of Senate, 27 April 1867, GUA SEN 1/1/8, p.175.
11 *Ibid*, Letter from Professor WT Gairdner to Andrew Macgeorge, 5 June 1872, p. 47.
12 *Ibid*, 7 January 1874, 62-63. The Clayslaps site played host to the 1888 International Exhibition and later accommodated Glasgow Museum and Art Gallery.
13 *Ibid*, pp.69-70
14 Loudon MacQueen and Archibald B Kerr, *The Western Infirmary 1874-1974*, (Glasgow, John Horn, 1974), pp. 3-6.
15 Deposition by the Principal and Professors of the University of Glasgow to the Managers of the Western Infirmary of Glasgow, GUA 55421.
16 *Ibid*, 7 November 1879, p. 111
17 *Ibid*, 4 December 1879, p. 114
18 *Ibid*, pp. 114-5; Michael Moss, J Forbes Munro and Richard H Trainor, *University, City and State: The University of Glasgow since 1870*, (Edinburgh, EUP, 2000), pp. 57, 61
19 *Ibid*, 7 March 1882, p. 134

20 *Ibid*, 3 May 1882, pp. 139-42
21 *Ibid*, Minute of Matron and Medical Committee, 18 April 1882, p. 143
22 RRHSCG, "Minutes of Board of Management 1861-1884, 1 November 1882, YH1/2/1, p. 165.
23 *Ibid*, pp. 164-5
24 RRHSCG, "Minutes of Board of Management 1861-1884, 5 January 1883, YH1/2/1, p. 172. The hospital was initially named the Glasgow Hospital for Sick Children. It became the Royal Hospital for Sick Children, Glasgow, upon the granting of a Royal Charter by Queen Victoria in 1889 – RRHSCG, Annual Report 1889, YH3/1/1, p. 7
25 For an early overview of Belvidere Hospital see James B Russell, *City of Glasgow Fever and Small-pox Hospitals, Belvidere* (Glasgow, Alex MacDougall, 1888).
26 RRHSCG, Ward Journal, YH7/2/1, Case No. 1.
27 RRHSCG, Ward Journal, YH7/2/1, Case No. 20. Opened in 1853, Barnhill was a poorhouse with a large hospital section – Rona Gaffney 'Poor Law Hospitals 1845-1914' in Olive Checkland and Margaret Lamb (eds) *Health Care as Social History* (Aberdeen: Aberdeen University press, 1982), p. 46
28 Charles Duguid, *Macewen of Glasgow: a recollection of the chief* (Edinburgh, Oliver & Boyd, 1957), p. 23
29 Archibald Young, *Sir William Macewen and the Glasgow School of Surgery*, (Chicago: Surgical Publishing, 1926), p. 24.
30 RRHSCG, Ward Journal, YH7/2/1, Case No. 12.
31 RRHSCG, Ward Journal, YH7/2/1, Case No. 26.
32 RRHSCG, Ward Journal, YH7/2/1, Case No. 31.
33 RRHSCG, Ward Journal, YH7/2/1, Case No. 15.
34 Andrew Macgeorge, *The Royal Hospital for Sick Children*, p. 9
35 Edna Robertson, Glasgow's Doctor: James Burn Russell 1837-1904, (East Linton, Tuckwell Press, 1998), pp. 109-110. A brief overview of the Dispensary appears in Derek A Dow's paper 'The Dispensary of the Royal Hospital for Sick Children / James Nicoll and the Dispensary' GGHBA HB2/6/16 and Derek A Dow, *The Dispensary of the Royal Hospital for Sick Children Glasgow* (Glasgow: Department of Clinical Physics and Bio-Engineering, 1980)
36 Derek A Dow, *The Dispensary of the Royal Hospital for Sick Children Glasgow* (Glasgow: Department of Clinical Physics and Bio-Engineering, 1980), p. 2
37 James Christie, *Medical Institutions of Glasgow*, p. 69
38 *Ibid*, 10 July 1885 YH1/2/2, p. 62
39 *Ibid*, letter from Archibald Orr Ewing, House of Commons, 15 February 1187, pp. 111-112.
40 RRHSCG, *Report of the Proceedings of the Opening of the Dispensary*, p. 7, Reports 1888-1891 YH3/1/1
41 *Ibid*, pp. 109-110
42 RRHSCG, Ninth Annual Report RHSCG 1891, YH3/1/1, pp. 12-13
43 RRHSCG, Annual Report y/e 31 Dec 1900, YH3/1/3, pp. 9-10
44 RRHSCG, Annual Report y/e 31 Dec 1901, YH3/1/3, p. 10
45 RRHSCG, Annual Report y/e 31 Dec 1903, YH3/1/3, p. 10. The Country Branch was erected in Drumchapel Road on the site that is now occupied by Drumchapel Hospital. In the second decade of the twenty-first century, the only visual reminders of the original Country Branch children's hospital were the century-old sandstone gate pillars.
46 RRHSCG, Annual Report y/e 31 Dec 1901, YH3/1/3, pp. 9-10
47 RRHSCG, Annual Report y/e 31 Dec 1902, YH3/1/3, pp. 9-10
48 RRHSCG, Annual Report y/e 31 Dec 1902, YH3/1/3, pp. 17-18
49 Ibid, pp. 17-18
50 RRHSCG, Annual Report y/e 31 Dec 1908, YH3/1/4, p. 9
51 RRHSCG, Annual Report y/e 31 Dec 1914, YH3/1/6, p. 22
52 *Ibid*, p. 29

