

# The American Journal of Surgery

NEW SERIES, VOL. III

AUGUST, 1927

No. 2

## LISTER'S CENTENARY\*

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**T**HIS is Lister's centenary. The name of Joseph Lister will ever be revered and remembered wherever surgery is taught as a science and practiced as an art. Probably there was never such an assemblage of learned and scientific men as was welcomed by King George in London on April 5 at the celebration of the centenary of the birth of Joseph Lister. In the hall of the British Medical Association numerous eulogistic addresses were delivered and in Westminster Abbey memorial services were held by the Bishop of Birmingham—certainly no such grand and glorious tribute was ever paid to the memory of any of England's "immortal dead who live again in minds made better by their presence."

Like that other miracle, William Shakespeare, Lister was born in a small village in the midst of the common people, at Upton in Essex County, thirty-four years after the death of the great Scotchman, John Hunter, who dominated the surgery of the eighteenth century as did Lister that of the nineteenth. The brains of these two men were the mighty looms that wove the indestructible fabric of England's surgical greatness—John Hunter the greatest surgeon up to Lister's time—Lister the greatest of all time.

Lister's father and grandfather were wine merchants in London. The father, Joseph Jackson Lister, was of an eminently scientific turn of mind. He perfected the com-

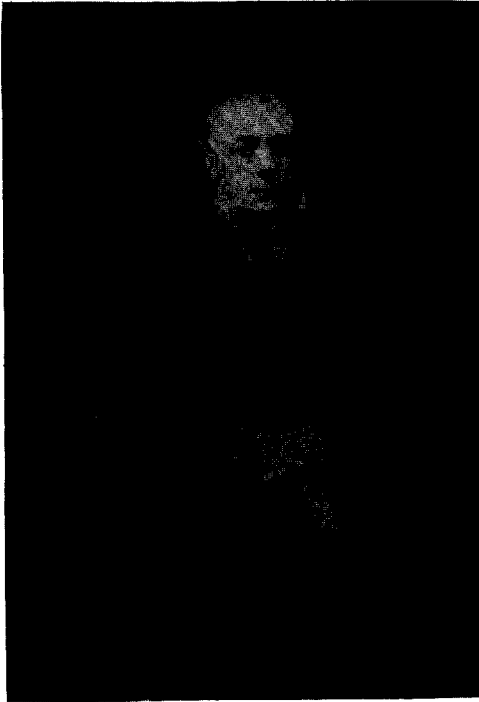
pound microscope; and "Lister's Law of the aplanatic foci remains the guiding principle as the pillar and source of all the microscopy of the age." In connection with Thomas Hodgkin, in 1827, the year of the birth of his son, Joseph, he determined the diameter of the red blood corpuscles and their rouleaux-formation. Lister's mother was Isabella Harris, a brilliant woman, and a teacher of elocution.

Joseph Lister attended private schools, at the age of seventeen entered the University College, London, was graduated A.B. in 1847, and five years later qualified in medicine. Lister was stricken with smallpox and was unable to commence his medical studies until 1848. He was, however, more fortunate than the brilliant Henry Gray, author of Gray's Anatomy, who was born the same year as Lister but died of smallpox at the early age of thirty-two. Lister, upon graduation at the University College, entered the University College Hospital and served for nine months as Erichsen's house-surgeon.

The mistake of speaking of Sir John Erichsen as an Englishman is frequently made. He was born in Copenhagen, in 1818, and the old family home, Le Palais Erichsen, is one of the show places of the Danish capital. Erichsen, like Lister, started out as a physiologist, but soon turned to surgery, and at the age of thirty-two, upon the retirement of Mr. Syme from the University College, London, was made a

\* Read before the Alabama State Medical Association, Montgomery, Alabama, April 20, 1927.

full professor there. In those days they "tried them out" before election, and Erichsen was given a lithotomy with Thompson, afterwards the great Sir Henry Thompson, who lithotritized Napoleon III, in 1872, holding the staff. On account of his myopia Erichsen was never a great operator, but measured up as a diagnostician and wrote the very Bible of surgery



Sir John Eric Erichsen.

in 1853. During our Civil War the U. S. Government had a special edition published and gave a copy to every surgeon in the Federal Army. On September 23, 1896, on the death of Sir John Eric Erichsen from angina pectoris, the profession lost one of the ablest literary exponents of the science of surgery of the generation.

Saturated with scientific heredity and a student and admirer of the physiologist, Sharpey, it is not surprising that the spirit of investigation and experimentation was early infused into Lister's mind and that his first paper, the year of his graduation, was upon the identity of the muscle of the iris and involuntary muscular fiber.

Having served his time in London, upon the advice of his former teacher and friend, Sharpey, he went to Edinburgh "to take six weeks of Syme's clinic" but remained six years and married Mr. Syme's daughter, Miss Agnes Syme.

