History

Sir James Lancaster the Explorer

M Thompson

Introduction

The developing role of the naval surgeon has been studied extensively throughout time and many characters and events are well known in popular history. Commodore George Anson’s scurvy riddled voyage in 1740, the unprecedented health amongst Captain Cook’s South Sea Crews and Lord Admiral Nelson’s variety of war injuries to name but a few. One character has been largely overlooked to date. His role and contributions are debatable but the following tale warrants a place for him in history not least for some accidental brilliance and his role as a forerunner to James Lind’s 18th century clinical trial for the treatment of scurvy.

James Lancaster

Captain Sir James Lancaster, as he later became known, commanded many British explorations under sail to the East Indies and the Indian sub-continent between 1591 and
1603. Little of his early life is known. His will states he was born in the Parish of Basingstoke, Hampshire, in 1554 or 1555 (Foster, 1940. pg xiii). Unfortunately the parish records for that time no longer exist so details of his parents are unknown. He states himself in his journals that he was “by birth of gentility” (Anon, 1601-1606. pg 57) but this statement may have been propagated by a need for recognition or a social standing in his chosen career, as he provides no other details at any other stage.

He appears to have spent his early life in Portugal, however, which does suggest a certain degree of family wealth, perhaps through trade. He states of the Portuguese: “I have bene [sic] bought up among this people: I have lived among them as a gentleman, served with them as a soldier, and have lived among them as a merchant” (Anon, 1601-1606. pg 43)

Although much is speculation, Foster has interpreted this to give a brief outline of what may have happened to Lancaster (Foster, 1940. pg i-xxxvii). It is probable that he was sent to Portugal to learn the language and the merchant trade at a relatively young age. The civil war in 1580 was likely to have been when he raised arms, fighting and losing for Don Antonio, and then being driven back to England with many of the other English ex-patriots at that time.

It is his appointment as Commander of one of the earliest British expeditions to the East Indies in 1601 that is of particular interest. After one failed mission a decade earlier (1591), which lost many men to scurvy and two ships to mutiny and the elements, Lancaster took four ships, including his flagship the Red Dragon, around the Cape of Good Hope to the Nicobar Islands and Kotaraja in Indonesia (Foster, 1940. pg i-xxxvii).

The Trial

During this new age of British sea exploration, the military surgeon was being met by new challenges. One of the most devastating diseases to the sailor, be him part of the merchant fleet or Royal Navy, was the scurvy; a disease characterised by vitamin C deficiency that eventually proves fatal (Fujita, 1990). As seafaring became more established and voyages became longer and less reliant on constant land-based replenishment, scurvy became the cause of more loss of life than conflict with enemies (Carpenter, 1986. pg 46). In 1971, CP McCord showed that over one million sailors perished of the scurvy between 1500 and 1800 (McCord, 1971) and this may even be a conservative estimate (Cuppage, 1994. pg 11).

Lancaster’s journey took a total of sixteen months and was the platform for an interesting series of scurvy related events that were, fortunately, well documented by an anonymous scribe on board the Red Dragon (Anon, 1625).

Lancaster himself had fitted out all four of the ships to his specifications (Foster, 1940. pg xxv). The living conditions on board each vessel would have been similar, although the flagship was slightly heavier and had a larger crew (Foster, 1940. pg xxv). There is no reason to believe that the general diets on each ship would have differed significantly with standard rations being given to every sailor and the initial health of the sailors before embarkation is most likely to have been similar. The only difference between the crews was that on the flagship, the men were made to take two spoonfuls of lemon juice in the mornings as an addition to their normal diet. Whether Lancaster arranged it this way deliberately is an important issue but seems unlikely – it is probable that limited supplies forced this situation. According to the scribe, by the time the ships had finally crossed the equator and had caught the South-Westerly trade winds:

“very many of our men were fallen sicke of the scurvey in all our ships, and unlesse it were in the generals ship only, the other three were so weake of men that they could hardly handle the sayles.” (Anon, 1601-1606. pg 79)

Although there is no record of a deliberate attempt to control confounders or a detailed method, the differences between the control and treatment groups are minimal. With one variable having been deliberately altered, that is the addition of lemon juice to the sailors’ diet in
one of the groups of subjects, this situation provides us with an excellent example of controlling a trial, albeit accidentally.

