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Eponymous doctors associated with Edinburgh, part 2 – David Bruce, John Cheyne, William Stokes, Alexander Monro *Secundus*, Joseph Gamgee

D Doyle
Retired Consultant in Palliative Medicine, Edinburgh, Scotland

ABSTRACT This, the second in a three-paper series with this title, looks at famous doctors who trained in Edinburgh and their eponyms. With one possible exception, none seems to have sought the eponym, nor awarded it to themselves, nor used it for self-promotion. Unlike those in the first paper, all eponyms in this paper are still in use and their brevity is in contrast to the lengthy description needed if the eponym is not used. Examples are Cheyne–Stokes respiration, Stokes–Adam attacks, Brucellosis and Gamgee dressing. Monro Secundus is included because of his vehement defence of his professional reputation and research findings when he suspected others of trying to detract credit from him, a characteristic seldom reported for the others.

KEYWORDS David Bruce, John Cheyne, William Stokes, Alexander Monro *Secundus*, Joseph Gamgee

LIST OF ABBREVIATIONS General practitioner (GP), World Health Organisation (WHO)

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Correspondence to **D Doyle, 7 Kaimes Road, Edinburgh, EH12 6JR**

tel. **+44 (0)131 334 3168**

e-mail **debedoyle@surefish.co.uk**

INTRODUCTION

This, the second of three papers on this subject, continues to look at why and when eponyms were awarded and by whom, and looks at any use they had, or continue to have. All the doctors studied in this paper trained in Edinburgh and with one exception, Gamgee, were Fellows of the Royal College of Physicians of Edinburgh, though Monro also taught surgery.

BRUCE, MAJOR GENERAL SIR DAVID (1855–1931)

Brucellosis
Micrococcus Brucei
Trypanosoma Brucei

In David Bruce we have someone whose own work was eponymised and who also proposed someone else for such an honour, a Dr Theiler for his discovery of Trypanosoma theileri.[1]

A man who today would be called 'larger than life' or 'a colourful character', Bruce was born in Melbourne, Australia, of Scottish parents. His father, David, and mother, Jane Hamilton, migrated to Victoria in the 1850s, but returned to settle in Stirling, when young David was four years old. He attended Stirling High School until he was fourteen years old, then left to work for a warehouse company in Manchester. His ambition was to become a professional athlete, for he was tall and strongly built, but pneumonia at the age of seventeen put an end to this idea. He returned to Scotland to study zoology. at the University of Edinburgh.

Bruce completed his first year at Edinburgh as a medallist in natural history, and a physician friend persuaded him to take up medicine. He graduated MB, CM in 1881, at the age of 26, was an Eccles Prize winner (awarded to the most distinguished graduate of the year) and became a GP assistant in Reigate, Surrey. There he met and married Mary Elizabeth Steele, the daughter of Dr John Sisson Steele, the previous owner of the medical practice. Mary was an amateur artist who had used her skills to draw Trypanosomes and other organisms when her husband was working in Uganda and Zululand. Her name appears on at least 30 of his 172 published papers, recognising her contribution as a microscopist.

After passing out top of his class at Netley (the army medical college), he was commissioned surgeon captain in the Army Medical Service, and in 1884 was posted to Malta (1884–1889), the first of many postings including Zululand in South Africa (1894–1901), Uganda (1908) and what was then Nyasaland (1911–1914).

FIGURE 1 David Bruce. Courtesy of the Library of the Royal College of Physicians of Edinburgh.

In Valetta, he and his wife were quartered at the Valetta Hospital, which did not even have a microscope, but nothing daunted them and, being aware of Robert Koch's recent discovery of the tubercle *bacillus*, Bruce decided to purchase a microscope and investigate Malta fever. This disease, regarded locally as a form of typhoid fever, caused about 120,000 days of illness annually and was responsible for about 100 British soldiers being admitted to hospital for a period of around three months each.[2–4]

The Bruces failed to find the organism causing typhoid but instead found a previously unreported gram negative *micrococcus*. In 1886, he found many more of them in the spleen of a fatally ill patient, and then in the spleen, kidneys and liver at post mortem.

