

Journal of the Royal Society of Medicine

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J R Soc Med 2012 105: 131

DOI: 10.1258/jrsm.2012.12k006

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DECLARATIONS

Competing interests

None declared

Funding

None

Ethical approval

Not required

Guarantor

Derek Doyle

Contributorship

Derek Doyle was the sole contributor

Acknowledgements

The author records his indebtedness to the librarians of the Royal College of Physicians of Edinburgh, Edinburgh Central Library (Scotland Section), the National Library of Scotland, Perth Central Library and Mrs Margaret Brown of Perth. Additional material for this article is available from the James Lind Library website (<http://www.jameslindlibrary.org>).

The Perthshire MacLagans

Speak to anyone interested in the history of medicine in Scotland and they will tell you of the famous Edinburgh MacLagans of the late 18th and the whole of the 19th and 20th centuries. A remarkable family, two were famous surgeons who, having reached the pinnacle of success and influence in that specialty, became equally famous and influential physicians, indeed, presidents of the Royal College of Physicians of Edinburgh. Other members of the Edinburgh MacLagan family were general practitioners, public health specialists, anthropologists, clergymen (including an Archbishop of York), academics, senior military men, missionaries in China, musicians, polyglots and polymaths and included a distinguished museum curator.¹ One MacLagan who appears not to have been related to the Edinburgh MacLagan dynasty is Dr Thomas John MacLagan, remembered primarily for his demonstration of the dramatic effects of salicin in rheumatic fever^{2–4}

Thomas John MacLagan was a Perthshire MacLagan. In the 17th and early 18th centuries by far the commonest name in the north of Perthshire was MacLagan, although it was spelt in many different ways (McLagan, Maclagan, MacLagan, MacLaggan and even McGlashen), which makes genealogical research difficult. Every village in the north of the county had MacLagans, few intermarried with or claimed close relationships with neighbours of the same name, and all had large families, although few children survived into adulthood. After the 1745–6 Jacobite Rebellion, many MacLagans moved to south Perthshire, particularly to the villages of Stix, Dull, Logierait, and Scone.⁵

Thomas John MacLagan's father, Thomas John MacLagan Senior, was born to William and

Margaret (née Duff) MacLagan, in the village of Logierait, Perthshire, on 23 February 1772, and was christened a few days later, as was the custom because of the high likelihood of neonatal death. When he was only 14 years old, Thomas Senior applied to Glasgow University on 2 June 1786 for the degree of MD, claiming that he had studied medicine for three years in Edinburgh and had subsequently worked as a surgeon in Perthshire. The Senate of Glasgow University discussed his candidature on 5 June and he was awarded the MD on 9 June 1786.⁶

Nothing is known about Thomas Senior's life over the subsequent 24 years. Between 1810–1820, however, he is known to have worked and lived in Kingston, Jamaica, where he ran (and possibly owned) two plantations, one with 60 slaves, the other with 75. He served in the Jamaican Militia, a volunteer organisation, and may well have had a thriving medical practice. If designated as a surgeon, the best run plantations would have paid him a retainer of 3 shillings per day per slave under treatment, and he would have been permitted to have up to 4000 slaves on his books.⁷ Slave records name only one of Thomas Senior's slaves, a Mary Rose MacLagan (possibly born in the same year as him), who took her owner's surname when she was granted her freedom. There is no evidence that Thomas married her but there is a tantalising suggestion that he married a mulatto whom he presumably left in Jamaica when he returned to Britain.

In 1820 Dr Thomas John MacLagan Senior returned to Scotland, where he worked as a general practitioner in Scone, Perthshire and married Ellen (born in 1811, 39 years his junior). They had five children, the oldest boy being the Thomas John we are about to study. The other children were Robert, Fergus, Gilbert Stanley, and

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Norman (who died in childhood). On his death in the 1840s Dr Thomas John MacLagan Senior left a fortune of £230,000, equivalent to several million pounds today.

