

Section of the History of Medicine

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The East India Company and the Control of Scurvy

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FROM 1601 onwards the East India Company's ships carried a supply of oranges and lemons, or lemon juice, for the prevention of scurvy amongst their crews. By the kindness of Mr. Ottewill (Keeper of the Records at the India Office) I have been made aware of the complete knowledge which the Company possessed at that early date of the prevention and cure of scurvy.

So far as I can ascertain, the man who was responsible for introducing the remedy to the Company's ships was Sir James Lancaster, who sailed as Commander of the first fleet sent by the Company to the East Indies in 1600. Grant, in his book *The East India Company*, described Lancaster as a "tried seaman who had been employed some years before in the conduct of a privateering expedition to the East Indies." This "privateering expedition" is included in Hakluyt's *Principal Voyages of the English Nation*, "A Voyage with three tall ships . . . to the East Indies by the Cape of Buona Speransa . . . begunne by M. George Raymond in the yeere 1591 and performed by M. James Lancaster and written from the mouth of Edmund Barker of Ipswich, his lieutenant in the sayd voyage by M. Richard Hakluyt". In this account there are several references to scurvy in the ships. On the return journey they set sail on "the eight of December 1592" because the men said "that they would take their direct course for England and would stay there (Point de Galle in Ceylon) no longer", and "the Captaine was constrained to give his consent to return".

At St. Helena it is recorded that one man "was diseased with the skurvie" but he and another who "had bene nine moneths sick of the flux, in short time while

they were on the Iland recovered their perfect health. We found in this place great store of very holesome and excellent good greene figs, orenge and lemons very faire, abundance of goates and hogs and great plenty of partridges, guinecocks and other wild fowles ”.

From St. Helena they crossed the Atlantic and touched at several of the West Indian islands, running short again of provisions but ultimately reached Rye on “ the 24th of May 1594 ”.

Apart from the reference to fresh fruit at St. Helena which is not specifically mentioned in Barker’s account as being anything more than part of the fresh provisions found on that island, there is nothing to indicate that Captain Lancaster was able to keep his crews free from scurvy nor that he recognized the superior value of oranges and lemons as a remedy.

Yet when one reads the account in *Purchas his Pilgrimes* of “ The first voyage set forth by the East India Company in 1600 ” it is evident that Lancaster had a sound grasp of the prevention and cure of scurvy. Purchas describes how the fleet arrived at Soldania (from a note in Markham’s *Voyages of Sir James Lancaster*, Hakluyt Society 1877, this would appear to be Table Bay) with much scurvy in the ships. The narrative goes on “ The generall (i.e. Lancaster) went aboard them and carryed good store of men. . . . The reason why the generall’s men stood in better health then the men of the other ships was this :

“ he brought to sea with him certaine bottles of the juices of limons, which he gave to each one as long as it would last, three spoonfuls every morning fasting not suffering them to eate anything at all after it till noone. This juice worketh much the better if the partie keep 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. By this meanes the Generall cured many of his men and preserved the rest ”.

A little later another reference to scurvy occurs : “ and to strive long in hope of change of windes wee could not for now our men began againe to fall sicke of the scurvy. Then the Captaine of the Vice-Admirall called to the Generall and thought it best to bear into the bay of Antongile and there to refresh our men with oranges and lemons, to cleere ourselves of this disease ”.

One more reference is to be found : “ (We) sent our Boats aland to Saint Maries where wee had some store of limons and oranges, which were precious for our diseased men, to purge their bodies of the scurvy ”.

Lancaster’s knowledge was quickly applied by the Company so that the supply of fresh oranges and lemons and lemon-juice became official.

In the *First letter-book of the East India Company 1600-1619* this entry appears :—

“ A computation of the chardge for setting forth to sea upon a third voyadge to Bantam and the Moluccos . . . with the *Dragon, Hector* and a pinnace ”. In this computation there is an entry of “ lemon water ” among “ the p’portion of victuals for the two shippes and the pinnace with 280 men ”. The editors of the *First letter-book* (Sir George Birdwood, Surgeon, and Sir William Foster, Head of the records) added a footnote “ We may trace in this item the hand of Sir James Lancaster who was one of the first to use the juice of lemons as an antidote to scurvy . . . not formally adopted by the Admiralty until 1795, nearly two centuries after its value had been pointed out by Albertus and its practical efficacy demonstrated by Sir Richard Hawkins and Captain Lancaster ”. I cannot understand why Albertus is placed in the same category with Hawkins and Lancaster. In his *Schorbuti Historia* published in 1594 Solomon Albertus mentions the value of fresh food generally,

including domestic poultry such as fowls and pigeons or wild fowl, as well as pheasants and partridges which he advises cooking with oranges or orange juice ; elsewhere he recommends various fruits and herbs. But as there is little in the Pharmacopœia of those days which he does not recommend he cannot be said to rank with Lancaster in having singled out oranges and lemons.