Bruce then inoculated three monkeys with the organism, all of whom developed intermittent fever in two to three months. All were subsequently found to have the same post mortem changes as observed in humans with Malta fever, with no evidence whatsoever of typhoid.

He had established the aetiology of the mysterious Malta/Mediterranean fever and suggested the name *Micrococcus Melitensis* for the organism. Later, goat's milk was implicated in the spread of Malta fever When its purchase and consumption were forbidden, the Malta garrison was freed from the disease. Sadly, even today, 500,000 cases are reported annually to the WHO.[5]

The eponym *Micrococcus Brucei* appears to have first been used by the Swiss researcher Karl Friedrich Meyer working with E Shaw in the USA in 1920. Thereafter the disease itself came to be known as *Brucellosis*. Karl Friedrich Meyer (1884–1974), like so many others mentioned in this paper, was a brilliant man. He trained in vetinerary science, biology, bacteriology and parasitology, did post-graduate work in Munich, Berlin, and South Africa, and settled in the USA where he succeeded George Whipple (1878–1976), a Nobel Prize winner, as Director of the Hooper Institute. It is said of him that he produced more scientific papers in his retirement than most do in their lifetime. His subjects ranged from wild boar to dolphins, lynxes to turtles.[6]

Nagana

In 1894, Bruce was posted to Natal, where he and Elizabeth were sent to northern Zululand to investigate a serious disease called Nagana, which was killing large numbers of Zulu cattle.

David Bruce described the clinical features of Nagana:

> 'The horse stares, he has a watery discharge from his eyes and nose. Shortly afterwards a slight swelling of the belly and puffiness of the sheath may be noticed, and the animal falls off in condition. The hind extremities also tend to become swollen; and these various swellings fluctuate, one day being less marked, or having disappeared. During this time the animal is becoming more and more emaciated, he looks dull and hangs his head, his coat becoming harsh and thin in places; the mucous membranes of the eyes and gums are pale, and probably slight cloudiness of the cornea is observable. In severe stages, a horse presents a miserable appearance. He is a mere scarecrow, covered by rough hair, which falls off in places. His hind extremities and sheath may be more or less swollen, sometimes to a great extent, and he may become blind. At last he falls to the ground and dies of exhaustion. During his illness he has shown no symptoms of pain, and up to the last days has had a good appetite.'

Using the verandah of his simple Zulu hut as a laboratory, Bruce and his wife examined affected oxen. They found an organism, thought by Bruce to be a trypanosome, and showed its relation to Nagana by inoculating healthy horses and dogs with blood from infected cattle, after which they became acutely ill. Bruce wrote about a similar condition in Uganda – '*Muhinyo*'.[7] In his Croonian lectures (1915),[5] Bruce explained that he had oxen and several dogs sent into a low-lying 'fly-belt' for two weeks, where they acquired this same parasite in their blood,

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convincing him that nagana was identical with the 'tsetse fly disease' described by Livingstone in 1858, and that this fly transmitted the causal trypanosome.[8–12] Bruce even had an infected dog sent to several European laboratories where his findings were verified.

Bruce then went on to complete the work of the Italian, Aldo Castellani (1878–1971), who had found Trypanosomes in the cerebrospinal fluid of patients with sleeping sickness. Bruce showed that Trypanosomes were transmitted from antelopes to cattle by the tsetse fly, *Glossina morsitans*, and could be found in the blood. In so doing, he was the first to prove that an insect could carry a protozoan pathogen.[9–12]

Before he retired, he focused on tetanus affecting soldiers in the 1914–1918 war, as it had done so tragically in the Boer War where he had been present at the siege of Ladysmith.[13–15]

His life of research into tropical diseases brought him a knighthood and many academic, military and international honours. Described by those who knew him well as a somewhat aloof self-opinionated man, he was nevertheless always generous in his appreciation of those who worked alongside him, especially his talented and devoted wife. The final anecdote about him shall be Harvey Cushing's.