Thomas John MacLagan Junior: the early years

Thomas John MacLagan Junior – hereafter referred to simply as ‘MacLagan’ – was born in Scone, Perthshire, in 1838, when his father was 66. It has been said,^{8,9} that he was educated at a school in Perth but I have not been able to identify which one. Aged 15, he studied Humanities at Glasgow University before going to Edinburgh to study medicine in 1855. Although the days of the Scottish Enlightenment had long passed, great men still taught and inspired students in the Medical School: Sir Andrew Douglas MacLagan (possibly the most brilliant member of the Edinburgh MacLagan dynasty), Alexander Peddie, Robert Peel-Ritchie, Sir James Young Simpson (of chloroform fame) and his nephew Alexander Simpson, Sir Robert Christison (in pharmacology and forensic medicine), and John Tuke (in psychiatry). Professor Sir WT Gairdner (1824–1907), a pathologist and physician in the Royal Infirmary of Edinburgh who moved to Glasgow to become the city’s first Medical Officer of Health and advocated isolation of patients with infectious diseases, may have influenced MacLagan’s subsequent meticulous record-keeping. MacLagan qualified LRCSE in 1859 and MD Edinburgh University (at that time a primary degree) the following year, with a doctoral thesis *On Oxaluria*. Before taking up his first salaried appointment he was financially able to spend two years in Paris, Munich and Vienna, where he learned French and German.

Over two years after he had graduated he was appointed as Resident Medical Officer at the Dispensary in Jersey. There had been two previous incumbents, the second of whom had contracted and died from typhus. MacLagan soon showed his commitment to efficient record keeping and fascination with statistics. In 1863 he reported that he had issued 7403 prescriptions, made 6673 home visits, and had seen 1330 patients at the Dispensary itself.⁸

That year, MacLagan applied unsuccessfully for the post of Resident Medical Superintendent of Dundee Royal Infirmary. This post had become vacant because of the deaths of one previous incumbent from typhoid fever, then two from typhus, followed by the death of the resident matron in January 1864. The start of another epidemic of fever the following month led the hospital governors to telegraph MacLagan to offer him the post, possibly because they knew that he had already survived an attack of typhus fever in 1860 whilst a clerk in Edinburgh Royal Infirmary.⁸

The post of Resident Medical Superintendent had been created for recently qualified doctors. It carried a heavy caseload and considerable responsibility, including patient care (overseen by visiting medical and surgical staff), ordering essential supplies for patients and staff, attendance at committees, preparing monthly and annual reports for the governors, and acting as ‘apothecary’ to the Infirmary. The post carried a salary of £150 per annum (compared to the matron’s £50 per annum), which was later increased to £200 when the quality of MacLagan’s work was recognised. The average number of inpatients at any one time was 140 (ranging from 108 to 215); and weekly admissions averaged from 40 to 50.^{8,10}

Unsurprisingly, MacLagan’s time as Resident Medical Superintendent was marked by epidemic after epidemic of typhus, typhoid, cholera and smallpox, as well as by many patients with rheumatic fever. With the influx of cheap labour for the jute mills Dundee’s population was rising sharply (from 91,600 in 1861 to 120,720 in 1871). Working class families were forced to live in houses that were far too small and had inadequate sanitation and ventilation. Diets were poor and illiteracy rates high. Doctors knew something about contagion but it was three years after MacLagan took up his post that Lister propounded his theory of antiseptics.¹¹ The principle of keeping patients with infectious diseases separate from those with other conditions was unknown in the old Dundee Royal Infirmary although, following the practice of Aberdeen and Glasgow Infirmarys, these principles were followed faithfully when the new Dundee hospital opened in 1855.¹² MacLagan was rightly proud that, in his time as Resident Medical

Superintendent, only one member of staff (a staff nurse) died from hospital-acquired typhus, and his hospital had had a lower mortality rate for typhus than Glasgow Royal Infirmary and two fever hospitals in Glasgow and London.¹³ He attributed this success to window-based ventilation, and from replacing 'cottage-type' toilets (in essence, buckets only emptied when they were full) with flush toilets in cubicles with hinged windows.⁸

MacLagan was in post as Resident Medical Superintendent at Dundee Royal Infirmary from January 1864 through 1865 to December 1866, when he went into general practice, probably in Forfar, not far from Dundee, although he also spent some time in 1868 as a resident in the Edinburgh Maternity Hospital, to prepare himself for domiciliary obstetrics.

