

A B O U T

The first scientific clinical study

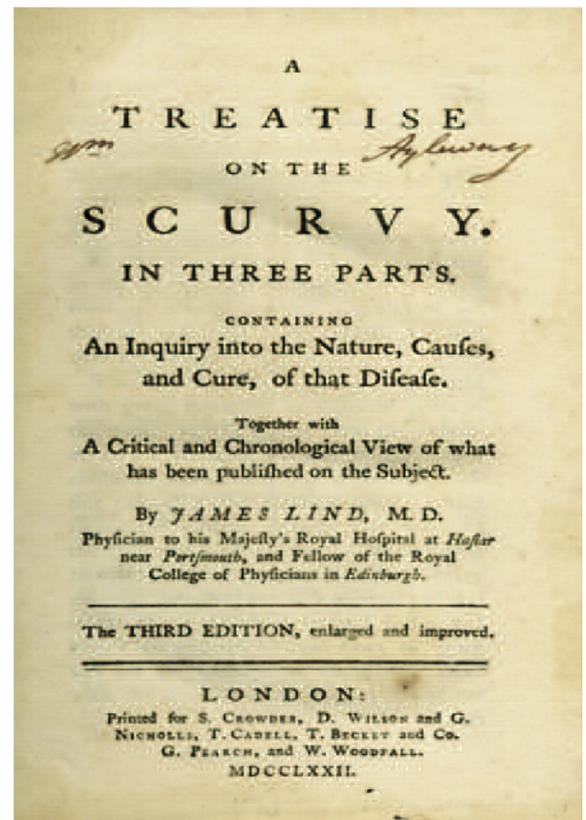
James Lind, London, 1753

Michel AMORIC

Just 25 years after Pierre Fauchard published his pioneering work, *The Surgeon Dentist or Treatise on the Teeth* in 1728, James Lind, a Scottish physician, presented the results of his study on scurvy, the first clinical experiment in the history of medicine, which provided the methodological foundation for modern medicine.

This malady, recognized some 400 years BC, was known to attack, selectively, troops in isolated garrisons. In 1536, Jacques Cartier observed that Indians in the Saint Laurent basin, who were immune to this scourge, regularly drank concoctions made from the needles of coniferous trees. So he gave it to his sailors who were then immunized against scurvy, not knowing, of course, that it was the high level of vitamin C in the beverage that was the active factor. About a century later John Woodall of the British East India Company noted in his 1617 book *The Surgeon's Mate* that lemon juice helped prevent the disease and then, in 1734, the Dutch writer Johann Bachstrom, stated that "Scurvy is exclusively caused by a lack of fresh vegetables in the diet.

But it was James Lind, a British Navy surgeon, who codified his observations into the first clinical medical trial in scientific history. During a long voyage Lind selected 12 men from the crew, all suffering from scurvy, and divided them into six pairs,



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Chap. IV. *Of the prevention of the scurvy.* 149

The following are the experiments.

On the 20th of *May* 1747, I selected twelve patients in the scurvy, on board the *Salisbury* at sea. Their cases were as similar as I could have them. They all in general had putrid gums, the spots and lassitude, with weakness of their knees. They lay together in one place, being a proper apartment for the sick in the *fore-bold*; and had one diet common to all, *viz.* water-gruel sweetened with sugar in the morning; fresh mutton-broth often times for dinner; at other times light puddings, boiled biscuit with sugar, &c. and for supper, barley and raisins, rice and currants, sago and wine, or the like. Two of these were ordered each a quart of cyder a-day. Two others took twenty-five drops of *chris vitriol*. three times a-day, upon an empty stomach; using a gargle of it for their mouths. Two others took two spoonfuls of vinegar three times a-day, upon an empty stomach; having their gruels and their other food sharpened with vinegar, as also the gargle for their mouth. Two of the worst patients, with the tendons in the ham quite rigid (a symptom none of the rest had) were put under a course of sea-water. Of this they drank half a pint every day, and sometimes more or less, as it operated, by way of gentle physic. Two others had each two oranges and one lemon given them every day. These

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might perhaps have been expected from an inspection of several thousand scorbutic patients, from a perusal of every book published on the subject, and from an extensive correspondence with most parts of the world, whereby a knowledge must have been obtained of every remarkable occurrence in this disease; but, though a few partial facts and observations may, for a little, flatter with hopes of greater success, yet more enlarged experience must ever evince the fallacy of all positive assertions in the healing art.