Lancaster’s intent must be discussed in more detail. His Portuguese upbringing, time spent in the merchant trade and his unsuccessful earlier voyage may have all influenced him in the decision to provide his men with the juice, although this is purely speculation on my behalf. The Portuguese are known to have advocated the use of fresh fruit to prevent scurvy far earlier than the British (Carpenter, 1986. pg 2). Moreover, Lancaster’s career, although not affected by his far from victorious maiden voyage to the East Indies in 1591, may have had a lot riding on the success of this mission. He was also due a large financial reward on his return and he had invested much of his own money into the company’s stock just before his voyage (Foster, 1940. pg xxvi). Thus, I propose that he may have taken every precaution he could think of to ensure the success of his voyage. In other words, he decided to try and reduce the risk of losing men from scurvy based on a Portuguese theory that lemon juice was a preventative. The use of matched control groups would add weight to any conclusions drawn from this ‘experiment’ many years later, but it was probably not Lancaster’s intent to conduct a trial against controls.

The scribe even offers his own explanation as to why the sailors had better health on his ship, which provides us with further evidence that Lancaster had known of the beneficial effects of lemons:

“And the reason why the generals men stood better in health then [sic] the men of other ships was this; he [Lancaster] brought to sea with him certaine bottles of the juice of limons, which hee gave to each one, as long as it would last, three spoonfuls every morning… By this means, the general cured many of his men and preserved the rest” (Anon, 1601-1606. pg 79)

The use of lemon juice as a cure as well as a preventative was therefore shown in this ‘trial’. Further evidence is available that shows Lancaster’s knowledge of the treatment of scurvy. This again adds to the ‘scientific’ weight of Lancaster’s experiment. He clearly had an intention to try and prevent scurvy amongst his crew because he:

“had some store of limons and oranges, which were precious for our diseased men, to purge their bodies of the scurvy” (Anon, 1601-1606. pg 90)

Further evidence that Lancaster had good knowledge of the treatment of scurvy compared to his contemporaries comes from the journal diaries of his voyage, if we look at the scribe’s account of the “generals [sic] men” in more detail. It states that:

“…three spoonfuls every morning, fasting; not sufferung them to eate anything after it till noone. This juice worketh much better if the partie keepe a short dyet and wholly refraine salt meate; which salt meate and long being at sea, is the only cause of the breeding of this disease.” (Anon, 1601-1606. pg 79)

This knowledge must have come from experience, perhaps with the Portuguese merchants or his earlier voyages with the East India Company in the Far East. Allowing time for the lemon juice (and therefore vitamin C) to be absorbed before meat and other food was eaten shows a design to his ‘trial’. Thus, because it was clearly no coincidence that Lancaster was using a true anti-scorbutic, the notion that his clinical trial was nothing but a lucky coincidence looks more vulnerable. He had used citrus fruits, perhaps for the first time in recorded history, in a prospective manner to prevent scurvy.

Lancaster also managed to persuade the rest of his commanding officers that oranges and lemons were the way to save lives. If we look at a later account of the voyage home, it is clear that there was no doubt about their efficiency amongst the council:

“Then the Captaine of the vice-admirall called to the general and thought it best to beare into the bay of Antongile [on the coast of Madagascar], and there to refresh our men with oranges and limons, to cleere ourselves of this disease; which was by him and the whole counsel (called for that purpose) approved.” (Anon, 1601-1606. pg 83)

All four ships returned to London in 1603, fully laden with cargo from the East, and the
trip was considered a great success. Storms and illness such as the scurvy had tried and failed to prevent a safe return.

James Lind

One hundred and fifty years after James Lancaster a ship’s surgeon called James Lind (1716 – 1794) was practising as a Royal Naval surgeon and his contribution to medicine is well documented (Carpenter, 1986. pg 54; Harvie, 2002; Thomas, 1997), not least through a republishing of his own treatise on the treatment of scurvy (Stewart, 1953) in its bicentennial year of 1953. The treatise includes a brief description of an experiment carried out on a dozen sailors with scurvy whilst at sea (Lind, 1753). It has been widely claimed that this experiment was the first published clinical trial (Lepreau, 2002; Roddis, 1941. pg 27) and that it ultimately led to the eradication of scurvy amongst sailors (Harvie, 2002; McBride 1991). In this way, Lind is credited with the proof that citrus fruits could cure scurvy. In Louis Roddis’ Short History of Naval Medicine, it is claimed that:

“Lind would be entitled to the Nobel Prize for medicine for such an achievement [his clinical trial] and deserves the warm admiration of every sailor [for proving oranges and lemons are effective against scurvy]” (Roddis, 1941. pg 27)

He is not alone in his praise of Lind for both of these accomplishments. David Harvie, for instance, wrote a tale of Lind’s “prodigious efforts” (Harvie, 2002. pg 276) that puts Lind up on a high pedestal. Duncan Thomas, along similar lines, wrote recently of Lind as a double hero, credited with the discovery of a cure for scurvy as well as being the “forerunner of the modern clinical investigator” (Thomas DP, 1997).