> 'General Sir David Bruce sank into a divan, stretched out his highly polished boots into the middle of the room, inserted his spurs into the rug, drew his John Bull visage deep into his clothes, turtle fashion, and slept profoundly – this was good for the General and also for the meeting.'[16]

CHEYNE, JOHN (1777–1836)

Cheyne–Stokes respiration

Born in Leith, the son of a GP, he attended various schools but showed neither academic promise nor any inclination to learn, and for a while helped his father in caring for his poorest patients. Inexplicably he gained entry to university and gained a medical degree and surgical diploma at Edinburgh (1795) before spending four years as an army surgeon after which he returned to assist his father for a further ten years. He is said to have dreamed of being a famous physician in a city, and in 1809 he went to Dublin where he stayed and distinguished himself for twenty years, his first appointment being 'Physician General to the forces in Ireland'. Private practice was permitted, but in the first six months his fees amounted to three guineas.

By 1811, he was physician to Meath Hospital, then Professor of Physic in the College of Surgeons for four years before being appointed to the House of Industry which, during the typhus epidemic which struck Dublin,

FIGURE 2 John Cheyne. Courtesy of the Library of the Royal College of Physicians of Edinburgh.

was used as a 700-bed infectious diseases unit. By then, his income from fees is said to have averaged £5,000 annually.

In 1818, he described the respiratory condition which bears his name. Little was heard of it, however, until Stokes, another equally famous Dublin physician and academic, described it in 1854, since when the eponym has honoured both men. However, his most famous paper and contribution to medicine is that on the typhus epidemics which swept across Ireland.[17]

By 1825, his health was deteriorating, necessitating his retirement in 1831 to Sherington, near Newton Pagnel in Buckinghamshire, where he died in 1836, the cause of death being 'Mortification of the Lower Body'. He is commemorated there by a beautiful monument.

The first mention of what today we call Cheyne–Stokes respiration is in Stokes's textbook of diseases of the heart and aorta where credit is given to Cheyne for noting it.[18] Subsequently, both men have shared the eponym.

STOKES, SIR WILLIAM (1804–1878)

Cheyne–Stokes Respiration
Adam–Stokes Attack
Stoke's Disease
Stoke's Law

Following Corrigan in the earlier years of the nineteenth century Stokes, Graves, Cheyne and Adams were, without doubt, the giants of Irish medicine in the second half of that century, with Stokes 'the greatest physician at

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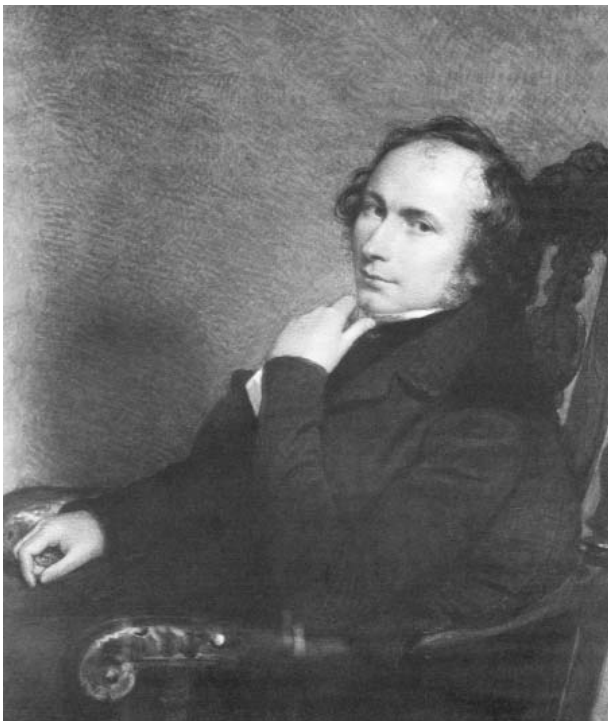

FIGURE 3 William Stokes. Courtesy of the Library of the Royal College of Physicians of Edinburgh.

his time in Europe', according to Sir George Edward Paget writing in1868.

