Luso-Brazilian antiscorbutic herbs

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Abstract

Not only Iberian physicians such as João Curvo Semmedo and Francisco Suárez de Rivera participated in the 17th and 18th-century endeavor of seeking cures for scurvy. Besides those Luso-Hispanic iatrochemists, at least three Portuguese-born surgeons who resided in the Brazilian colony also took part in this crusade. As detailed here Luis Gomes Ferreyra, Jozé Antonio Mendes and João Cardoso de Miranda – each in his own way – advocated that the herb popularly called *mastruço* in Portuguese had antiscorbutic properties. Presently known as *Coronopus didymus* (L.) Sm. (American wormseed) this plant was considered by Gomes Ferreyra to be identical with the one named *erva-de-santa-maria* (lesser swine-cress) or *Dysphania ambrosioides* (L.) Mosyakin & Clemants. Incidentally, such confusion is still common in Brazil.

Keywords

18th-century Brazil; Luis Gomes Ferreyra; João Cardoso de Miranda; Jozé Antonio Mendes; antiscorbutic herbs; American wormseed; lesser swinecress

Plantas antiescorbúticas luso-brasileiras

Resumo

Não só médicos ibéricos como João Curvo Semmedo e Francisco Suárez de Rivera participaram da empresa seis e setecentista de buscar curas para o escorbuto. Além desses iatroquímicos luso-hispânicos, pelo menos três cirurgiões nascidos em Portugal que residiram na colônia brasileira também tomaram parte nessa cruzada. Conforme detalhado aqui, Luis Gomes Ferreyra, Jozé Antonio Mendes e João Cardoso de Miranda – cada um a sua maneira – advogaram que a erva popularmente chamada mastruço em português teria propriedades antiescorbúticas. Presentemente conhecida como *Coronopus didymus* (L.) Smith, esta planta foi considerada por Gomes Ferreyra como sendo idêntica à denominada erva-de-santa-maria ou *Dysphania ambrosioides* (L.) Mosyakin & Clemants. A propósito, semelhante confusão ainda é corriqueira no Brasil.

Palavras-chave

Brasil; Século XVIII; Luis Gomes Ferreyra; João Cardoso de Miranda; Jozé Antonio Mendes; ervas antiescorbúticas; mastruço; erva-de-santa-maria

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Introduction

The goal of the present article is to argue that Luso-Brazilian surgeons also had a share in the 18th-century endeavor of seeking cures for scurvy. In brief, Luis Gomes Ferreyra (1686-1764), Jozé Antonio Mendes, and João Cardoso de Miranda – each in his own way – advocated that the herb popularly called *mastruço* in Portuguese had antiscorbutic properties. Known in English both as American wormseed and garden cress, its currebt binomial name is *Coronopus didymus* (L.) Sm. Gomes Ferreira in particular considered that this species was identical to the one named *erva-de-santa-maria* (lesser swinecress) or *Dysphania ambrosioides* (L.) Mosyakin & Clemants.

Before going into these matters, attention is initially given to the reappearance of scurvy in the 16th century. In addition to being a suitable prologue to the historical episode under discussion here, this discussion will demonstrate that the Portuguese hardly ever were given credit for having participated from the start in the early modern crusade against scurvy. As discussed in the next section, the reason for this seems to reside in a persistent historiographical fallacy centered upon the Scottish physician James Lind (1716-1794), who in 1747 cured two scurvy-stricken seamen after adding fresh oranges and lemons to their diet.

Owing to this most historical studies on scurvy tend to focus on former speculations about the virtues of citrus fruits, whereas little attention has been given to antiscorbutic herbs, equally making up standard treatment of scurvy in the past. According to Elwyn Hugues, even though there are indications of further plants, the traditional triumvirate comprised scurvy grass (also known as spoonwort; *Cochlearia officinalis* L.), brooklime (*Veronica beccabunga* L.), and watercress (*Nasturtium officinale* W.T. Aiton).

After a closer look at these plants, the life and times of Cardoso de Miranda, Gomes Ferreyra, and Antonio Mendes are detailed. Careful attention is also paid to the way each one of them recommended *mastruço* to cure scurvy. This includes Gomes Ferreyra's confusion with *erva-de-santa-maria*. In short, thanks to the testimony of those surgeons, we know that former treatments for scurvy also comprised Luso-Brazilian antiscorbutic herbs.

