

Sampson Gamgee: a great Birmingham surgeon

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The name Gamgee is best known as that of Frodo's faithful friend in *The Lord of the Rings*—Sam Gamgee. During his childhood in Warwickshire, JRR Tolkien picked up something of the local vocabulary, adopting dialect words into his speech—'miskin' for dustbin, 'pikelet' for crumpet and 'gamgee' for cotton wool¹. The last owed its origins to Sampson Gamgee (Figure 1), the Birmingham surgeon who amongst other things invented Gamgee tissue, a surgical dressing.

Joseph Sampson Gamgee (known as Sampson) was born in 1828 at Leghorn in northern Italy, the eldest son of Joseph Gamgee, a British veterinary surgeon²⁻⁶. The family moved to Florence, where Sampson was educated⁷. He first visited England at the age of fifteen, when he rode across Europe on horseback; at eighteen he left Italy permanently to come to London^{3-5,8}. With his cosmopolitan upbringing he was fluent in French, German, Italian and Spanish as well as English.

Intending to become a veterinary surgeon like his father, he entered the Royal Veterinary College in London in 1847 and by the age of twenty-one was a member of the Royal College of Veterinary Surgeons³⁻⁵. Gamgee always maintained his veterinary interests, being for a time vice president of the College². While a veterinary student he was invited to attend lectures at University College Hospital^{4,6,7} and his work was so good that he was persuaded to become a student there⁷. Joseph Lister was a classmate with whom he shared lodgings⁶. Though they later disagreed professionally, they remained friends. During the summer of 1849 he travelled through France, Germany and Italy, making contacts in various clinics and hospitals^{3,6}. In Paris, he was befriended by Louis Pasteur, who gave him an excellent testimonial⁸. Before obtaining Membership of the Royal College of Surgeons in 1854, he had won five gold medals including the Liston Gold Medal for surgery, becoming a Fellow of the Royal Society of Edinburgh a little later^{2,7}. His first post was as house surgeon to Sir John Erichsen at University College Hospital, and he then moved on to become surgeon to the British-Italian Legion, first-class staff surgeon to the Royal Navy,

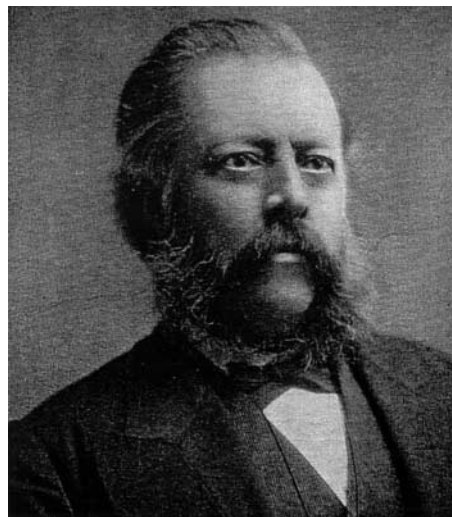


Figure 1 **J Sampson Gamgee** (reproduced from *Birmingham Med Rev* 1935;10:158)

and superintendent of the Military Hospital in Malta during the Crimean War^{3,4,8}. After a short spell as assistant surgeon to the Royal Free Hospital he gained the post of surgeon to the Queen's Hospital, Birmingham in 1857. It is said that he moved there because of its large Italian community⁶. His reason for resigning from the Royal Free was that 'The management of that hospital was not in accordance with the only principles consistent with due regard for the interests of mankind and of science⁹.' Details of this dispute have yet to emerge.

Gamgee's election to the surgical staff of the Queen's Hospital was fraught with controversy. Appointments were made by the Governing Council of the Hospital and Medical School, composed of laymen, professors at the Medical School and members of the hospital staff. The professors would submit to the Council the names of two applicants, with a special recommendation for one of them^{3,5}. Their chosen candidate was usually elected: this time he was turned down. The professors had declared Gamgee's superiority over the other five applicants¹⁰ for the following reasons¹¹: he had distinguished himself at University College London and University College Hospital; he had received strong testimonials while studying in Europe; the Secretary of State for War, the Director-General of the Army Medical Department and others had expressed a high opinion of his services during the Crimean War; some of the most distinguished medical men in the country had