The first two eponyms, *Cheyne–Stokes Respiration and Adam–Stokes Attack,* are so well known as to need no description. *Stoke's Law* states that a muscle lying above an inflamed serous or mucous membrane may be paralysed. *Stoke's Disease* is a syndrome characterised by fine tremor of the extended fingers and tongue, increased nervousness, weight loss, altered bowel activity, heat intolerance, excessive sweating and increased heart rate (remarkably similar to the features of hyperthyroidism). One of his closest friends and colleagues was, in fact, Graves, their reports on all the medical cases they saw in a year making fascinating reading.[19]

Stokes was privileged in that his grandfather was a professor of mathematics and his father, Whitley Stokes (1763–1845), Regius Professor of Medicine in Dublin. There was seldom a time when famous intellectuals, politicians, artists and musicians were not visiting them, and a private tutor, Rev John Walker, could be afforded to teach him mathematics and the classics.

In 1821, he enrolled in the College of Surgeons in Ireland to study anatomy, then went to Glasgow to read chemistry under Thomas Thompson. However, two years later, deciding that his future lay in medicine, he went to Edinburgh where a fellow student was Dominic Corrigan.[20] His 1825 MD thesis was on ascites.[21] In the same year, he became a licentiate of the King's and Queen's College of Physicians, the following year succeeding his father as Physician in Meath Hospital, Dublin (where he was a close friend and colleague of Robert James Graves) and Physician to the Dublin County Infirmary. Wherever he worked, he encouraged his students to get as much experience as possible in the wards, and to study the humanities as well as medicine to develop their skills of judgement. Like Corrigan and Graves he promoted the use of the stethoscope and insisted that diagnoses should be based on detailed knowledge of anatomy.[22–24]

Though no eponym resulted from it, on page 161 of *Lectures in fever*[24] is the first description of paroxysmal tachycardia.

During the Dublin epidemic of typhus in 1826, he not only worked among the patients, but contracted the disease himself in the following year. Five years later, he treated the first recorded cholera patient in Ireland. In 1843, he founded the first chair in public health medicine and pharmacology at Trinity College, his experience of fevers being the basis for his book on them.[25] Ironically, by now one of the most famous and esteemed physicians in Ireland, he could not be made a Fellow of the College of Physicians of Ireland because he had not graduated in arts and his medical degree was from Edinburgh and not Dublin! However, an honorary degree from Trinity was sufficient to see him made a Fellow, and in 1845 he followed his father as Regius Professor of Medicine at Dublin University. Thereafter, honours were showered on him, including the Prussian *Ordre Pour le Mérite*, making him one of the few doctors to be so honoured.

We are indebted to his equally famous son for a biography of his father.[26] Sir William Stokes (1839–1900) became a famous surgeon, and a grandson, Adrian Stokes (1887–1927), a distinguished bacteriologist and pathologist. The Stokes Dynasty had become longer and as famous as Edinburgh's Monro Dynasty, one of whom we discuss next. Sadly, it has proved impossible to ascertain who awarded the eponyms, richly deserved as they were.

MONRO, ALEXANDER *SECUNDUS* (1733–1817)

Foramen of Monro

So much has been written about this brilliant man and his dynastic family that there might seem little to add. Perhaps only in the matter of eponyms might there be something.

Grandfather (1697–1767), son (1733–1817), and grandson (1773–1859) – *Primus, Secundus* and *Tertius* – occupied the chair of anatomy in Edinburgh University for 128 years. It would be no exaggeration to say that much of Edinburgh's fame and popularity in the late eighteenth century was because of the charismatic teaching and influence of *Primus* and *Secundus*, the latter so brilliant that he shared the chair

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of anatomy with his father from age 22, the year he qualified in medicine. Whether or not surgeons feel indebted to Monro *Secundus* when, as a non-surgeon, he insisted on teaching surgery, is another matter.

