

## Sir William Arbuthnot Lane, 1856–1943

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**Abstract** This biographical sketch on William Arbuthnot Lane corresponds to the historic text, *The Classic: The Operative Treatment of Fractures*, available at DOI [10.1007/s11999-009-0860-4](https://doi.org/10.1007/s11999-009-0860-4).

Sir William Arbuthnot Lane was born July 4, 1856, in Fort George, Inverness, Scotland [2, 7]. His early education was in Scotland. His father, a military officer, moved the family about. Owing to matters of convenience and finances at the time, his father arranged for him to enter Guy's Hospital at the age of 16 for medical training. He was apparently shy [10] and had a youthful appearance even for his young age, a point that created some problems for him with his fellow students, who nonetheless soon realized his exceptional abilities [2]. He qualified at Guy's Hospital and as a member of the Royal College of Surgeons in 1877 at the age of 21 (becoming a Fellow in 1883). He subsequently received Bachelor of Medicine and Master of Surgery degrees from the University of London [7]. He procured an appointment at Great Ormond Street in 1883 but returned to Guy's in 1888 at the age of 32 and spent most of his career there.

He was evidently as skilled as he was prolific. Jones noted,

“In one morning at Guy's I saw him do an unusually difficult palatoplasty for cleft palate in a small child, a resection of the lower jaw for malignant disease, an open reduction and plating of both bones of the

forearm for fracture, and a total colectomy, from cecum to sigmoid, with a terminal ileosigmoidostomy, by his method of anastomosis—for the relief of what is still known as “Lane's disease.” Upon all these operations he stamped the seal of his personality by the originality of his procedures and the smoothness, ease, and perfection of technic that proclaimed a real master, a master who dared where others quailed and who succeeded where others would have failed without his skill, his precision, and the confidence with which he planned and executed his operations” [2].

Lane traveled extensively, developing international friendships and colleagues and frequently visited the United States [7]. He retired from practice at Guy's Hospital in 1920, but continued a practice out of his home office [2]. He often held strong opinions and in fact after retirement “asked to have his name removed from the Medical Register, in order to promote the New Health Society (the first organised body to deal with social medicine), to avoid being disciplined by the General Medical Council. He had founded the New Health Society in 1925 to publicise his views on healthy diet and life” [10].

As with virtually all surgeons of the time, he had broad interests and became particularly well known for his work with cleft palate and intestinal tract [7]. However, perhaps his most lasting influence was with internal fixation of fractures. Peltier [9] suggested that prior to antiseptic surgery introduced by Lister in the 1860s [6], there were only anecdotal reports of using wire suture, cerclage, or ivory pegs to internally fix fractures. Lister himself reported internal fixation of a displaced patellar fracture with silver wire. Beginning in 1892 (before the introduction of radiographs) Lane began using screws and wires [8] to

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internally fix displaced fractures. His rationale was the poor results of nonoperative treatment in some of these fractures:

“A careful inquiry into the results of the treatment of fractures by splints and manipulation confirmed the experiences of the dissecting room and showed that the consequent joint changes meant depreciation in physique and the wage-earning capacity of those who had to engage in laborious pursuits” [5].

Our rationale for internally fixing fractures is similar over a century later. However, the notion of internal fixation raised no small amount of reaction from the conservative medical community. Lane himself noted,

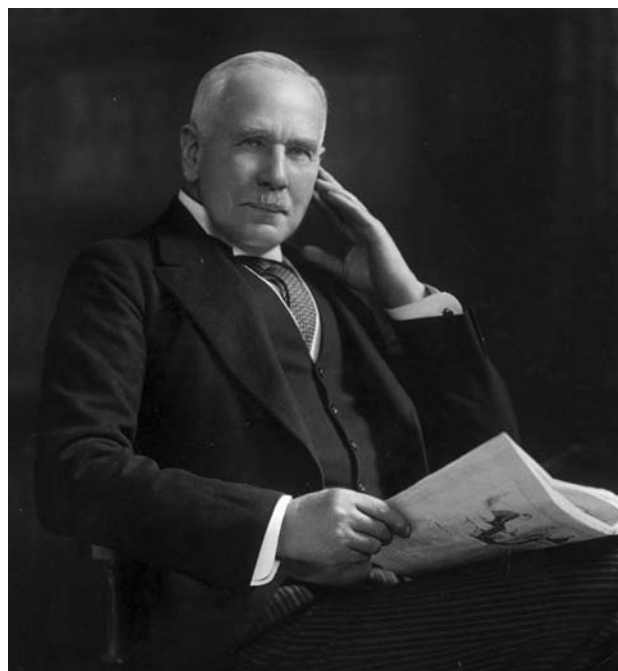
“These views met with violent opposition till the discovery of X-rays proved that the first contention (the high rate of nonunion of displaced fractures) was true, while the law courts are steadily impressing on the profession, in a costly manner, the disabilities which are associated with the imperfect restoration in the form of broken bones” [5].