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submitted testimonials in his favour; and his literary work was well known. The lay members, led by the Rev Dr Miller, Rector of St Martin's in the Bull Ring, elected by one vote J F West, house surgeon at Queen's Hospital (the only position he had held)⁴. Even West admitted his opponent's superiority¹². The election was disputed: views were expressed in the press, the *BMJ* ran a commentary on the events, and Dr Miller even preached a sermon on the subject^{3,4}. The professors distributed a statement opposing the appointment, firstly because canvassing (which was forbidden) had occurred on West's behalf and, secondly, because the post should have gone to the candidate whom the professors regarded as 'best fitted', which West was not. Four days later, West's appointment was declared void and Gamgee was elected¹⁴. West's friends were angry, claiming that the substitute appointment should not have happened without a separate meeting¹⁵. Eventually a compromise was reached and both Gamgee and West were elected¹⁶. But this was not the end: who would be the senior, Gamgee or West?¹⁷. It was decided that they would be on equal terms, with seniority to be determined later. Surprisingly, four years later West was appointed as Gamgee's senior². The following testimonials¹⁴ show that Gamgee had already made a name for himself.

'...no one in the profession...is in every way so highly qualified as Mr Gamgee for the post of surgeon to a hospital...'—John Erichsen

'Mr J S Gamgee...is a gentleman exceedingly well qualified in his profession, and equally active and zealous, and a good linguist'—G J Guthrie

'You were conspicuous for your superior talents...and your enthusiastic passion for surgery...your turn of mind is peculiarly practical, and all your investigations have a bearing on the improvement of the art you profess'—Joseph Lister

'...the profession [has] every good reason to expect much aid and advancement...from Mr Gamgee.'—James Young Simpson

THE SURGEON

In 1873, Sir John Eric Erichsen, then one of the leading surgeons of the day, declared that 'the art of surgery can only be carried to a certain point of excellence. That we have nearly if not quite reached the final limit, there can be little question'. He believed that the wise and humane surgeon would never operate inside the head, the chest or the abdomen¹⁸.

Gamgee, however, was ahead of his time. In 1865 he asked 'What should a surgeon be?', and his answer was 'A physician and a good deal more'¹⁹. In a lecture entitled *The Surgical Epoch* he stressed that without true scientific

knowledge surgery would be reduced to a mere handicraft²⁰.

From Gamgee's writings it can be seen that he taught ten principles for surgical practice²¹.

- Study each case as fully as possible
- Win the confidence of the patient
- Be prepared for every emergency
- Have all your appliances on the spot and ready for use
- Make up your mind what to do, and do it without hesitation
- Use firm delicacy or gentle force as required
- Swiftly is good, but safety is better; the best evidence of skill is not in the rapidity of movements or sleight of hand, but in the recovery of the patient
- Be collected and self-reliant
- Treat every case as if your reputation depends upon it
- After operation, work is only changed, not ended; postoperative watchfulness is indispensable.

Gamgee had a great regard for the history of surgery, arguing that to understand the present it is necessary to 'contemplate the past, the present, and the future'²⁰. He was also an internationalist: '...rich as the medical knowledge of this country is, anyone would form a very imperfect notion indeed of the literature of medicine who neglected the libraries of Italy, Germany, France, and the United States of America'²². His ease with Italian, French and German was that of a native, allowing him to read continental journals and publish in them²; he read widely²³, and on Saturdays the first thing he would ask for was 'this week's *Lancet*'². But he was modest about his attainments, declaring that 'If you are diligent in questioning me, you will often discover many gaps in my knowledge of surgery'²⁴.

Surgical procedures

As early as 1856, Gamgee published a textbook, *Researches in Pathological and Clinical Surgery*²⁵, which was commended in *The Lancet* as 'a collection of very interesting papers, in which the subjects are very ably handled'²⁶. In his first year at the Queen's, only fifty-four operations were performed, mainly for strangulated hernia, bladder stones and emergencies such as fractures and wounds⁴⁻⁶. Before any major operation, all the senior staff would meet to decide whether surgery was avoidable, in view of the high postoperative mortality rate^{5,6}.

