Edward Alanson: responsibility in surgical innovation.

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Edward Alanson (1747-1823) was born in Newton, Lancashire. Sixteen years old he was apprenticed to a surgeon at the Royal Liverpool Infirmary, Pickering, in whose family he stayed for five years. He then studied for two years with the already famous experimental surgeon John Hunter in London. Back in Liverpool he was quickly appointed as a surgeon at the Liverpool Infirmary in 1770. This was the time in which this institution, founded in 1749, experienced a substantial medical shake-up when all six of its consultant posts, three surgical and three medical, fell vacant, and six young men with original and enquiring minds were appointed. Some of them such as Henry Park (1744-1830), appointed as a surgeon in 1767, Matthew Dobson (1731-1784), appointed as a physician the same year as Alanson, and James Currie (1756-1805) working there later, were interested in statistical recording. These men were more than colleagues at one hospital: there was a remarkably close friendship and co-operation, not only between the surgeons but also with the three equally brilliant physicians. These consultants helped each other in their research projects. Throughout his career, Park kept a careful record of all his obstetric cases (which eventually totalled nearly 4,000 between 1761 and 1830). Dobson used records of 15 provincial hospitals and questionnaires for his epidemiological studies of bladder stone. Currie substantiated his cold water bathing in “fevers” (typhus) by honestly reporting his extensive records from the Liverpool Infirmary and the fever wards of the Liverpool workhouse. This was the atmosphere in which Alanson worked until his retirement from the Infirmary in 1794 to Aughton, near Ormskirk, and later to Wavertree, near Liverpool, where he practiced till shortly before his death in 1823.
Alanson’s achievement

Edward Alanson is still remembered among historians of surgery for having induced a ‘revolution’ in amputation technique by combining two new techniques that replaced the traditional flat stump, i.e. he combined the new flap-technique with the immediate post-operative union of the skin-edges by apposition. (Both were not his inventions; as he insists, the combination was.) Therewith he hoped to achieve direct wound healing, by first intention (as this was called) rather than via the usual lengthy suppuration, i.e. by second intention. He acquired a reputation for this in his life-time. This invention was first published in Practical observations on amputations (1779).6

To-day I want to draw the readers’ attention to the care, we might say the method, he chose to communicate his invention. For this was still quite new in 1782. Alanson felt responsible to the public when proposing a change in the technique of amputation – an operation ‘terrible to bear, horrid to see, and [which] must leave the person on whom it has been performed, in a mutilated imperfect state’.7 Therefore he substantiated the superiority of this innovation by comparing the results of his new method numerically with those he had previously observed using the old technique. Alanson presented the results of his analyses using this “historical control group”, and referred frankly to some of its hidden pitfalls in the preface to his book. His motivation shows social responsibility and hints at the novelty of his methodology:

When we attempt to introduce any new and important deviations from the common mode of practice into general use, and, particularly…in the mode of performing and after-treating one of the principal operations of surgery, the public have a right to be fully acquainted with the author’s reasons and motives [...] and such trials should likewise previously have been made, as are sufficient to demonstrate that the doctrine recommended will bear the test of general experience [...] Had I been aware of the utility of such an attention, I would not have omitted taking an accurate history of every amputation at which I have been present. However, the following heads of success may be relied upon, and I hope will answer my present purpose.8

Judged by his mortality and morbidity statistics, Alanson's new technique was an improvement: whereas ten out of 46 patients had died after the old procedure, none of the 35 patients he treated with the new technique had died, and the postoperative course had been much less complicated following the new one.

7 E. Alanson, Practical observations, 2nd edn (London, Joseph Johnson, 1782), pp.xi- xii.
8 Ibid., pp. vii-viii.
Alanson insisted that the 35 patients whom he had treated in the new way had been unselected referrals to the Liverpool hospital, ‘where the practice has been made as public as possible’, rather than in, often secret, private practice.⁹

Alanson also requested information on the results of his colleagues. He published some of their observations together with some of his own as selected illustrative cases, broken down according to the anatomical localisation of the operation (thigh, above ankle, arm, forearm). In a qualitative way, this breakdown showed simply that the new technique was applicable to all parts of the limbs. No attempt was made to compare outcomes by site of operation, or by indication for amputation.

Alanson's report shows various facets underlying the collection of facts to be presented as “statistics”: not only was he aware of the danger of selection made after the operation according to the outcome (reporting bias), but also of a possible bias in the admission or exclusion of certain cases from surgery at all. He asserted: ‘I have never refused to operate upon any case that has presented, where a single person in consultation has thought such operation advisable’.¹⁰ Furthermore he requested ‘that those who do me the favour to adopt the practice, will execute it exactly as recommended; for every single portion is so intimately connected with the rest, that they cannot remove one part, without danger of bringing down the whole fabric’.¹¹ In other words, he wanted his colleagues to test his invention fairly, lest it might be unduly discredited.

As a matter of fact, the technique seems to have been quickly adopted in Great Britain and on the Continent. A second English edition of *Practical observations on amputations* appeared in 1782, much enlarged by the favourable judgement of many colleagues; French and German translations came out in 1782 and 1785, respectively.¹² The technique of immediate union of the wound-edges was also propagated in Benjamin Bell’s *System of Surgery* (1783-1787), which became one of the foremost surgical textbooks in Europe during the last two decades of the 18th century with translations into German and French.¹³

Alanson’s method of communication featured four points: i) He presented factual results (rather than extolling words); ii) He used the complete data from a reliable source (rather than selected from memory); iii) He used precise numbers (rather than vague general terms); and iv) he made a comparison (rather than simply looking at his new method).

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⁹ Ibid., pp. xiii, xv-xvi.
¹⁰ Ibid., p. xv.
¹¹ Ibid., pp. xix-xx.
¹² Hirsch, *Biographisches Lexikon*.
To put this quadruple approach into context I want to quote, by contrast, from the review of the second edition of Alanson’s book in *The English Review* of April 1783: ‘Experience must determine in a matter of such importance [...]. The trials made of it in London have been frequently, though not always successful, and from the accounts we have been able to collect, the success has been more general than the failure’. The wording is extremely vague. It does not fulfil any of the four points used by Alanson. Nothing is mentioned in this very favourable review about his having used comparison and numbers. This did not obviously strike the reviewer. This might be accounted for in a book review. Did he consider it “normal”? From a more systematic study of the review literature of the time I can answer this question tentatively: I do not think so.

The reviewer was, typically for many a surgeon, keen on the technical points of Alanson’s invention rather than on the comparative results, yet the latter were important for the Liverpool surgeon. He therewith, quite untypically, took the patients’ point of view; on the basis of empirical results rather than on mere theoretical and technical grounds he took on responsibility for them. After all, they were to undergo an operation ‘terrible to bear, horrid to see, and [which] must leave the person on whom it has been performed, in a mutilated imperfect state’.

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14 *The English Review* (1783), April, 321.