Evidently, lawsuits, then as now, helped dictate the evolving standards of treatment, with patients (and attorneys) not accepting less than perfect reductions. Matas, writing Lane’s obituary forty years later, also emphasized the controversy surrounding Lane’s advocacy of internal fixation:

“...his operating on simple fractures raised a storm of criticism and even abuse. In his hands the operation was performed under strict asepsis but some other surgeons less meticulous in their technique failed to obtain union of the fracture owing to sepsis. This led to a tendency to blame the operation rather than the manner in which it was performed” [7].

He nonetheless persisted and published his first book, “The Operative Treatment of Fractures” in 1905, reporting good results with apparently few cases of infection [3].

In the article from 1909 we reproduce here [5], Lane describes this procedure in some detail. To minimize infection, he used strict aseptic procedures and developed the “no touch” technique. In addition to using antiseptic agents, he ensured the skin and wound edges were covered by thick “gauze” and not exposed or touched. In the 1890s he had developed long instruments to ensure even the gloved hand did not touch any part of the wound. (Surgical gloves were relatively new and not in widespread use, having been introduced by Halsted in 1889 [12]. Halsted contracted with the Goodyear Rubber Company to create sufficiently thin gloves that would allow the surgeon adequate sensitivity.) Though skilled technically, Lane recognized the difficulty in placing a screw through both



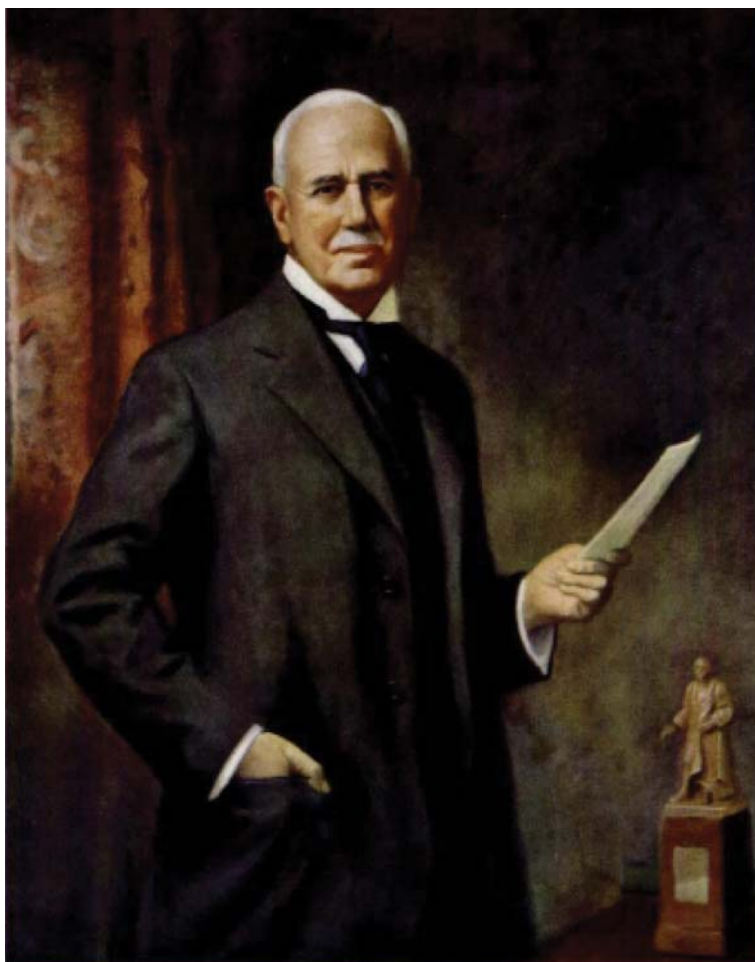
**Fig. 1** Sir W. Arbuthnot Lane is shown [General Photographic Agency/Hulton Archive/Getty Images].

cortices, “To reduce the difficulty of finding the drill hole in the distal compact layer of bone, which is frequently of no avail when the fragment is comminuted, I employ screws of a length only sufficient to engage the proximal compact tissue...” [5]. This is a practice, however, that had largely been abandoned by the time of the AO school of thought in the late 60s. Lane introduced plates in 1907 [4] (Figs. 176–178). “...in the vast majority of cases I prefer to use as long and as strong a steel plate as possible, carrying as many screws as space permits” [5]. These were not made of stainless steel, since most forms of stainless steel were not discovered until into the next decade, and then were not widely used for medical applications for some time after [11]. However, he often internally fixed complex fractures (Fig. 197). One author reported a 45-year followup of one of these plates, apparently without any subsequent complication [1] (whether and how most of these fared long term is unclear from my literature review).