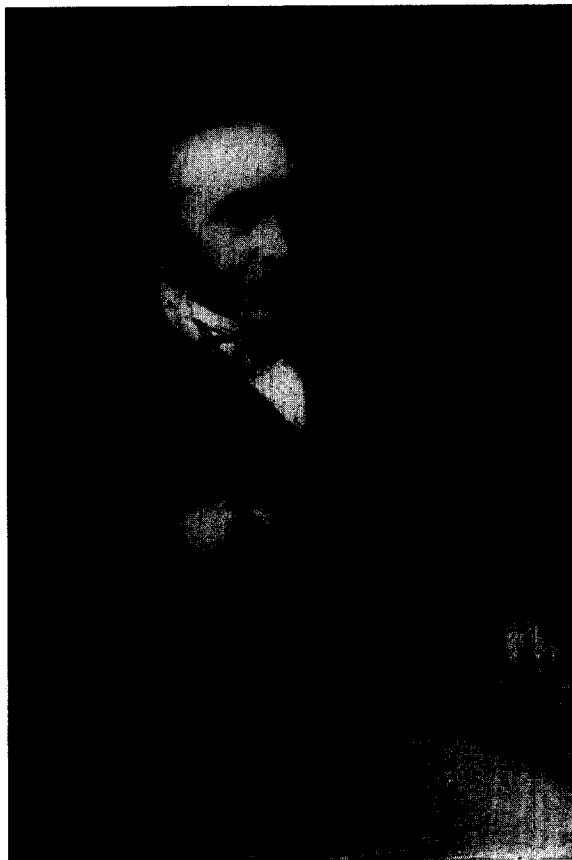
When Mr. Syme was nineteen years of age he had charge of Robert Liston's dissecting room, but a quarrel with the great master, who never hesitated to cut off with his amputating knife a piece of his operating table to plug a bleeding bone, kept him out of the Edinburgh Royal Infirmary for a number of years. In 1829 he commenced teaching surgery and opened a private infirmary, Minto House, with twenty-seven beds, which was everywhere recognized except at home, and in popularity soon rivaled the Royal Infirmary. It was here that he first divided the sterno-cleido-mastoid muscle for torticollis. In 1833 Syme agreed to pay Russell fifteen hundred dollars a year to resign the chair of Clinical Surgery at the University and was appointed to the vacancy by the Crown. About this time Liston and Fergusson went to London and left Syme without a surgical rival in Edinburgh. With Liston, Syme revived flap amputation, first proposed by Lowdham of Oxford, and shared with Fergusson the honor of reviving excision of joints and is alone entitled to the credit of originating, in 1842, the operation of amputation at the ankle-joint, which bears his name. He devised many mechanical instruments, performed external urethrotomy for the cure of callous or impassible strictures, and demonstrated the function of the periosteum in repair of bone. Upon the death of his great enemy and cousin, Liston, who, it has been said, once was overheard demonstrating to his class the similarity of Syme's head to that of the chimpanzee, Syme succeeded to the Chair of Surgery in the University College Hospital, of London, but returned to Edinburgh before the end of the year. Upon his return home he devoted much time to the treatment of aneurisms. He was first in modern times to incise, turn out the clot

and tie each end of the diseased vessel in the carotid, axillary and iliac. J. Marion Sims said, "I have seen, all over the world, great surgeons operate, in my own country, in London and in Paris; but I have never seen such an operator as Mr. Syme." Syme was polemical and a born controversialist, immensely popular with the students, but disliked by his colleagues. His great friend and student, Dr. John Brown, the author of "Rab and His Friends," a pathetic story that need not blush in company with Hannah More's "Shepherd of Salisbury Plain," said of him, "He was almost always right in matter, sometimes wrong in manner." Mr. Syme is the surgeon in the story. Early in life Syme, who had a decided taste for chemistry, discovered that distilled coal-tar is a ready solvent of caoutchouc, which led to the waterproofing of cloth, and this process was patented by Charles Mackintosh. We owe our raincoats to the genius of Mr. Syme. Mr. Syme died in Edinburgh, in 1870, after his third paralytic stroke, and was succeeded by Lister, who was at the time in Glasgow.

We learn from Sir Hector Cameron, who was Lister's house-surgeon at the Glasgow Royal Infirmary in 1861, that he had seen as many as five cases of amputation of the leg die of pyemia in that institution in one week. This made a profound impression upon Lister, who at the early age of thirty-four had just been called to the Chair of Surgery, and he immediately went to work to investigate the cause. He taught that "the cause of suppuration in wounds was the decomposition of blood and serum retained within them, brought about in some way through the influence of the atmosphere." Sir Watson Cheyne tells us that in 1864 Lister, when walking home with Prof. Thomas Anderson, who held the Chair of Chemistry in the University of Glasgow, had his attention called to certain papers on fermentation and spontaneous generation which had recently been published by the French chemist, Pasteur. Lister read these papers and

found from Pasteur's experiments that it was minute living particles floating in the air or settling on surrounding objects in the form of dust, and not the gases of the air that the surgeon had to fear.