In 1865 Gamgee performed his first abdominal section, for ovariectomy, a very risky operation at the time^{3,6}. He described this procedure as one of three events 'than which no greater or more important have ever occurred in the history of medicine and surgery' (the other two being the

invention of the stethoscope and the introduction of anaesthetics). Justifying his claim he said that medicines were of no use for ovarian tumour but successful surgery would produce a lasting cure²¹.

Gamgee's first outstanding operation was an amputation at the hip joint in 1862, the report of which was published in 1865 (Figure 2)¹⁹. This procedure was first performed in 1803 by Larrey, Napoleon's surgeon²⁷. Gamgee's patient had an enormous osteochondroma of the femur, complicated by its vascularity and the man's exhausted condition¹⁹. Haemorrhage was checked with an abdominal aorta clamp specially designed by Lister¹⁹. All the surgeons of the hospital assisted; Gamgee's brother Arthur administered the anaesthetic and the patient made a good recovery¹⁹. Reviewers described the report as more 'carefully detailed and splendidly illustrated' than any other case in the annals of surgery, though Gamgee was criticized for the amount of 'padding' it contained²⁸, with a whole page on the necessary qualifications of a surgeon and a chapter 'Critical Observations on Medical and Surgical Statistics'.

In 1868, he controversially removed the entire tongue for cancer, thought of by others as a 'cruel and unnecessary' procedure; Gamgee compared such negativism to that

previously surrounding ovariectomy²⁹. His patient died, and he used the case to call for further investigation, saying that no condition is 'in need of more precise pathological investigation, wider bibliographical research and closer statistical scrutiny'²⁹.

Fractures and wounds

Gamgee made great advances in the treatment of fractures and wounds, perhaps because of his experiences in the Crimean War. While a student at University College London in 1853 he introduced into England the 'starched apparatus'^{3,5,6} winning the Liston Gold Medal for his essay³⁰. This provided a firm, light casing for the limb³¹. At that time, fractures were not reduced until the swelling of the soft tissues had gone down: against much opposition, Gamgee advocated immediate reduction and application of the starched apparatus³⁻⁵. Gamgee's son recalled his father referring to the 'surgical trinity' in the treatment of fractures—rest, position and pressure⁴. These three words were used frequently in his teachings. His results were excellent³²⁻³⁴.

He is best known for his revolutionary views on wound treatment³⁵, believing in dry, firm absorbent dressings, disturbed as infrequently as possible—at that time an innovation. Gamgee outlined his method for the first time in 1867³⁶. At the same time, Lister was using Pasteur's germ theory as a basis for his antiseptic surgery³, maintaining that the essential cause of suppuration in wounds was decomposition brought about by the influence of atmosphere upon blood or serum retained within the wound⁶. In opposition to Gamgee's approach, he placed calico saturated with undiluted carbolic acid in the wound and covered it with lint saturated with undiluted carbolic acid³⁷. Gamgee never used strong antiseptic lotions, believing that these lessened the resistance of the tissues³.

It has been alleged that Gamgee opposed Lister's antiseptic theory because he could not believe that his friend had discovered anything more worthwhile than he had⁶. However, he obviously had a deep respect for Lister, for he took his son to see him just so he could say he had shaken hands with the great man⁴. Gamgee studied Pasteur's germ theory and held to his own principle that 'life is a great antiseptic'⁶.

Gamgee insisted on absolute cleanliness around the patient and is said to have been the first surgeon in Birmingham to wash his hands before operating³⁻⁶. He did not believe that the germ theory should be accepted as a foundation for a new system of surgical procedure³. Many of Gamgee's contemporaries followed Lister's teaching in part but missing the underlying principles. As long as they worked under a cloud of carbolic spray, they thought they could scratch their heads and blow their noses at will³. The

*Joseph Lister Esq. F.R.S.
with kind remembrance
The Author*

HISTORY

A SUCCESSFUL CASE

AMPUTATION AT THE HIP-JOINT,

(THE CASE OF TROUSSEAU'S CASE)

BY

J. SAMPSON GAMGEE,

Surgeon to the Queen's Hospital, Birmingham; Late Staff Surgeon of the First Class, Foreigns
Corresponding Member of the Society of Surgeons of Paris.

WITH FOUR PHOTOGRAPHS, BY SARONY AND FERRIS-PÉTE.



LONDON:
JOHN CHURCHILL AND SONS, NEW BURLINGTON STREET
1865.