Research

MacLagan's clinical work and observations at the bedside whilst working at Dundee Royal Infirmary were the basis of most, if not all, of his research – on clinical thermometers, on fevers, and on the topic for which he became most famous – the use of salicin in rheumatic fever.^{4,14–16}

Although raised body temperature had been recognised as a manifestation of illnesses dubbed 'fevers' since antiquity, it was not until the 17th century that devices were made to measure body heat. Both Galileo and Boerhaave had developed such devices but they were too large to carry around and took too long to register body temperature. In 1862, Wunderlich published reports on a more manageable mercury thermometer, and reported more than 1 million readings from over 25,000 patients,¹⁷ establishing that 'normal' body temperature was between 36.3° and 37.5° centigrade. MacLagan's paper on *Thermometrical Observations* was based on observations made on hundreds of fever patients when he was Resident Medical Superintendent in Dundee.¹⁸ He showed how charting changes in temperature was associated with clinical worsening or lessening of fever, whatever the underlying pathology. The thermometer he used was a Casseni 'self-regulating' model, made by the same company that supplied thermometers to Arctic and Antarctic expeditions (it still produces devices for

meteorology, mining and climate studies). It was 1 foot long and took 20 minutes to measure body temperature. Following MacLagan, Professor T Clifford Allbutt (1836–1925), Regius Professor of Physic at the University of Cambridge, brought the size of clinical thermometers down to a manageable 5 inches, and the time needed to gauge the temperature to only 5 minutes. Predictably Allbutt became known as the inventor of the modern clinical thermometer.¹⁹

While MacLagan was Superintendent at Dundee Royal Infirmary he kept detailed statistics of every patient admitted – gender, age, primary illness, complications (recorded daily), outcome, and unusual features. For example, he recorded that between July 1864 and July 1866 127 patients (46 male, 81 female) had been admitted with typhoid, and experienced an overall mortality of 8.5%.²⁰ He showed that it was the children, young parents and wage-earners who died, leaving the very young and the very old to fend for themselves.^{21,22}

MacLagan also described the clinical features such as the delirium associated with both typhoid and typhus (which he showed could co-exist). He referred to the delirium as 'mirthful, gay', and of patients singing all day, carrying on animated conversations, and seeing imaginary people and objects. Without antibiotics it is not surprising that infections superimposed on underlying typhoid or typhus resulted in the deaths of 9 out of a consecutive series of 29 admissions.¹⁰ Nevertheless he recorded a surprising number of patients who had repeated relapses but eventually survived and returned home – an outcome that few thought possible at that time, and a credit to him and the nursing staff. Indeed, MacLagan himself survived typhoid whilst working at the Infirmary.

Typhus was by far the commonest reason for hospital admission. In two years, MacLagan admitted 1750 cases, with a male death rate of 11.86%, and female rate of 8.28%. The worst season for this disease was November, December and January, with most deaths always occurring in November. He contrasted the situation in Dundee with hospitals in Glasgow and London, then tried to explain why death and complication rates varied so greatly across these centres.¹³ He concluded that Dundee's relatively low death rate reflected his regimen of a bath on admission,

then beef tea and milk in as large quantities as patients could take, rest for the younger patients, and as much stimulation as they could tolerate for the elderly ones – the opposite of the regimens being used in London. Time and again he urged gentle, compassionate concern for each patient. Perhaps his most useful suggestion was that all physicians caring for such patients, whether with typhoid or typhus, should collect identical data for all patients under their care.¹³

Although MacLagan had a number of research interests, it is his study of the effects of salicin on rheumatic fever that established his place in medical history.^{2–4,23} In his day, rheumatic fever was treated with purgatives, diaphoretics, sedatives, alkaline salts, colchicum, aconite, quinine, Guajacum, lemon juice, sulphur, mercury, veratrine, tincture of muriate of iron, whey, and bread pills.^{2,12} MacLagan poured scorn on those colleagues who used such untested medicaments, and criticised others who did not give anything to relieve their patients' suffering.

MacLagan was impressed by the parallels between rheumatic fever and intermittent and remitting fevers (assumed today to have been caused by malaria), and the benefits of cinchona bark in the latter.^{21,24} He was a lifelong believer that Nature provides locally grown remedies for the illnesses prevalent in the areas where they grew:

...it seems to me that a remedy for rheumatic fever would most hopefully be looked for among those plants and trees whose favourite habitat presented conditions analogous to those under which the rheumatic miasma seemed most to prevail¹⁴

MacLagan's belief echoed that of the Reverend Edmund Stone, a vicar in Chipping Norton, Oxfordshire, who had found a century earlier that a preparation made from dried willow bark was helpful in reducing fever.²⁵