His earlier research interests were in the lymphatic systems of human and then later (though he claimed he had always been interested in them) of fish, amphibians and small mammals.[27] Later, his greatest interests, and the subject of most of his brilliant papers, were the *bursae mucosae*[28] and the anatomy of the brain and nervous system.[29]

Living first in the Lawnmarket, then in Nicolson Square before moving to the newly built St Andrews Square in Edinburgh's 'New Town', *Secundus* was a 'renaissance man' in every way – a polymath, a polyglot, a man of great charm and gentleness of manner. Planning for his retirement, he even bought a large acreage of land at Craiglockart in Edinburgh so that he could plan and develop a garden there and occasionally host some of Edinburgh's most exciting dinner parties.

However, little has been written about another aspect of his character – his vigorous, sometimes vituperative, defence when he suspected anyone was challenging him and his professional reputation. William Hewson (1739–1774) was one who experienced his wrath on not one but two occasions.

After qualifying in Edinburgh, Hewson joined the Hunters from Glasgow, William and his younger brother John, first as an assistant then, when John left to serve as a military surgeon, as a full partner in William's school of anatomy and medicine, one of 26 in London at that time. His focus of research was the blood and in particular the cells of the blood, coagulation (he discovered fibrinogen), the thymus, spleen and the lymphatic system.[30] It is little wonder that he is sometimes referred to as 'The Father of Haematology'. Like the Hunters he did not restrict his teaching and research to humans but studied fish, amphibians and small animals. Proving all the previous ideas of the anatomy and physiology of the lymphatic systems wrong, he showed that lymph channels do not start in body cavities, that the glands (nodes) are stations spaced out on lymphatic channels, crucially important in infection and malignant disease, and that the whole system is an absorbent one. He described his work on the animals previously listed in his papers read for him by William Hunter at the Royal Society (because he was not yet a Fellow). Monro was up in arms, protesting that he had done all the same work on fish and amphibians several years before. He had no intention of allowing Hewson to get the honour of being the first to demonstrate such findings, and said so in writing to colleagues in Edinburgh and to the Royal Society in London, as well as orally at every opportunity. Evidence showed conclusively that Monro was wrong but he never apologised.

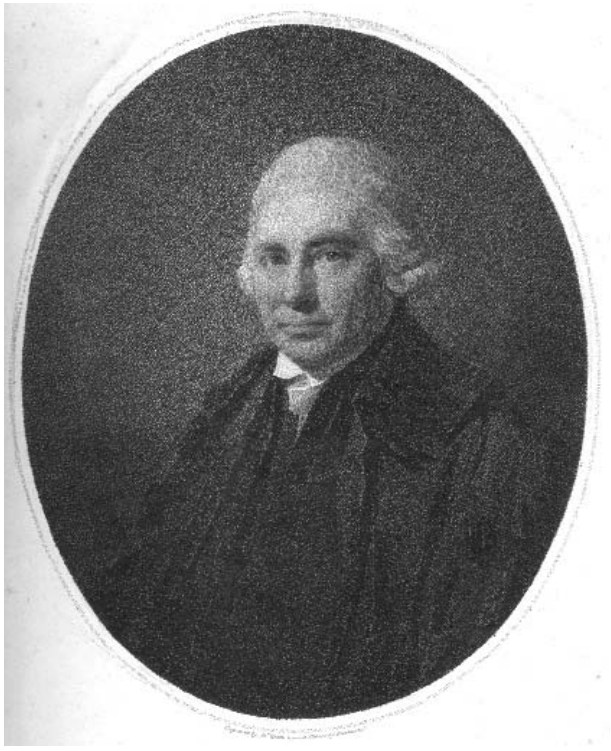

FIGURE 4 Alexander Monro *Secundus*. Courtesy of the Library of the Royal College of Physicians of Edinburgh.