Lind undoubtedly contributed much to his subject. The way in which he wrote up his findings on the treatment of scurvy in his treatise in 1753 showed remarkable insight into what is provided for the reader of a modern scientific document. Elements such as discussing work published before him in great detail and distributing credit where it was due, in his section entitled Bibliotheca Scorbatica (Lind, 1753. pg 262-348), are just two examples of his astuteness.

On the other hand, however, it is well documented that for hundreds of years before Lind, various nations had an idea that oranges could refresh their men, such as the Portuguese and the Spanish as shown in Carpenter’s (Carpenter, 1986) complete and accurate history of scurvy and vitamin C (a book cited by many historians who have written on this topic). RE Hughes, for example, takes a more conservative and arguably more realistic view:

“The use of controlled conditions of experimentation was Lind’s main contribution to medical science; the demonstration that oranges and lemons cured scurvy was an essentially fortuitous happening” (Hughes, 1975)

The famous experiment itself only occupies a very small proportion of the treatise, as pointed out by Derrick Baxby in a letter in 1997 (Baxby, 1997), and does not appear to have had much importance placed upon it by Lind himself as it was not discussed in great detail in his treatise (Lind, 1753) or with much enthusiasm. This suggests that his awareness of the importance of his methodology is not as great as has been depicted in the past by a variety of historical writers (Roddis, 1941; Hughes, 1975). Moreover, it is not until the early nineteenth century when practice in the Royal Navy was actually changed to include anti-scorbutics in the diet of sailors (Carpenter, 1986. pg 63) suggesting his conclusions were not even recognised by many of his contemporaries.

Lancaster has not been entirely ignored. JH Baron has briefly suggested that Lancaster’s actions in 1601 were an impressive early example of a controlled trial (Baron, 1997) and has been supported by FC Rose on this matter (Clifford Rose, 1997). Both these writers have made only a very brief mention of Lancaster, however, and have ignored the fact that his work also provided proof that lemon juice was a preventative against scurvy. In his book, Sea Diseases (Allison, 1943), Surgeon Commander Allison
wrote of Lancaster’s unwitting brilliance. He stated that:

“Without knowing it, Lancaster had performed an important therapeutic experiment, and one which had the additional merit of having been performed against untreated controls living under otherwise identical circumstances” (Allison, 1943, pg 28)

Thus, Lancaster’s work has been given some credit in the past but never as an early clinical trial and a cure for scurvy simultaneously, which, as we have seen, is how Lind is so often depicted. In the introduction of the republished version of Lancaster’s voyage diaries (Foster, 1940) Sir William Foster provides a very useful and detailed account of what is known concerning Lancaster’s upbringing and professional life but, as is expected, discusses neither his contribution to the prevention and cure of scurvy nor his clinical trial in any great depth.

Perhaps most interestingly, James Lind himself mentions Lancaster’s work in his own treatise. He quotes the diaries from Lancaster’s 1601 voyage and claims that they provided:

“a remarkable and authentic proof of the great efficacy of juice of lemons against this disease[scurvy]” (Lind, 1753, pg 152)

So we have the popularly regarded ‘father of clinical trials’ (Redmond, 2001, pg 38) giving Lancaster credit for proving the effectiveness of a therapy. That is, conducting a clinical trial one hundred and fifty years before Lind. The very fact that Lind provided the reader with such a detailed history of scurvy and of the earlier attempts to cure the disease gives his treatise many characteristics of a modern publication and is undoubtedly one of the reasons why Lind has been so frequently praised. Many writers have ignored the contributions of another nautical pioneer, Lancaster, who has provided us with a far earlier example of curing the scurvy.

Conclusion
When Lancaster unwittingly conducted his trial he did so by accident - probably as a direct result of not having enough lemon juice for the entire flotilla. Lancaster was not recognised as having found a cure for scurvy by his contemporaries back home, as they chose to ignore the writings of his scribe, in the same way that Lind did not influence the diets of sailors in the Royal Navy.

Thus, in many ways, Lancaster was an early example of Lind. Perhaps it is because of his lack of formal medical training and his neglect to recognise the full implications of his trip that Lancaster has been overlooked by the current literature. Much of his life is still a mystery, as pointed out by Foster, and this too may have contributed to him being given very little attention in the past for his insightfulness.

Either way, Lancaster is worthy of note at least as an interesting story of fortune and success. He should by no means be remembered for a brilliant scientific mind but his experiences in life did lead to a largely forgotten addition to the long and fascinating tale of scurvy at sea.

Bibliography

Primary Sources


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