The problem that presented itself to the mind of Lister was how to destroy these microorganisms of the vegetable kingdom before and after operations, and if, as in



Professor James Syme.

compound fractures, they had already entered the wound, then how to destroy or inhibit their growth before they could get a foothold and spread. About this time Lister saw a newspaper article giving an account of carbolic acid, discovered by Runge in 1834, and its wonderful effect in cleansing the sewage of the town of Carlisle, and conceived the idea that carbolic acid might be used to kill the germs without detriment to the wound. Prof. Anderson

secured a supply of a purer specimen of carbolic acid which would dissolve in water, one to twenty.

In 1863 Jules Lemaire, a French pharmaceutical chemist, wrote a book on carbolic acid in which he accepted the germ theory as the explanation of putrefaction and recommended the use of carbolic acid for dressing wounds and "for all sorts of diseases." The book attracted very little attention and the work of Lemaire was not heard of by Lister until 1867, several years after Lister had used carbolic acid, when an anonymous letter attacking Lister was published in the *Edinburgh Daily Review* and the profession was flooded with reprints. This false and libelous communication was traced to Sir James Y. Simpson, "a very religious man who preached every Sunday" (Gross).

All honor to the names of Oliver Wendell Holmes and the martyred Hungarian, Ignaz Philipp Semmelweis; but as Lister knew nothing of their work and was in no way influenced by them, a review of their achievements would not be germane.

In 1867 Lister struck his level and laid down upon an eternal and unshakable foundation the great principle of the modern treatment of wounds. In his address before the British Medical Association he stated that septic properties depended upon minute organisms, that suppuration might be avoided by using some agent capable of destroying them, and recommended carbolic acid. He called the microorganisms which produce suppuration "dust particles," and believed that air infection was the great source of danger. His carbolic spray was the outcome. He soon discovered that these microorganisms were omnipresent, that the greatest danger was actual contact infection, and he recommended cleansing of the surgeon's and assistant's hands, patient's body, instruments, threads, and dressings. He saturated a piece of lint with pure carbolic acid and mopped the wound out, afterward covering it with the same material and holding it in position with

pieces of tin. The tin was daily removed and the dressings painted with pure acid. He treated abscesses by mixing pure carbolic acid with pus which formed a paste. He filled the wound with paste and covered it with tin. He next used as a dressing for all wounds antiseptic putty, made of carbolic acid, linseed oil, and carbonate of lime. The putty was found unwieldy and he used "antiseptic lac plaster," which is made by melting shellac and mixing it with carbolic acid. Its adhesiveness was highly objectionable, and he overcame it by painting the calico, saturated with shellac and carbolic acid, with "a solution of india rubber and benzine." The benzine was soon evaporated and the india rubber prevented the dressing from sticking. To prevent irritation from the acid he covered the line of incision with an oiled silk protective, which had previously been dipped in a solution of carbolic acid. We learn from Sir Hector Cameron that this was the dressing used by Lister when he returned to Edinburgh in 1869 as a successor to Mr. Syme. In the *Lister* number of the *British Medical Journal* Mr. Cheyne has an article in which he states that Lister in 1873 substituted carbolic gauze for lac plaster and introduced his spray. In 1890, when he discovered that the dust did not contain pathogenic microorganisms, he discarded the carbolic spray, washed the wound with a weak solution of bichloride of mercury, and substituted the double cyanide of mercury and zinc for the carbolic gauze. I heard Lister say in 1884 that he questioned the necessity of the spray but that his results had been so satisfactory that he was loath to make a change. I was impressed with his statement about the spray and in perfect agreement, as I couldn't figure out how to get the price of one of those big steam sprays out of my allowance. He used carbolic acid for disinfection of the skin and instruments. Just prior to his discovery, from 1864 to 1867, his mortality in major amputations was 50 per cent. From 1867 to 1869 his

mortality in the same class of cases was 15 per cent. In the face of these decisive and incontrovertible statistics Spence, Billroth, and other leading surgeons ignored his teaching and continued to empty their wards with a death-rate four times greater than his. Professor Ogston, of Edinburgh, first accepted it in its entirety, and he was soon afterward followed by Macewen, of Glasgow. A German, Von Bergmann, in 1886, was the first to use steam sterilization for instruments and dressings.