Hewson's first paper was on pneumothorax, something he saw frequently in his clinical practice in London. He observed that surgical emphysema (which he coupled with pneumothorax) did not always produce dyspnoea and did not always follow a penetrating wound in the chest wall; that pneumothorax could follow relatively minor injury to the chest wall, or none at all; and that dyspnoea from these conditions could be easily relieved by the insertion of a small trocar into the chest wall (anteriorly on the right side and in the mid-axillary line on the left to safeguard the heart) followed by firm bandaging round the chest wall.[31]

His paper incensed Monro who claimed that he had been the first to recommend the procedure after staying with Johannes Friedrich Meckel the Elder (1724–1774) in Berlin and assisting him to do the procedure. Not only that but, he claimed, he had been teaching it to his students of surgery for years, one of them having been Hewson himself. For some reason Hewson had no recollection of that but so many others came forward to confirm Monro's claim that Hewson immediately apologised, but Monro's anger rumbled on for some time.[32]

On yet another occasion Monro took offence with William Hunter, suspecting him of undermining his reputation,[33] and reports exist of yet another unpleasant defensive battle waged by Monro against a Dr (later Sir Gilbert) Blane (1747–1834).[34] In defending his reputation

HISTORY

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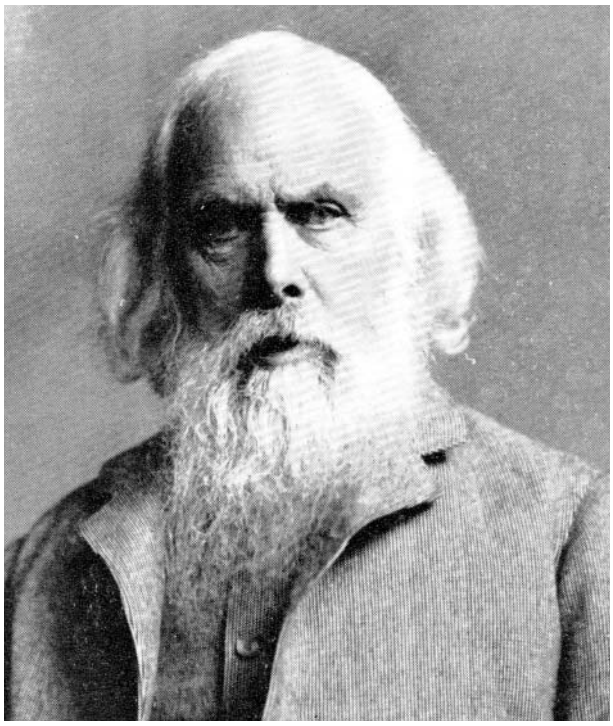

FIGURE 5 Joseph Gamgee. Courtesy of the Library of the Royal College of Physicians of Edinburgh.

against Blane, as he had done with Hewson and Hunter, Monro was challenging the integrity of a famous and much respected man.[35] Sir Gilbert Blane's name is for ever associated with that of James Lind, scurvy, and his own work for those serving in both the Royal Navy and the Tsarist Russian Navy.

It is interesting that a brilliant man renowned for his neuro-research,[29,36] a man who so aggressively guarded his name and reputation, should have only one eponym attached to his famous name – Foramen of Monro.[37] What is not known is who first used Monro's sole eponym which describes the foramen between the lateral and third ventricles on each side of the brain. Could it possibly have been Monro himself?

JOSEPH SAMSON GAMGEE (1828–1886)

Gamgee Dressing

Surgeons will certainly know this name but non-surgeons may feel they too have come across it before. It was the name of a character, Samwise Gamgee, Frodo Baggin's companion, in JRR Tolkien's *Lord of the Rings*. However, when questioned about this, Tolkien denied having borrowed the name, could not remember when and where he came across it and, in fact, had not known it was a real name.