*Est modus in rebus,
Sunt certi denique finis.*

*Hester Hospital,
August 30. 1771.*

giving each group different additions to their basic diet. Some took cider, another pair seawater, and others a mixture of garlic, mustard and horseradish or spoonful's of vinegar. But the test couple ate two oranges and lemons. They experienced a remarkable recovery and the design of test group and control group had been brilliantly introduced. Lind presented

his results in this Treatise of 1753. Here are the relevant sections of the original document:

Of the Prevention of the Scurvy

I shall conclude the precepts relating to the preservation of seamen with showing the best means of obviating

many inconveniences which attend long voyages and of removing the several causes productive of this mischief.

The following are the experiments.

On the 20th May, 1747, I took twelve patients in the scurvy on board the *Salisbury* at sea. Their cases were as similar as I could have them. They all in general had putrid gums, the spots and lassitude, with weakness of their knees. They lay together in one place, being a proper apartment for the sick in the fore-hold; and had one diet in common to all, viz., water gruel sweetened with sugar in the morning; fresh mutton broth often times for dinner; at other times puddings, boiled biscuit with sugar etc.; and for supper barley, raisins, rice and currants, sago and wine, or the like. Two of these were ordered each a quart of cyder a day. Two others took twenty five gutts of elixir vitriol three times a day upon an empty stomach, using a gargle strongly acidulated with it for their mouths. Two others took two spoonfuls of vinegar three times a day upon an empty stomach, having their gruels and their other food well acidulated with it, as also the gargle for the mouth. Two of the worst patients, with the tendons in the ham rigid (a symptom none the rest had) were put under a course of sea water. Of this they drank half a pint every day and sometimes more or less as it operated by way of gentle physic. Two others had each two oranges and one lemon given them every day. These they eat with greediness at different times upon an empty stomach. They continued but six days under this course, having consumed the quantity that could be spared. The two remaining

patients took the bigness of a nutmeg three times a day of an electuray recommended by an hospital surgeon made of garlic, mustard seed, rad. raphan., balsam of Peru and gum myrrh, using for common drink narley water well acidulated with tamarinds, by a decoction of which, with the addition of cremor tartar, they were gently purged three or four times during the course.

The consequence was that the most sudden and visible good effects were perceived from the use of the oranges and lemons; one of those who had taken them being at the end of six days fit for duty. The spots were not indeed at that time quite off his body, nor his gums sound; but without any other medicine than a gargarism or elixir of vitriol he became quite healthy before we came into Plymouth, which was on the 16th June. The other was the best recovered of any in his condition, and being now deemed pretty well was appointed nurse to the rest of the sick . . .

As I shall have occasion elsewhere to take notice of the effects of other medicines in this disease, I shall here only observe that the result of all my experiments was that oranges and lemons were the most effectual remedies for this distemper at sea. I am apt to think oranges preferable to lemons, though it was principally oranges which so speedily and surprisingly recovered Lord Anson's people at the Island of Tinian, of which that noble, brave and experienced commander was so sensible that before he left the island one man was ordered on shore from each mess to lay in a stock of them for their future security. . . . Perhaps one

history more may suffice to put this out of doubt.

“Eft modus in rebus

Sunt certi denique fines”

(There is a measure in things; there are, moreover, certain limits
Horace, *Satires* I. 1. 106.)

James LIND. *A Treatise on the Scurvy in Three Parts. Containing an inquiry into the Nature, Causes, and Cure of that Disease, together with a Critical and Chronological View of what has been published on the subject.* A. Millar, London, 1753.