



Lord Lister, Joseph

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ONE of the greatest names in the history of surgery is that of Joseph Lister. Sir Francis Galton in his book, *Hereditary Genius*, showed the frequency with which high abilities were transmitted in families. This was the case with Lister whose father, Joseph Jackson Lister, was a pioneer microscopist of the 19th century and made many improvements in the microscope. The future surgeon was born at Upton, Essex, England, on April 5th, 1827. Coming from a home of both wealth and culture, Lister had every educational opportunity and the choice of almost any vocation. He was graduated in 1847 as B.A. from University College, London, and in 1852 with the Bachelor of Medicine degree. He remained as house surgeon at University College Hospital where he began the long habit of combining research with clinical work.

Sepsis early claimed his attention, as it did all the surgeons before the germ origin of surgical infections was known. It is interesting to note that many had placed emphasis on cleanliness in

dealing with wounds as far back as Hippocrates. To cite a few nearer Lister's time, Charles White of Manchester, Semmelweis, and our own Oliver Wendell Holmes had believed in the connection between infection and the lack of cleanliness in hands, clothes, and the skin surface of the operative area. Lister was one of those who thought that lack of cleanliness and contagion were related and he at once seized upon Pasteur's newly discovered germ origin of certain diseases and applied it to the prevention of surgical infection.

Young, personable, and brilliant, opportunity readily opened its doors to him and he went to Edinburgh as assistant to James Syme, one of the greatest Scottish surgeons. Syme's amputation of the foot at the ankle joint was known to every physician. Of him it was said that "he never wasted a word, nor a drop of ink, nor a drop of blood." The old cliché about marrying the daughter of the boss applies to Lister, for he married the eldest daughter of Syme. Although his own genius would have ad-

Medical History

vanced him anywhere, while house surgeon to his father-in-law he had unusual opportunity to learn from this master surgeon. Also Syme was one of the first to recognize the outstanding abilities of Lister and to make them known. His prestige and influence may have assisted in the appointment of Lister to the chair of surgery at Glasgow in 1860. Nine years later Lister succeeded Syme at the University of Edinburgh.

The work of Pasteur showing that living organisms, "germs," were the cause of suppuration was grasped immediately by Lister and applied to the problem of surgical infection. In seeking ways to kill the germs or prevent their growth, he early hit upon the idea of employing carbolic acid, then in use as a deodorant. He first put the pure acid on a wound, really a cauterization, and the crust was left on as a protection for a day or two and when removed, the wound was again touched with the acid and the process repeated; sometimes 2 or 3 times. Most of this early work was done on compound fractures. Finding the treatment rather drastic, he turned to dilution of the carbolic acid. This he found more suitable, particularly for ordinary incised wounds and for abscesses where the pure acid could not be so well applied. Pasteur had shown that the air of a room contained the living germs and it was to deal with these that Lister devised his

famous phenol spray. This antiseptic spray was long a feature of surgery. Phenol poisoning and kidney damage were all too common, although Lister and his assistants labored constantly to lessen these effects. Gradually the concept of antiseptics, the complete exclusion of all germs changed to one where it was found that the body was capable of resisting minimal infections. In 1881 Lister, before the London Medical Congress, showed that the blood and the organizing blood clot contained something inimical to bacteria. Other workers in the field of immunology increased the knowledge of the natural defenses of the body against these newly discovered enemies that caused infection, and by 1890 the carbolic sprays were a thing of the past. It had served the purpose, however, of initiating the era of aseptic surgery.

His fame as the pioneer in the prevention of operative infection has overshadowed another great contribution to modern surgery made by Lister. This was the development and introduction of the absorbable ligature, an achievement that was the result of long and patient investigation and trial. Such an advance would alone have made any surgeon's name memorable.

Lister wrote no books although his collected articles were later published. He contributed a number of papers to medical journals. Some of these had been read before medical societies and several of

Medical History

them may be considered as medical classics. His Croonian lecture in 1863 showed that the injury to the wall of a blood vessel was of primary importance in bringing about coagulation. This lecture also was one of his first efforts to indicate his belief that bacteria were the causes of suppuration in a wound. His "Observation on the Ligature of Arteries on the Antiseptic System," published in the *Lancet*, April 3, 1869, contained much of his work on the absorbable suture of catgut. In 1873 appeared "A Further Contribution to the Natural History of Bacteria and the Germ Theory of Fermentation Changes." This appeared in the *Microscopical Journal* in October, 1873. A reprint of this is worth about \$25.00 today.

The earliest acceptance of Lister's work was in Germany. This was in part due to the advocacy of it by the great German surgeon, Richard von Volkmann of Halle. His paper on "Antiseptic Osteotomy" was translated and printed in the *Edinburgh Medical Journal* in 1875 and strongly supported the Lister theory and technique. Due to the prestige of Pasteur, France followed close on Germany, and it may be said that his own country was slower in acceptance of his doctrines than either of the 2 continental countries. Recognition at home came, however, and in 1877 Lister was offered and accepted the chair of surgery at Kings College,

London. Once recognition came, many honors were received. In 1883 he was made a baronet and in 1897, Queen Victoria's Diamond Jubilee year, was raised to the peerage, the first medical man to be created a peer for professional eminence. From 1895 to 1900 he was President of the Royal Society, and in 1902 was one of those made a member of the newly established Order of Merit, one of the most exclusive of honorary distinctions in the world.

Lister's career began when 2 revolutionary events in the history of medicine occurred in the space of 2 decades. These were the discovery of anesthesia and the germ origin of infection. Before that time pain and the almost universal presence of sepsis in any surgical wound had greatly limited the field of surgery. Now that field could be extended to a wide area and it was the good fortune of the world that a man of Lister's genius appeared at such a time and led the way in bringing it about.

A man of the highest character as well as the highest attainments in his profession, Lister was simple and courteous in his manner and like every true physician thought first of the patient and the best means to bring about his recovery. He was an excellent lecturer and public speaker.

His death occurred in 1912 and he is buried in Westminster Abbey.

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