Learning from Lister: antisepsis, safer surgery and global health

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Last year saw the 100th anniversary of the death of Joseph Lister FRCS PRS (1827–1912), and two Lister commemorative events, in London and Edinburgh.1 This issue of Notes and Records is devoted to new scholarship on Lister’s surgical science and discovery of antisepsis, and brings together a collection of papers arising from the London conference, which took place on 22–24 March 2012 in three locations: the Royal Society, where he was President between 1895 and 1900, the Royal College of Surgeons, where he was Vice President (1886–88), and at King’s College London, where he was Professor of Clinical Surgery (1877–92). Organized by the King’s Centre for the Humanities and Health,2 the conference attracted a multidisciplinary audience, including Fellows of the Royal Society, surgical academics, nursing staff, pathologists, historians of medicine and health care safety, infectious disease experts, health services researchers and commentators, museum professionals and a dozen members of the Lister and Watson Cheyne families.

Lister had a long connection with the Royal Society, culminating in a successful term as President and the award of the Copley Medal in 1902.3 His father, Joseph Jackson Lister, had also been a Fellow, as had his teacher at University College London and later friend, William Sharpey. Some of Lister’s first papers were presented to the Society, four appearing in its publications of 1857–58, three in Philosophical Transactions and one in Proceedings.

Three years after his election to the Fellowship in June 1860, at the early age of 33 years, Lister gave the Croonian Lecture on the coagulation of blood. In 1880 he was awarded one of the Society’s two Royal Medals, the first time in 14 years that anyone engaged in clinical practice had received this level of recognition for their scientific work. Between 1881 and 1883 Lister was a member of the Council, becoming its Foreign Secretary 10 years later, and succeeding Lord Kelvin as President in 1895.

Lister’s biographers suggest that after he retired from his post at King’s College Hospital, influential friends in the Royal Society arranged the appointment as Foreign Secretary in November 1893 to counter his depressed spirits after the unexpected death of his wife, Agnes, in April of that year.4 Since their marriage in 1856, Agnes had been a constant partner in his experimental work. The new appointment benefited Lister and came at an

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auspicious time for the Royal Society, at which criticism had been levelled: over the standard of the Society’s Fellows and publications, the narrowness of the group from which Council members were recruited, the excessive influence of permanent officials in the Society’s affairs, and the distribution of public money for scientific research. *The Times* was buoyant about Lister’s appointment:

No better selection could possibly have been made, since apart from his scientific eminence, the new Foreign Secretary may be confidently expected to throw the weight of his authority on the side of rational reform. It is indeed so excellent a selection that one cannot but note with surprise that the Royal Society has made no use of Sir Joseph Lister’s great abilities, even as an ordinary member of Council, since the year 1882.

As President, Lister was far from a figurehead, introducing the Year Book and actively representing the Society to government and abroad, activities for which he received his peerage in 1897.

The collection of papers begins with Edward Howard’s ‘Joseph Lister: his contributions to early experimental physiology’, which seeks to refocus attention on Lister’s early physiological phase, by examining his microscopical investigations on the musculature of the iris, blood clotting, inflammation, vascular and lymphatic fluid flow, the innervation of the gut and control of peristalsis. Howard argues that the early experiments not only made valuable contributions to the physiology of the period but also reveal the developmental course of observational, reasoning and practical skills that Lister would later deploy successfully in surgical innovations and antiseptic procedures.

Lister’s microscopical investigations began when he was a London schoolboy, continued during his medical training at University College Hospital, and contributed to the experimental, surgical outlook for which he would gain renown after he moved to Scotland in 1854. Michael Worboys develops this theme in ‘Joseph Lister and the performance of antiseptic surgery’ by showing how Lister’s scientific turn of mind found expression in both his surgical experiments and his manner of communicating them as detailed, step-by-step descriptions in which ‘readers were invited to be at Lister’s shoulder and to “see” his performance’.