53 *Ibid*, pp. 14-21 For a detailed study of one particular condition presenting periodically at the RHSCG between 1883 and 1913, see Alexandra Fleagle's unpublished MSc thesis, '*This poison, Intangible, but Real'; Congenital Syphilis in Victorian and Edwardian Britain,* University of Edinburgh (2012), pp. 43-60.

THE TWENTY THIRD HALDANE TAIT LECTURE

The Twenty Third Haldane Tait Lecture was held in the Craiglockhart Campus of Napier University in Edinburgh on 7th May 2014, with 38 members and guests attending. Before the lecture started Catherine Walker, the Curator of the War Poets Collection at the Craiglockhart Campus, gave a short talk on the collection and demonstrated photographs, books and other memorabilia, including those of Siegfried Sassoon and Wilfred Owen, to members. Details of the War Poets Collection are available at http://www2.napier.ac.uk/warpoets/index.htm

The demonstration was followed by the Haldane Tait Lecture, which was an excellent presentation by Professor David Purdie entitled The Scottish Enlightenment – a Tale of Three Cities. The three cities were Athens, Florence and Edinburgh and Professor Purdie's talk explored the common features in these centres of enlightenment. These included a period of stability following either a war or a similar period of instability, a key central figure receptive to ideas, Pericles in Athens, Lorenzo Medici in Florence and George Drummond in Edinburgh and a flowering of architecture, art, philosophy and science. The lecture was liberally illustrated with slides and was very well received. It was followed by an excellent meal and an opportunity for members to talk and share memories of previous meetings and speakers.

THE ONE HUNDRED AND NINETY NINTH ORDINARY MEETING

The One Hundred and Ninety Ninth Ordinary Meeting of the Society was held in the School of Medicine at St Andrews University on Saturday 14 June 2014. 20 members and friends attended and listened to two excellent papers, with the President, Dr Butler in the chair. Before the lectures, Dr Butler announced the results of the golf competition which had been held earlier in the morning. The joint winners were Mr John Chalmers and Mr Geoffrey Hooper who won a book on golf by David Hamilton. Dr Fiona Miller, as the runner up, won a bottle of wine. Two papers were read after this, the first one by Professor David Simpson on Medicine in St Andrews. Professor Simpson gave an excellent talk, covering the six centuries since the

university's inauguration. He described the ebb and flow of events and referred to a number of famous medical names associated with St Andrews including James Bell Pettigrew, D'Arcy Wentworth Thompson and Sir James Mackenzie. He concluded by describing the exciting developments in the twenty first century with the re-establishment of the medical faculty and the use of state of the art teaching methods and equipment.
The other paper was by Mr David Hamilton and was on tuberculous golfers of the late 1800s. A summary of his paper follows.