A son of a member of the Society of Friends, Lister was the antipode of his twin brother in science, the polemical, pugnacious, and unpeaceful Pasteur, who after the Franco-Prussian War in 1871 wrote to the Head of the Faculty of Medicine of the University of Bonn, "Efface my name from the archives of your Faculty and take back that diploma, the sight of that parchment is odious to me." When taunted and told at the British Medical Association at Plymouth in 1871 that "as his solutions become weaker and weaker his faith appeared to grow stronger and stronger" Lister did not swerve nor turn but intrepidly walked the highway of the right. His critics said the smell of carbolic acid would preclude its use; but in 1871 he was called by Sir William Jenner to operate upon Queen Victoria for a large abscess that had formed between the armpit and mamma, and he used carbolic acid. Her Majesty answered the criticism. Queen Victoria was the first patient upon whom Lister used a rubber drainage tube, though Chassaignac had used it in 1859. Lister cut the tube from a Richardson's atomizer that he had used the day previously to freeze the parts, and soaked it in carbolic acid. Sir Hector Cameron tells us that Lister was immensely pleased when King Edward VII said, "Lord Lister, I know well that if it had not been for you and your work I would not have been here today." The King referred to his operation for gangrenous appendicitis performed by Sir Frederick Treves

which was made possible by Lister, and at which he was present.

The immortal Master lived

To see his own work out  
And watch the sandy footprints harden into  
stone.

Lister's active work as a surgeon ended in 1892 when he reached the age limit and retired from King's College Hospital. We have it upon the high authority of Sir St. Clair Thomson that Lister with a purely altruistic motive left the Royal Infirmary at Edinburgh, in 1877, where he had sixty to seventy beds, his lecture room crowded with enthusiastic, sympathetic and friendly students and foreigners, and went to King's College Hospital where only twenty-four beds would be allotted to him and his audiences would be cold, apathetic, and unfriendly, because London was the hotbed of his opposition and by going there he could sooner overcome the opposition, disseminate his great truths, and fulfil his mission in the world. Lowell has well said, "We breathe cheaply in the common air thoughts that great hearts once broke for." In 1895 Lister was elected President of the Royal Society and Mr. Cheyne says it gave him another five years of life.

In 1893 Mrs. Lister died under peculiarly distressing circumstances. She and her husband were botanizing in an out-of-the-way spot on the Italian Riviera when her death came after four days' illness of acute pneumonia. Lister was alone without a nurse or friend other than the local Italian doctor. He prepared the body for the difficult journey and distressing home-coming. She was truly his helpmate and after his death most of his papers were found in her handwriting. They had no children.

Never was there a more inspiring scene than on the celebration at the Sorbonne of Pasteur's seventieth birthday on December 27, 1892. With the band of the Republican Guard playing a triumphal march, Pasteur, worn and broken, leaning heavily upon the arm of the French President, Carnot, came upon the stage and fell into the

arms of Lister. This memorable meeting was portrayed upon canvas by the great artist, M. Rixens. It was like the meeting of Wellington and Blucher after Waterloo when the great Corsican commenced his melancholy march to St. Helena. It was the signal to the world that the surgery of the past, with its indescribable sufferings, miseries, misfortunes, and death was gone and forever, and that a new era, a golden age, of untold possibilities filled with hope, happiness and life for this and future generations had loomed. It was man's redemption of man. It was science in benediction with outstretched hands.

In 1875, though Lister's "turret torch was blazing high," like Leander, the surgeons in America would not see and could not hear. We find Dr. Samuel D. Gross, the Nestor of American Surgery, and Dr. Lewis A. Sayre, hard by, pushing a trocar through the ninth intercostal space of Vice-President Breckinridge at Lexington, Ky., to drain an abscess of the liver that was discharging a pint of pus daily through the lung. Dr. Gross complacently remarked that he made no reply to criticism, "conscious that we had done our duty."

As paradoxical as it may appear, mistakes are often a boom for the relief of suffering humanity. Perhaps some such case as Breckinridge's may have suggested to Sir Frederick Treves to go into an hepatic abscess and drain it with a tube an inch in diameter. When McGill, the father of prostatectomy, was told by his house-surgeon, Moynihan, that the microscope showed that a "tumor he had removed at the base of the bladder" was prostatic he answered, "Then why don't we always take the prostate out when it projects into the bladder?" When Sir Spencer Wells by mistake operated for an ovarian cyst and found tuberculous ascites he established the surgical treatment for peritoneal tuberculosis; and when he operated for a supposed uterine fibroid on an eighteen-year-old jaundiced girl, and

removed an enlarged spleen he cured a lifelong jaundice, and inaugurated a surgical treatment of hemolytic jaundice (Moynihan). When Lister in an old dislocation at the shoulder-joint tore the axillary artery it was a warning against the use of too great force and a brief for the open operation.