In 1874 MacLagan decided to try salicin in a patient with rheumatic fever who was not responding to the alkalis he had prescribed. To assess the drug's safety, MacLagan himself took five, then ten, then thirty grains of it. Because he did not experience any 'inconvenience or discomfort', he gave the patient twelve grains every three hours. Within a few days all pain had gone and the swelling had been much reduced.²⁶ Over the

next two years MacLagan investigated salicin and reported its dramatic effects in eight patients with rheumatic fever in the *Lancet*.^{4,14} He concluded that salicin was 'the most effective means yet for the cure of acute articular rheumatism and it may even show itself to be a specific for the disease.' He was unmoved by suggestions that salicylic acid might be equally effective, and claimed that salicin had superior pharmacological properties, especially when taken orally, because it was more pleasant to swallow,^{4,26} although he was certainly aware that it could produce severe dyspepsia.

The general practice years

In 1869 MacLagan had married Isabella Scudamore (b. 1843) in Ireland (it is not clear why they married in Ireland: Isabella's family lived in Maidstone, Kent).

They lived initially at No. 138 Nethergate, Dundee (moving No. 136 in 1873), a popular and fashionable part of the city for general practitioners. It was whilst living and working there that their first three children were born: Fergus in 1870 (who died in Auckland, New Zealand in 1906, not in South Africa, as some writers have claimed); Helen Beatrice in 1872 (who died in Paddington, London, in 1960), and Norman in 1873 (date and place of death unknown). Their fourth child, Gilchrist Stanley, was born in 1880, after the family's move to London.

It was also while living in Dundee that MacLagan published his work on salicin, his book *The Germ Theory of Disease*,²⁷ and his work on fevers.^{20,28,29} It should be noted that, although MacLagan believed in 'germs' (referring to them as 'particles'), he had never seen them in blood, other body fluids or tissues, and was unaware that they could be transmitted through coughing. In 1872 he published a translation of Charles Bouchard's book *The Pathology of Cerebral Haemorrhage*, indicating by this and his references to German literature that he was fluent in French and German.³⁰

As a result of his work on salicin and his medical publications he was granted hospital privileges as Attending Physician at Dundee Royal Infirmary (1877–8), and invited to be an external examiner for Aberdeen University – no small

honour for a 19th century general practitioner. From 1869 he was a member of the Forfarshire Medical Association, becoming a member of council and finally treasurer from 1877 to 1879. Between 1876 and 1879 he was also the Honorary Medical Superintendent of Dundee Convalescent House, a charity founded by the Countesses of Southesk and Airlie, supported by the Bishop of Brechin, to speed the recovery of 'ladies' who had been in-patients in Dundee Royal Infirmary, and to relieve the chronic overcrowding of the Infirmary's wards.

Among Thomas MacLagan's patients in Dundee were the Earl and Countess of Southesk, the Earl having been prescribed salicin by MacLagan for his rheumatism. It was they who persuaded MacLagan to leave Dundee and move to London in 1789, where he established a home and a successful practice at Cadogan Place, Belgrave Square. Soon he was treating Thomas Carlyle, Gerald Balfour, the Duchess of Albany, Sir Edmund du Cane, and Sir Henry Campbell-Bannerman, as well as being appointed "Physician-in-Ordinary" to HRH Prince and Princess Christian Schleswig-Holstein. His closest friends included Lady Gregory and Lord Lytton (Owen Meredith), and James Joyce.

MacLagan was a Fellow of the Royal Medico-Chirurgical Society of London, and a member of the Pathological and Clinical Societies and President of the Pharmaceutical Section of the British Medical Association in 1884 – a considerable honour. Although he became a Member of the Royal College of Physicians of London in 1882, for reasons that remain unclear,²³ he was never elected a Fellow and he had no hospital appointments in London.

Thomas John MacLagan Junior died in 1903 of gastric carcinoma. After a funeral service at St. Paul's Knightsbridge, he was buried in Brookwood Cemetery, Woking, Surrey. Obituaries and tributes spoke of his 'sincerity and kindness of disposition' and his 'great love for his work.' Others referred to his treatment of his 'fever-haunted mill workers' in Dundee exactly as he treated his wealthy and eminent patients in London. Medical colleagues said he should be rated alongside Simpson and Lister and added to the list of 'illustrious men' of the Edinburgh University Medical School^{9,31,32} In William J. Maloney's foreword to Leopold Lichtwitz's

1944 monograph *Pathology and therapy of rheumatic fever* as 'the kindly, omniscient Scot' and 'the wonder-working MacLagan'.²

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