In the *Hawkins Voyages* (Hakluyt Society, 1878) there are published "The observations of Sir Richard Hawkins, Knight, on his Voyage into the South Sea". Scurvy is fully described in Section XVI. He recommends scrupulous cleanliness of the ships, of the men, and of their clothes, together with "exercise of work, of agilitie, of pastimes, of dancing, of use of armes"; also "a morning draught of wine or beere".

He concludes: "That which I have seen most fruitful for this sicknesse is sower oranges and lemmons, and a water which amongst others (for my particular provision) I carryed to the Sea, called Dr. Stevens his water". . . .

In this voyage in 1590 Hawkins lay becalmed "nearly 6 months with a fleet of Her Majesties' ships about the ilands of the Azores". He relates how "many of every ship (saving of the *Non-pareil*, which was under my charge and had only one man sick in all the Voyage) fell sick of this disease (i.e. Scurvy) and began to die apace".

Again when he sailed on the *Dainty* to Brazil he says "that the sicknesse of my people made mee to seeke the shore". He put into Santos, now known as Victoria, a Brazilian port in the Bay of Espirito Santo, when the Governor procured for them "two or three hundreth oranges and lemmons and some few hennes".

There is no doubt that Hawkins was as well aware as Lancaster that oranges and lemons were the best cure or preventive for scurvy.

I raised the question with Mr. Ottewill whether it could be established that the East India Company supplied oranges and lemons to their ships as a regular practice. He showed me in the *Letters Received by the East India Company from its Servants in the East* a letter of complaint from Captain Keeling who sailed in command of the Third Voyage with the *Dragon* and *Hector* mentioned above. This letter is dated 19th June 1615 and is couched in a tone which leaves no doubt that he was bringing to the Directors' notice a dereliction or oversight which he judged they would not condone.

"Your lemon water in that fleet stark naught, a complaint of the Portuguese and the fleet generally". The phrase "your lemon water" seems to mark it as an authorized item in the victualling of the fleet.

One more book was produced by Mr. Ottewill in proof of his contention. *The English Factories in India 1630-33* contains (p. 42) Nicholas Sharp's account of the Homeward Voyage of the *Charles* (*Marine Records*, vol. 53, p. 25): "July 14. The fleet from England arrived and landed their sick men; but having no orugings (*sic*) and lemons were not recovered, but something better than they were". This reads as though Nicholas Sharp expected the ships to carry oranges and lemons in their stores.

Lind quotes Purchas's description of Lancaster's voyage with its clear emphasis of the importance of oranges and lemons, but he lays no stress on these particular fruits.

Hess, in his book on Scurvy (Chapter VI: Historical Review) appears to misquote Lind's version of Lancaster's voyage; Hess gives the version: "In the year 1600 four sailing vessels left England for the East Indies. The sailors on three of these ships

did not receive lime juice, whereas those on the fourth received their daily quota. The men of the first three ships suffered severely from scurvy, but those on the fourth escaped". This is a sorry curtailment of Lind who gives Purchas's account verbatim and never mentions *lime* juice at all—nor did Purchas. The phrase was explicitly "the juice of lemons".

Budd, writing the article on Scurvy in Tweedie's *System of Practical Medicine* puts the whole of the early history accurately and clearly: "The efficacy of oranges in preventing and curing scurvy was discovered before the disease had been described by physicians. Ronsseus, one of the earliest writers on scurvy, in a work published in 1564, observes that seamen in long voyages cure themselves of it by the use of oranges. He conjectures that Dutch sailors, afflicted with scurvy on their return from Spain with a cargo of these fruits, had by chance discovered their efficacy.

"Albertus, in a treatise on scurvy, published in 1593, recommends the juice of oranges, and of sour and austere plants. He advises that this juice should be put into soups, and that meat, while roasting, should be sprinkled with it. In the same year, the virtues of lemon-juice in the cure of scurvy were experienced by Sir R. Hawkins, whose crew, while within the tropics were affected with it in an extreme degree.

"We have already given an instance of the extraordinary efficacy of lemon-juice as a preventive of scurvy, in the first voyage for the establishment of the East India Company in 1600. After this it seems to have been pretty generally used in the Company's ships; and, in a medical work published in this country in 1636, it is recommended as the best remedy for scurvy. . . .

"Most of these proofs of the efficacy of oranges and lemons were collected by Dr. Lind, and published in his justly celebrated work on scurvy in 1757. His earnest recommendation for the general employment of these fruits in the Navy was, however, not acted upon for some time; the disease continued to depopulate our fleets, offering a striking example of the delay which sometimes attends the practical application of most important truths."