In Edinburgh, Lister worked first under Professor James Syme, moving to Glasgow in 1860, where the bulk of his work on antisepsis was undertaken as the Regius Professor of Surgery, then retracing his steps to Edinburgh in 1869, to become Professor of Clinical Surgery. Here, the success of his practice and his reputation as a researcher and teacher grew, and in 1877 he took up a new chair, created especially for him, as Professor of Clinical Surgery at King’s College London. Ruth Richardson’s paper, ‘Inflammation, suppuration, putrefaction, fermentation: Joseph Lister’s microbiology’, examines his inaugural lecture of that year, in which Lister demonstrated the first isolation of a pure bacterial culture derived from a single bacterial cell, and established that bacteria—thought of at that time as being akin to fungi—did not necessarily require spores to multiply, but were in themselves ‘a generative apparatus’. She argues that, years before Koch formulated the ‘postulates’ for proof of a condition’s causation by an infective agent, they had been clearly anticipated in Lister’s microbiological work.

Lister conducted his last outpatient clinic at Edinburgh Royal Infirmary late in the summer of 1877. In ‘Lister’s relationship with patients’, Mary Carpenter gives a detailed account of his clinical review of Margaret Mathewson, on whom he had earlier operated to remove a tuberculous shoulder joint. Lister was shocked to find Mathewson’s wound
gaping, the result of rough handling by a surgical dresser who had moved her shoulder too extensively and violently in an effort to prevent the development of a stiff joint, in the process causing her much pain and suffering. Margaret Mathewson left a detailed and revealing manuscript about this experience, which recounts that Lister taught her how to dress her own wound and, contrary to the notion that charity patients only ever adopted a passive and thankful attitude towards their care, Lister expected any patient to complain about mishandling or mistreatment.

Thomas Schlich’s ‘Farmer to industrialist’ focuses on Lister’s influence outside the confines of the UK, and specifically on how his antiseptic practices were adopted in Germany, where they helped to supplant a surgical approach to infection that hitherto had treated sepsis as a chance (albeit complex) occurrence. Lister’s methods were invoked to replace that approach with ‘a regime of modern risk management’, which actively sought to minimize the likelihood of infection taking hold, through practices that were on a par with processes then being actively developed to manage risk in German industry.

Recent historical interest in commemorative practices, nationally and internationally, inaugurates Marguerite Dupree’s paper, ‘From mourning to scientific legacy’, which examines the organization of the many commemorations of Lister’s life and work that were held after his death, together with the controversies to which some gave rise. In them she finds powerful echoes of Lister’s reputation and public image, which by the end of his life had become ‘a complex construct, involving the scientific and moral reputation of the medical profession, the rise of surgery from a craft to a science, and the rise of the profession as a whole to a pinnacle of esteem’, in marked contrast to its mid-century social standing, when Lister had first entered its ranks.

In the penultimate contribution, entitled ‘Lister at home and abroad: a continuing legacy’, Anne Crowther extends the study that she and Dupree completed in 2007, which traced Lister’s influence through more than 1000 of his students qualifying from Glasgow and Edinburgh universities in the 1870s. The new study follows a second generation of 787 medical students, qualifying in the decade starting in 1910, and shows how successfully, and diversely, this cohort of doctors translated Lister’s ideas into everyday clinical practices in academic and hospital settings, colonial government and medical services, as well as on the battlefields of World War I. Her paper convincingly charts Lister’s pervasive, worldwide legacy.

The final paper of the series will appear in the December issue of Notes and Records and has emerged from an interdisciplinary collaboration between historian Ruth Richardson and surgeon Bryan Rhodes, who met at the London conference. They jointly report the discovery of Lister’s first major operation: an emergency repair of intestinal perforations and of the anterior abdominal wall, performed with astonishing confidence while he was still a medical student.

This themed issue of Notes and Records supplements existing historical scholarship on Lister, by focusing on less studied aspects of his practices and achievements. It sheds new light on the interaction between Lister’s thinking, methods, and experimental and clinical practices across the full span of his working life. Lister’s ideas and practices spread because he was a powerful advocate in print; he was committed to the craft of his discipline and became an immensely popular teacher and moral exemplar whose thousands of students went on to fill influential medical and surgical posts in all corners of the empire, establishing his continuing importance to securing global health.
NOTES

2 The Centre for the Humanities and Health, Strand Campus, King’s College London, London WC2R 2LS (https://www.kcl.ac.uk/innovation/groups/chh/index.aspx, accessed 21 April 2013).
4 See, for example, Godlee, op. cit. (note 3); C. Dukes, Lord Lister (1827–1912), pp. 170–171 (Parsons, London, 1924); Fisher, op. cit. (note 3).
7 Marie Boas Hall, All scientists now: the Royal Society in the nineteenth century (Cambridge University Press, 1984).