The Gamgee dressing consists of a sandwich of a thick layer of absorbent cotton wool between an outer covering of absorbent gauze, said to be the first time that cotton wool was used on surgical wounds. In Birmingham, where Gamgee was a surgeon, it became a colloquial name for cotton wool. Invented by Gamgee in 1880, it has been a registered trade mark since 1911. There is no record of who bestowed or suggested the eponym, nor when it was first used. Most likely it was brought into common parlance because of the frequency with which it was used and the easily-remembered name that avoided a long description.

The son of an Edinburgh-trained veterinary surgeon who practised in Livorno, a small port on the NW Italian coast, he went to school there and planned to follow in his father's footsteps. In fact his first papers were published when he was only 16, before starting his veterinary training, on the calcified testicle of a ram and ossified enchondroma of the testicle.

However, after qualifying as a vet in 1849 he began his medical studies at University College Hospital London, and for a short time shared lodgings with Joseph Lister, the father of antiseptic surgery, whilst earning some much-needed money working as a vet. He later became a fellow of both the Royal Colleges of Surgeons of England and of Edinburgh, spending most of his professional life from 1857 onwards in Birmingham.

Before settling into practice in Britain, he toured Europe, as did many of our eponymous doctors. He too was multi-lingual – fluent in English, Italian, French, German and Greek even before he left school. He spent some time in Paris (forming a close friendship with Pasteur), before visiting Brussels, Vienna, Pavia and Florence. Stopping off at Malta, he worked in the Anglo-Italian Hospital caring for wounded from the Crimean War (1853–1856). In 1855, when only 27, he was appointed Surgeon to the Italian Legation in Britain. His brother Arthur became Professor of Physiology in Manchester and a Fellow of the Royal Society, whilst his son, Leonard Parker Gamgee (1868–1956) became a surgeon in Leamington.

He was renowned for his efforts to improve hospital conditions, his insistence that surgical dressings should be changed as infrequently as possible and be as gentle on the skin and wound as possible, and had an encyclopaedic knowledge of literature, and elegant writing and lecturing style.[38]

DISCUSSION

As in the first paper in this series, it is clear that, with one possible exception, none of those honoured with an eponym awarded it to themselves and some of them made several other important discoveries or recommendations that were not commemorated with eponyms. In most cases the eponyms were easy to remember but, as with the Foramen of Monro, Cheyne–Stokes respiration and Stokes–Adams attacks, did not even hint at the details of the famous discovery.

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Bruce is an example of a brilliant man whose life's work was totally focused on describing and defining tropical diseases. Cheyne, on the other hand, found fame, and probably fortune, but not by any standard could he be described as brilliant. The wonder is that he ever rose to such eminence. It seems that brilliance is not a *sine qua non* for winning eponyms though presumably it helps.

One feature that appears time and time again in these eponymous doctors is their knowledge of, and fluency in, so many languages. It has to be recalled, however, that in those days many doctors came from well-to-do homes; that it was so common as to be almost the norm for professional people to travel extensively and spend long enough in a country to be able to pick up the language. It would be interesting to know if Bruce ever learnt a Bantu language during his stay in South Africa or Swahili when he worked in Kenya and East Central Africa.

The esteem in which Bruce was held, as had happened a century before with William and John Hunter, William Hewson and the medical giants of St Thomas's and Guy's hospitals, owed much to the Royal Society where their papers were read and then published, and where their work could be critically discussed. Monro is an example of someone active in the Royal Society of Edinburgh but fully conversant with what was happening in London because of his involvement with the Royal Society there. How much did the development and proliferation of medical and scientific journals change this picture?

Whatever else we can learn from these men, it is clear that all were rightly famous and highly esteemed, in fact giants in our profession, long before they became eponymous. The rank and file do not seem to attract eponyms.

ACKNOWLEDGEMENTS

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Useful websites and web links

- David Bruce http://library.wellcome.ac.uk/doc%5Fwtl039951.html
- William Hewson Search for 'The Works of William Hewson FRS' in Google book search (www.google.co.uk/books?hl=en)
- Alexander Monro *Secundus* www.rcpe.ac.uk/library/manuscript/m.php

HISTORY

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