Once again Hess is guilty of a mis-quotation. He states that Budd tells us that "in the sixteenth century sailors of a Dutch sailing vessel laden with these fruits were attacked with scurvy, and that, when they partook of the lemons and oranges in the cargo, a miraculous cure resulted". This is not what Budd wrote. He quotes this statement as a conjecture of Ronsseus.

It is difficult to see how this knowledge of the value of oranges and lemons did not spread from the East Indiamen to the Navy. I ventured to suggest to Mr. Ottewill that possibly the Company kept the remedy a close secret, but he pointed out that it had been published by Woodall in 1628.

Despite occasional references to the value of oranges and lemons such as occur in *Ives's Journal*, 1745 (quoted by Lind), where he says that he gave "to every scorbutic patient one China orange and three apples", and Lind's advice that lemon juice can be prepared and stored for long voyages, as Lancaster had shown, it was not until Captain Cook's voyage in 1769 that the Royal Navy adopted this means of preventing scurvy.

Even then it was misunderstood, and very often the juice of West Indian limes was provided with disastrous results. The story of Scott's voyage to the Antarctic, and of the Mesopotamian Expeditionary Force demonstrate how long it was before the value of Lancaster's experience and of the practice of the East India Company was fully appreciated.

Woodall's references in his *Surgeon's Mate* are as follows :—

“Further, the chirurgeon or his mate must not fail to persuade the governor or purser in all places where they touch in the Indies and may have it to provide themselves of juice of oranges, limes, or lemons, and at Banthame of tamarinds.”

“And note for substance, the lemons, limes, tamarinds, oranges, and other choice good helps in the Indies which you shall find there do far exceed any that can be carried thither from England ; and yet there is a good quantity of juice of lemons sent in each ship out of England by the care of the merchants, and intended only for the relief of every poor man in his need, which is an admirable comfort to poor men in that disease.”

“The use of the juice of lemons is a precious medicine and well tried, being sound and good, let it have the chief place, for it will deserve it.”

“Some chirurgeons also give of this juice daily to the men in health as a preservative, which course is good if they have store ; otherwise it were best to keep it for need.”

Woodall was born about 1569 and, at the age of 20, served in Lord Willoughby's expedition to render assistance to Henry IV of France. He then travelled for many years in France, Germany, and Poland, living by the practice of his profession until his familiarity with the plague tempted him to settle in London during the great plague year, 1603. Shortly afterwards he was appointed Surgeon-General to the East India Company, and in 1616 he became surgeon to St. Bartholomew's Hospital. He was appointed in 1627 to go to Portsmouth to cure the wounded soldiers that came from the Isle of Rhé in France. He died in 1643.

The Latin text of Ronsseus, with a translation, is appended.

Ronsseus. Epist. II. *On Scurvy.*

Nam et ea, quae secundum methodum sunt, omittamus, novimus nonnullos, qui solo pomorum aurantium unà cum corticibus usa sanitatem recuperarunt. Quod etsi empiricum sit, cum ipsa tamen ratione nonnihil habere commune videtur, siquidem quum in lienis affectibus, auctore Galeno, opus sit attenuantibus pharmacis, citra manifestam aliquam caliditatem, cum modica astrictione, ut robur addatur affectae particulae, aurantia affecto lieni non prorsus inutilia pronunciamus. Incidunt etenim, compescunt aestuantem sanguinem, & robur addunt laesa parti. Caeterum num ratione duce, homines barbari, ad propellen dam hanc luem aurantiis primum usi fuerint, pro incomperato est : mihi probabilior ea videtur opinio, quae fortuitò, & casa quopiam facultatem hanc compertam esse asserat, redeuntibus ex Hispania Batavis nautis, ac uberi novitate aurantium allectis, praeter spem avida quadam gulositate morbum pellentibus, atque id non semel felici successu experientibus.

Translation :—

For to say nothing of the remedies regularly employed in practice, we know of some people who have recovered health solely by taking oranges, skins and all. Although this is empirical it seems to have something in common with reason, for inasmuch as in diseased spleens we need, on Galen's authority, reducing drugs without obvious heating qualities, together with moderate astringent action so that the affected part may be strengthened, we shall

pronounce oranges not wholly useless in a diseased spleen. For they put an end to and check the excessive flow of blood, and give strength to the affected part. Still, it cannot be ascertained whether barbarians, guided by reason, first used oranges to ward off the disease ; to me the more probable opinion seems to be that which maintains that this property was discovered accidentally and by chance by some Dutch sailors returning from Spain who were attracted by the novel richness of oranges, and by their greedy gluttony unexpectedly drove out the disease and had this happy experience not once only but repeatedly.