Lane cautioned about operatively treating compound fractures, even those that had apparently healed:

“It is well to remember that it is never perfectly safe to operate on a compound fracture, even though the wound has been healed for months, and there be no evidence whatever of the presence of any inflammation process about the fracture. It would be possible for organisms introduced at the time of injury to remain latent for long periods of time, and to light up into activity when a large foreign body is introduced” [3].

**Fig. 2** Portrait of Sir W. Arbuthnot Lane is shown (reproduced with permission and copyright © of the British Editorial Society of Bone and Joint Surgery. Jones AR. Sir William Arbuthnot Lane. *J Bone Joint Surg Br.* 1952;34:478–482).



**William Arbuthnot Lane**  
1856-1943

**Fig. 3** Sir W. Arbuthnot Lane (left) in 1932 at a Foyle's Literary Luncheon at Grosvenor House in 1932 with English writer Radclyffe Hall (center) and Una, Lady Troubridge (right) [Sasha/Hulton Archive/Getty Images].



**Fig. 176–178** Lane's set of plates and instruments is shown. (From Lane WA. *The Operative Treatment of Fractures*, 2nd ed. London, England: The Medical Publishing Company, Ltd; 1914; photograph courtesy of Library, College of Physicians of Philadelphia.)

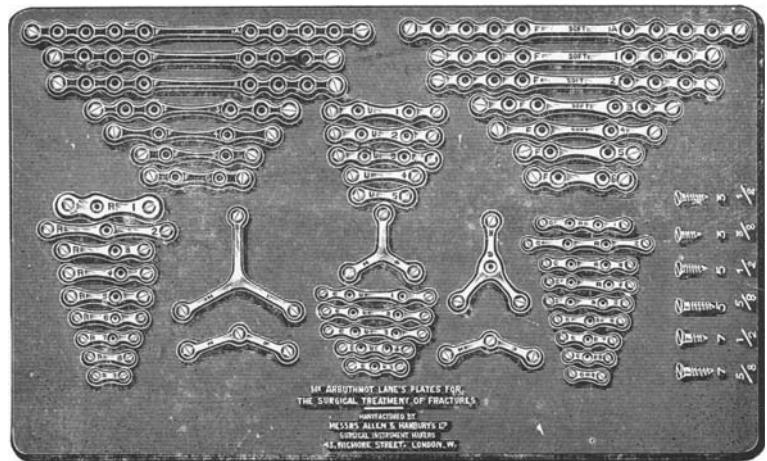


FIG. 176.



FIG. 177.

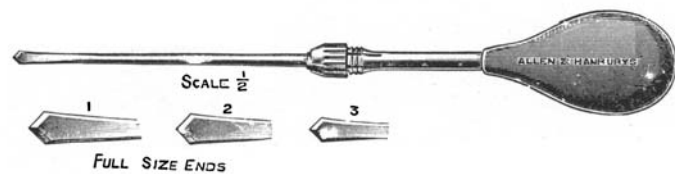


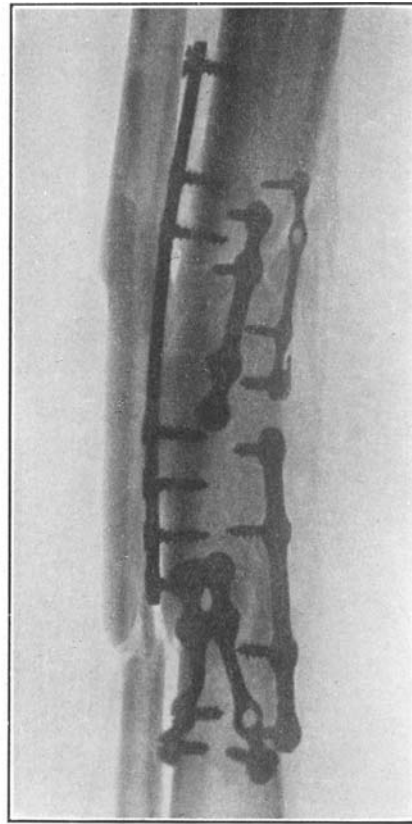
FIG. 178.

The apparent success of his approach to internal fixation no doubt attests to his meticulous aseptic and surgical technique and Lane likely had as much or more influence

on the introduction of the internal fixation of fractures as any of the other early pioneers such as Lambotte and later Sherman.



**Fig. 197** Internal fixation of a complex fracture is shown. (From Lane WA. *The Operative Treatment of Fractures*, 2nd ed. London, England: The Medical Publishing Company, Ltd; 1914; photograph courtesy of Library, College of Physicians of Philadelphia.)



**Fig. 197.**—Skiagram taken April 26th, 1911, showing reposition of parts two months after operation. The formation of new bone is indicated but faintly.

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