In 1877 Dr. John T. Hodgen, the ablest and most progressive surgeon in St. Louis, said to Bernays, "I have performed sixteen laparotomies and have fifteen tombstones to show for them." It would have exhausted the imagination of a Dumas to have predicted that Dr. Hodgen's assistant, Dr. W. W. Mayo, upon the pedestal of whose statue in a Rochester park is the appropriate line of Wordsworth, "A man of hope and forward looking mind," would have founded the Mayo Clinic and that his sons, those wonderful surgeons, Drs. W. J. and C. H. Mayo, who have "eyes that feel and fingers that see," would have reported, in 1925, 8147 laparotomies with a total death of 2.7 per cent. Lister made it possible.

In 1879 I saw a distinguished New York Surgeon, Dr. Alexander B. Mott, resect a hip-joint on the same table upon which Dr. J. D. Bryant had just made an anatomical demonstration. He had the courageous impudence to tell us of the insulting language that he had used in 1876 to that man of invincible patience and radiant purity, who had laid the benign hand of healing on the wounds of humanity—Joseph Lister—and we the idiocy to applaud.

In a recent letter from the venerable W. W. Keen he said, "I was Lister's first pupil in Philadelphia, on August 1, 1876, in St. Mary's Hospital, gathering all the utensils, including steam spray, to carry out exactly his methods."

Sir St. Clair Thomson in the commencement of his scholarly address, "A House-Surgeon's Memories of Joseph Lister," quotes the lines written by Robert Browning when he met a friend who had known Shelley:

And did you once see Shelley plain  
And did he stop and speak to you  
And did you speak to him again?  
How strange it seems and new.

Thomson said these lines convinced him that it was the duty of those who had the great privilege of "seeing Lister plain" to recall their personal recollections.

Joseph Lister weighed approximately 185

High Cliff  
Lysons Regis  
Dorset  
5<sup>th</sup> Mar 1895

My dear Sir

Your letter has been forwarded to this place, where I am just now staying.

I need hardly tell you that I have been much gratified by the honour you have done me in naming your son after me, and also by the

were purely because he felt that his great work for the relief of suffering humanity was progressing, that his teachings were being more and more recognized and accepted. His sympathies touched the extremes of life and were as wide as want. In the serene simplicity of his great, generous, and sympathetic soul there was no station, caste, nor prerogative, and the

very kind terms in which you refer to my teaching as it affected yourself, Cordially wishing all happiness to you, and a life of health, prosperity & usefulness to my numerous

I remain  
my sincerely yours  
Joseph Lister

D. L. L. Hill

Letter from Joseph Lister to the author.

pounds and was six feet in height. He wore side whiskers and his hair, an iron gray, was rather long. His dress was always the same, a black Prince Albert coat and dark gray trousers, a standing collar and black cravat—"the apparel oft proclaims the man." He was modest, unobtrusive, and cared not for fame or fortune, but like Robert Burns clung to the common, everyday facts of life. When honors were thrust upon him they were received with a personal detachment, as his gratification and satisfaction

"poor man was as rich as the richest and the rich man was as poor as the poorest—Dives relinquished his riches and Lazarus his rags." Possibly the greatest shock of Lister's life came to him when he, after reprimanding a Sairey Gamp, a type of nurse immortalized by Charles Dickens, asked her if she never thought of her responsibility for all the poor sufferers under her charge and she nonchalantly replied, "Oh, I nae minds o' them."

It has been well said that "things small

within themselves oft have far-reaching significance." I received this letter from him when I named my son, Congressman Joseph Lister Hill, for him:

High Cliff  
Lyme Regis  
Dorset  
5th March, 1895.

My dear Sir,

Your letter has been forwarded to this place, where I am just now staying. I need hardly tell you that I have been much gratified by the honor you have done me in naming your son after me, and also by the very kind terms in which you refer to my teaching as it affected yourself.

Cordially wishing all happiness to you, and a life of health, goodness and usefulness to my namesake,

I remain,

Very sincerely yours,  
Joseph Lister.

Dr. L. L. Hill.

This letter was characteristic of the great man. He did not wish fame, fortune, or exalted position, but simply "a life of health, goodness and usefulness to my namesake." It told the whole story.

Sir St. Clair Thomson was Lister's house-surgeon when I was there and it was evident that he had the approbation and confidence of his Chief. He was to Lister in his hostile surroundings at King's College Hospital what Archie Butt was to Roosevelt. The nursing was done by the Sisters of St. John, an Anglican Community, who thought surgeons operating was by their sufferance, that Lister's daily visits to the hospital were unwarranted interferences, his Sunday visits sacrilegious; who thought more of the esthetic than surgical dirt, believed more in prayer without operations than operations without prayer, did everything in their power to stifle and obstruct the efficient carrying-out of the details of Lister's treatment and in a general way "with devotions' visage and pious actions sugared over the devil himself." Sir St. Clair Thomson knew how to act promptly and do things—"carry a mes-

sage to Garcia." He is the author of one of the best textbooks that has ever been written on the diseases of the nose and throat, and is the Chevalier Jackson of England. It is no wonder that he has been knighted.