Figure 2 Title page from monograph, with dedication to Lister (from Ref. 19)

use of carbolic spray obscured many of Lister's principles, and he himself abandoned it in 1887, regretting that he had ever introduced it¹⁸.

Gamgee's principles are the foundation of much modern wound treatment⁶, and his dry absorbent dressings were a major advance. Unlike non-absorbent dressings, which quickly became soggy and had to be changed daily, they could be left in place for over a week^{3,4}. Having read an article published in 1842 by Dr Mayor of Lausanne describing the use of cotton wool and gauze for dressing of wounds, Gamgee emulated this method³⁻⁶. He soon found the perfect material to combine firmness with ability to absorb fluid—cotton wool with the grease extracted from it. In 1880 Gamgee announced in *The Lancet* his use of a sandwich of absorbent cotton wool between absorbent gauze³⁸.

The medical journals contained many reports of the preparation and use of 'Gamgee tissue'^{39,40}, which became a household name.

REFORMER AND EDUCATOR

Gamgee took a forceful interest in medical politics, playing an active part in the BMA's attempts to obtain direct representation of the medical profession on the General Medical Council⁴¹.

During the nineteenth century, medical services for the poor shifted from philanthropy towards self-help⁴², and in Birmingham, Sampson Gamgee was instrumental in bringing about this shift. Hospital Sunday had been introduced in 1859, providing for collections by church congregations. Hospital Saturday was to cause a more rapid move towards self-help. Gamgee opposed the system of indiscriminate hospital relief, with huge numbers of people visiting the outpatient departments of charitable institutions though not in need of charity⁴³. He prophesied that, as standards of living and education rose, working people would not want charity, preferring to support hospitals for treatment as a right for which they had paid⁵. The public would no longer expect the medical profession to provide unpaid service, and reform of the system would allow doctors to conduct their original research without having to earn a living in private practice³.

In December 1868, Gamgee called a meeting bringing together working men and leading manufacturers^{5,6}. He suggested that the artisans of the town could be persuaded to make small regular donations, adding up to substantial sums, for the provision and maintenance of hospitals in the town⁵. This was enthusiastically supported and a public meeting was held to discuss the extension of the Queen's Hospital to provide a proper outpatient and accident department: the Working Men's Fund for the Extension of the Queen's Hospital began⁵, and £3500 was raised by the end of 1871³. The scheme was a success, and the new block

was started in 1871 and opened in 1873⁵. The working men decided to support the fund financially, and in 1873 the Hospital Saturday fund was finally set up³. Money was raised by door-to-door collections and the holding of a Hospital Saturday, when people were encouraged to work overtime and donate the earnings to the Fund⁵. The annual collections averaged £4000 and in 1876 contributions to medical charities were £5200 (compared with only £506 in 1867)³. From this successful venture numerous hospital contributory schemes developed all over the country⁵.

CONCLUSION

In 1881, a severe attack of haematuria caused Gamgee to retire from active hospital work⁶, though he remained an honorary consulting surgeon and continued to write, lecture and see a small number of private patients^{3,5}. The illness was a great blow since he had no savings; though he had earned well, he had often been generous beyond prudence in charity⁶. In August 1886, while on holiday in Dartmouth, he slipped and fractured his right neck of femur. In bed at home, he saw patients and dictated his correspondence for a fortnight²³, but an exacerbation of his kidney disease (Bright's disease) led to his death on 18 September, 1886⁵. In Birmingham the streets were lined by thousands of people for his funeral, and more than twenty carriages followed the hearse².

Sampson Gamgee had married Marion Parker, the daughter of an Edgbaston veterinary surgeon, in 1860⁶, and they had two daughters and two sons, who both qualified in medicine^{3,5}. His younger son Leonard had a notable career as a surgeon, retiring as professor of surgery in 1931³.

Sampson's father Joseph died in 1895, aged 94, an eminent veterinary surgeon and teacher at Edinburgh³. His younger brother John, once described as the greatest genius the British veterinary profession has ever produced³, is credited with giving London its first artificial ice rink while conducting research into meat refrigeration³. Both John and Sampson died before their father. Their younger brother Arthur became a Fellow of the Royal Society and has been called the founder of British biochemistry³.

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