THE TUBERCULOUS GOLFERS OF THE LATE NINETEENTH CENTURY

Golf's early beginnings were on the East coast of Scotland (Carnoustie, St Andrews, Musselburgh and North Berwick), the game later spreading to the West of Scotland and to England. In the later years of the nineteenth century, Scottish players were still dominant in the amateur and professional game and some of them had tuberculosis (TB). This was an age without X-rays or sputum analysis, but TB was common and a diagnosis could fairly confidently be made on clinical grounds. The patients were often young with weight loss and a family history of the disease. A recurrent cough was often accompanied by bloody sputum. A chronic, relapsing course could lead to considerable, life threatening damage, but recovery was possible. Sufferers were often given the advice to move to a different climate. Famous TB sufferers from the world of literature and music included John Keats, Chopin, George Orwell, Igor Stravinsky, RL Stevenson and Dylan Thomas. It might be expected therefore that some famous golfers suffered from tuberculosis and this was indeed the case. Was there more to it than that?
James Grierson's Delineations of St Andrews (1807) noted an association between consumption (TB) and the making of the feather balls used at the time "*The employment* [ball making] *is accounted unhealthy, and many of the ball-makers have been observed to fall sacrifice to consumption…"*
Mr Hamilton then considered a number of notable golfers who had had TB. Young Tom Morris (1851-1875), who dominated the Open Championship between 1868 and 1872, died suddenly in 1875 at the age of 24, with a post mortem examination showing "*a burst blood vessel in the right lung*". David Strath (1840-1879), Young Tom Morris's friend and his closest rival, travelled to Australia on medical advice after becoming unwell. He developed laryngitis, probably tubercular, on the voyage and died shortly after arrival. Dr AJT Allan, who studied medicine at Edinburgh, was the surprise Amateur Champion at the age of 19, at Muirfield in 1897, his "serene confidence"

being a notable feature. He died 3 months later of tubercular meningitis. Professional champions with tuberculosis included Hugh Kirkaldy (1868-1897), of St Andrews and Harry Vardon (1870-1937) and these golfers were playing well when they had established disease. Is it possible that there was an association, that TB was a factor in their success?

Mr Hamilton quoted several authors on the subject *"When the blood comes from the lungs, patients do not give up hope… the strength of the body holds out, the strength of the mind even surpasses that of the body*" Aretaeus of Cappadocia (1st century AD).

"*That sad malady [consumption], in which the body and soul, as if knowing their time here was short, burn as in oxygen gas*" Dr John Brown (1810-82).

"[There is an] *insatiable craving for a full and active life, feverish eagerness, particularly noticeable in those of naturally artist or literary tastes*"…."*a cocaine like effect*" Macleod's Psycho-Pathology of Tuberculosis (1930).

[There is in relapsing cases of tuberculosis] "*unusual vitality and vigour, which often precedes an increase in cough, slight fever and another bout with the enemy"* Charles H Mayo (1865-1939).

In addition, there have been two publications on Tuberculosis and Genius, (Arthur Jacobson (1929) and Lewis Moorman (1940), which argue an association between the disease and creativity.

Mr Hamilton concluded his most interesting and stimulating paper by reminding us of the key role of the mind in golf and the importance of self-confidence. He left his audience with the possibility that TB may very well have had a stimulating effect on golfers, which may have been to the benefit of the sport, if not to those who had the disease.

After these two excellent papers there was an opportunity to visit the new Medical School building with its mix of different sciences affording the opportunity for cross specialty co-operation. Tea brought the meeting to a close and thus bringing the 2014 session to a successful conclusion.

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.