Having finished my studies in New York and Philadelphia, I had a great desire to visit London and see Mr. Lister, with whose work I was familiar and whose great name was then claimed by England, but has since become a common heritage. In September, 1883, after a tempestuous voyage of fourteen days in which "Fright" did not cure "the qualms of all the luckless landsmen seasick maws" I reached Liverpool. On arriving in London I matriculated at King's College and through the courtesy and kindness of Dr. John Curnow, Dean of the Medical Faculty of King's College, I was given every opportunity to attend the Surgical Hospital Practice and Surgical Clinical Lectures at King's College Hospital. King's College Hospital, which has since been moved to Camberwell, had a capacity of three hundred beds, was devoid of grounds, and was located in a thickly settled neighborhood very near the Hunterian Museum, which cost John Hunter, called the Dick Whittington of British Surgery, over \$375,000 and which since 1800 has been owned by the Royal College of Surgeons.

As I passed up the magnificent stairway and entered the operating room to hear Lister's opening lecture my eyes soon rested upon the bas-relief of Sir William Fergusson, whom Lister succeeded in 1877. I thought of his thirty-four years of active service in the hospital and of his lamentable death, of Bright's disease. I could see the great Scotchman, the most marvelous operator of his time, remove the upper jaw, lithotomize, perform his wonderful plastic work, and divide the levator palati and palatopharyngeus muscles as a preliminary to his successful staphylorrhaphy. His wonderful delicacy of touch enabled him to become a great violinist. Like Billroth, Mikulicz, and Rokitansky, he was a lover of all music, a worshipper



of Wagner, Beethoven, and Liszt, "of every eagle that soars in the heaven of sound." Fergusson was an uninteresting lecturer, not well informed about the works of others, and his ideas of pathology were archaic. On one occasion, while lecturing upon caries and necrosis, a student reminded him that his views differed from those of Niemeyer. Fergusson replied: "Sir, Nehemiah was a gentleman who wrote one of the books in the Old Testament, but I have yet to learn that he had views on caries and necrosis."

I thought of Sir Thomas Watson, "The Cicero of English Medical Literature," having once been a teacher here and how he electrified his classes.

Richard Partridge had previously been a surgeon of great distinction at King's College Hospital. He was one of the surgeons who went to Italy to examine Garibaldi's ankle after he was shot at the battle of Aspromonte in 1862. Partridge, unable to locate the bullet, said that none existed. But Garibaldi was not satisfied with the English surgeon's opinion and sent to Paris for Nélaton. Before starting to Italy Nélaton consulted an eminent French chemist to ascertain whether it were possible to devise an instrument which when rubbed against lead would receive the stain of the metal. The result was the famous porcelain probe, a metallic rod tipped with porcelain, which all of us had in our pocket cases before the roentgen ray. With this Nélaton located the bullet, enlarged the sinus, removed it, and this was followed by a cure with permanent ankylosis. Nélaton made a great reputation, and Partridge never recovered from his mistake.

Mr. John Wood was a clinical professor of surgery at King's College Hospital when I was there. He was a powerfully built man with a distinct lameness, and a harsh and abrupt manner. He was a thorough anatomist, having once taught it, and I thought a very good operator. He had written a book on hernia and frequently did his subcutaneous wire operation for the

radical cure of inguinal hernia, the success of which depended upon getting firm union of the conjoined tendon of the internal oblique and transversalis muscles with the deep part of Poupart's ligament. The operation seemed to me blind and brutal, and could easily have been bloody where a lesser anatomist than Mr. Wood stuck the big needle into the iliac artery. Wood claimed that "Lister's fame came from Germany, that the Germans were dirty people, but that the antiseptic system was not really necessary in England." Mr. Wood wrote the article on hernia for Ashurst's "International Encyclopedia of Surgery." Mr. Wood's assistant was Mr. William Rose, who was always flashily dressed, and I thought had many of the elements of an English dude—the direct opposite of his Chief. It never occurred to me that Mr. Rose would be the first to remove the Gasserian ganglion or write a standard textbook on surgery.

When Mr. Lister appeared in the operating room he was accompanied by his assistant, Mr. Watson Cheyne, now a member of Parliament, whom he brought from Edinburgh in 1877, when he came as the successor of Sir William Fergusson. "Lions make leopards tame." In the august presence of this great man who "had divided the history of surgery into two great eras, before Lister and after Lister," I was awed into a feeling of what Benjamin Rush described as suffocated excitement. Lister was then practically in the meridian splendor of a fully developed and glorious manhood. Unlike our American professors, he took a seat. He commenced lecturing upon the aseptic and antiseptic treatment of wounds, the chart and compass of all surgical advancement. It occurred to me that I had never seen so thoughtful a face, a more kindly expression, nor a more benignant smile to mirror a great inward soul. He spoke in a conversational tone with an almost imperceptible stammer that added to the charm of his musical voice, and he had a lucidity of statement unequalled by even Mr. Erich-

sen. As an operator he was resourceful, cleanly, bold, courageous, self-possessed, but not given to rashness. He wore no operating overalls and had no rubber gloves, but his work was the signboard upon the great surgical highway that pointed to the perfection of today. He taught us avoidance of irritation by anti-



Central portion of the picture by M. Rixens representing the ceremony at the Sorbonne, December 27, 1892. Lister and Pasteur.

sepsis, for which he used oil silk protective, and the destruction with carbolic acid of the microorganisms before they reached the wound. I saw him refuse to amputate in a compound dislocation of the ankle-joint with extensive laceration, and in a compound, comminuted fracture of the leg. I remembered what the elder Gross had taught me, and I thought of what

Syme had said, and yet I saw him save both limbs. I saw him operate for knock-knee, malunited and ununited fractures, wire the patella and olecranon, excise the wrist for caries, perform an open operation for radical cure of hernia, resect the knee-joint, do a suprapubic lithotomy, and almost do a Halsted in a mammary carcinoma. In 1867 Lister performed the first of his radical breast operations upon his sister after she had been told by the most eminent London surgeons that an operation on account of the dangers of infection was absolutely unjustifiable. Lister believed that with the use of antiseptics the undertaking was warranted and having the courage of his convictions removed the breast and contents of the axilla with a part of the pectoralis major muscle. She recovered and lived for many years. Lister's heroism parallels that of our Halsted, who with his own hand, in 1881, turned the current of his own blood into a vein of an exsanguinated and apparently dying sister, and saved her. A year later he hurried to Albany, New York and at two o'clock in the morning operated upon his mother for empyema of the gall-bladder that was about to rupture, and relieved her. It all seems easy today for, as Alfred Tennyson has beautifully expressed it,

Most can raise the flowers now  
For all have got the seed.

I saw Lister use no other anesthetic than chloroform, by the open method, discovered in 1847 by one of his colleagues and one of his most unrelenting and unfair critics, Sir James Y. Simpson, who said, in 1871, "The man laid on the operating table in one of our surgical hospitals is exposed to more chances of death than the English soldier on the field of Waterloo" (Thomson). It was an American surgeon, Crawford W. Long, that five years before Simpson

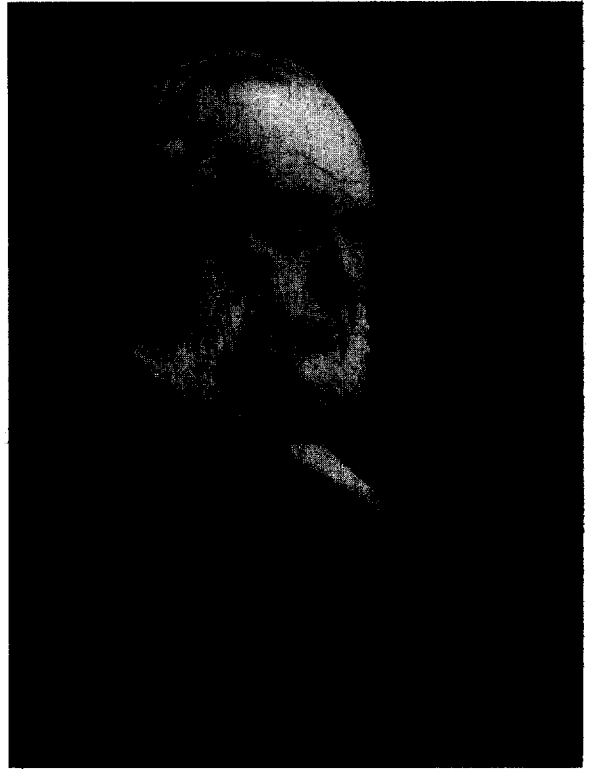
Struck from the roll of pangs one awful sum  
Made pain a dream and suffering gently dumb.

Lister used silver wire alone for suturing, for which he gave Sims credit, with a specially constructed needle. The eye of the needle was some distance from the end, and beyond the eye were grooves in which the wire fit snugly. He manifested the greatest admiration for his illustrious father-in-law, frequently during his lectures quoted Mr. Syme, and would sometimes exhibit pathological specimens that had been collected by the great surgeon. His article on amputation in Holmes's "System of Surgery" is a classic, and Lister's method of bloodless operating antedates Esmarch's bandage.

I had the honor of being one of the students that cheered him in 1883 when he returned from Windsor Castle with a baronetcy, and I rejoiced when he became a peer in 1897. Lister's pioneer work in practical surgery, which entitled him to everlasting fame, has been completely overshadowed by the enormous benefit to suffering humanity brought about by his revolution in the treatment of wounds. Lister's greatest characteristic was his conscientiousness. He refused to allow Mr. Cheyne to publish the notes of his clinic because surgeons, who did not believe in antiseptic treatment or who did not understand the technique, without the protection of which there would be loss of life or limb, would attempt to perform his new operations and to carry out his new line of treatment.

The other day at the celebration of Lister's Centenary in London Sir Berkeley Moynihan said in his masterly address: "Though Lister's earliest efforts were concerned with the abatement of existing decomposition of wound discharges, it was not long before the problem of the prevention of infection became paramount. It is beyond dispute that Lister clearly realized the distinction between the "prophylactic" and the "therapeutic" uses of chemical agents in surgery. We know now that the old quarrel as to the relative merits of the "antiseptic" and the "aseptic" methods was senseless and jejune;

for Lister was indubitably the parent of both; if indeed, there are really two methods. No surgeon ever practiced with success a method in which agents for the destruction of organisms were omitted. Aseptic surgery is the wise practice of antiseptic surgery. There is a difference in detail, not in ideal, or in fundamental truth."



Lord Lister.

Never aggressive, never palestric nor unpeaceful, but always kind and always considerate, he would say to us, "Gentlemen, I commend these facts to your candid and impartial judgment, beseeching you to form your own opinions regarding them. You are as competent as you will be to draw logical inferences from established data." Lister was unfitted and unsuited by temperament, training, and early environment for controversy; and, unlike Socrates, had no Xenophon, or to be more explicit, had no "bull dog," as Darwin had in Huxley, to attend to the needs of Spence, Simpson, and Savory. During the six

months that I saw him almost daily there was never a word nor act to cast a shadow upon his cherished memory.

By his great generalizations he has placed every organ in the body under the domain of surgical sway, made possible the wonderful clinics of the Mayos, Murphy, Deaver, Ochsner, Robert Jones, Moynihan, and others. Lord Lister relegated diseases like hospital gangrene to the past, and to victims, "oft in the morn and liquid dew of youth," listlessly looking a last good-bye to their loved ones he has given a chance, and glorified surgery. He has made civilized man his debtor, brought joy and gladness alike to the hovel of the poor and to the palace of the rich, to the Coburg of Windsor Castle and to the degraded occupant of White Chapel.

Sir Berkeley Moynihan in his Boswellian Oration, "John B. Murphy—Surgeon," referring to Lister, said, "If a man's services to humanity are the standard by which we measure his value then Lister may be counted as perhaps the greatest man the world has ever produced. He has been the means of saving more lives than all the wars of all the ages have thrown away." Who is better equipped or more competent to pass judgment upon the achievements of Joseph Lister than Berkeley Moynihan?

Sir St. Clair Thomson said, "Lister has wrought more for the relief of suffering, for the security of life, for the prevention of anxiety and for the promotion of happiness than any one man who has ever trod this earth."

Our distinguished ambassador, Thomas F. Bayard, addressing Lister at a banquet, said, "My lord, it is not a profession, it is not a nation, it is Humanity itself which with uncovered head salutes you."

Drawn and withering, for three years practically deaf and blind, Lister sat in the twilight of a life of fulfilment, "waiting for the night, waiting for the light," when on the morning of the 10th of February, 1912, at Walmer, the curtain fell upon the world's greatest tragedy, save when there

came from those pallid lips, that had never uttered any but the purest and sublimest thoughts, that heart-rending cry as they were molding on the inertia of death, "My God, My God, why has Thou forsaken me?"

When Baron Lister "left the shore touched by the mysterious sea that never yet has borne on any wave the image of a homeward sail," the great surrogate of truth and justice decreed as his legacy to his profession the magnificent achievements of the present and the marvelous possibilities of the future.

By his request he was buried with his wife at West Hampstead, although the services, with representatives from every civilized nation of the world present, were held at Westminster Abbey, where death is associated with public veneration and imperishable renown, and where the choir, as over John Hunter, proclaimed Handel's Funeral Anthem. As Sir Rickman Godlee said, "the words of the anthem, though a strange blending of texts from the Old and the New Testaments, were peculiarly applicable":

When the ear heard him, then it blessed him, and when the eye saw him it gave witness of him: he delivered the poor that cried, the fatherless, and him that had none to help him. Kindness, meekness and comfort were in his tongue. If there was any virtue, and if there was any praise, he thought on those things. His body is buried in peace, but his name liveth evermore.

In closing this altogether inadequate sketch of my venerated master I am tempted to paraphrase a beautiful apostrophe by that charming personality, "sculptor in speech, and colorist in words," Ernest Renan: "Repose in glory, noble founder, thy work is finished, the most complete immortality established. There will travel the royal road which thou hast traced ages and ages of followers."

There never was but one Joseph Lister; there never will be another.