The reappearance of scurvy in the 16th century

The association between scurvy and a severe deficiency of the antiscorbutic agent called ascorbic acid – today most widely known as vitamin C – is fairly recent. As a

matter of fact, the final stages of such findings ranged from about 1935 to 1953.[1] Long before that countless empirical measures and theoretical proposals were put forward throughout time not only to treat this disease, but also to explain its genesis.[2]

The reason for this is that, as explained by Brian Vale and Griffith Edwards, scurvy "had existed since ancient times". But beginning in the 1500s its incidence "multiplied", owing to the "sharp increase in the length of sea voyages in search of new lands and trade". Often appearing after "as little as six weeks at sea," scurvy steadily turned "the crew into enfeebled invalids" suffering especially from "stinking breath; swollen, bleeding gums; bloated flesh with a rash of bruises; lassitude; and extreme physical weakness leading eventually to death".[3]

Quoting from Stephen Bown, on the whole scurvy "was responsible for more deaths at sea than storms, shipwreck, combat, and all other diseases combined". For that matter, historians "have conservatively estimated that over two million sailors perished from scurvy during the Age of Sail – a time period" of approximately three centuries and a half. More precisely this era began in 1492 with the four voyages across the Atlantic Ocean completed by Christopher Columbus (1450/51-1506) and ended around 1850, when steam power was adapted for engines on ships.[4]

Long before scurvy had reached this dreadful toll it had already earned some ominous bynames. For instance, the Elizabethan explorer and privateer Richard Hawkins (c. 1562-1622) called it "the plague of the sea, and the spoyle of mariners". In the "twentie yeares […] since […] I have used the sea, I dare take upon me to give accompt of ten thousand men consumed with this disease". This is stated in Hawkins' memoirs of his voyage into the "South sea" in 1593, first published in 1622.[5] Nearly two hundred years later, in the second edition of his *Observations on the Scurvy*, the Naval physician Thomas Trotter (1760-1832) confided: "After what has been said by so many

[1] Emmanuil Magiorkinis, Apostolos Beloukas, & Aristidis Diamantis, "Scurvy: Past, Present and Future," *European Journal of Internal Medicine* 22 (2011): 147-52, on 149-50.

[2] In ibid., 147, the authors suggest that the "first reports" of scurvy "are found in [the] Papyrus of Ebers," an Egyptian medical writing, apparently dating from c. 1550 BC, named after the Egyptologist Georg Moritz Ebers (1837-1898). In this papyrus, "in addition to diagnosis, treatment is also recommended by eating onions and vegetables, all nowadays known to be rich in vitamin C".

[3] Brian Vale, & Griffith Edwards, *Physician to the Fleet: The Life and Times of Thomas Trotter, 1760-1832* (Woodbridge: The Boydell Press, 2011), 29; 110.

[4] Stephen R. Bown, *The Age of Scurvy: How a Surgeon, a Mariner and a Gentleman Helped Britain Win the Battle of Trafalgar* (Chichester: Summersdale, 2005), 9.

[5] Richard Hawkins, *The Observations of Sir Richard Hawkins, Knt in his Voyage into the South Sea in the year 1593: Reprinted from the edition of 1622*, ed. C.R. Drinkwater Bethune (London: Printed for the Hakluyt Society, 1847), 59.

able physicians concerning the prevention of Scurvy […], it may seem astonishing that it should still be the scourge of long voyages and a sea life"[6].

Of the nations engaged in prolonged maritime voyages during the Age of Sail, the Portuguese and the Spanish were the first to have seamen afflicted with scurvy. As noted by Kenneth Carpenter that was the case of the pioneering expedition to India led by Vasco da Gama (c. 1460-1524), which took place between 1497 and 1499. In total, practically two thirds of the men on board succumbed to the disease. Cursory records in its logbook disclose that when the disease appeared for the first time, fresh oranges were acquired from Moorish traders. Yet, the sick recovered their health thanks to the good 'air' of the place where the fleet was beaching. On the return journey, scurvy struck once more. Quoting from Carpenter, "convinced that the oranges […] eaten on the earlier occasion were powerful curatives," the crew "were specifically asking for them". Whether skeptic or not, da Gama satisfied his men. Along with shortage of food, scurvy also troubled the first part of the voyage initially led by Ferdinand Magellan (c. 1480-1521), which, extending from 1519 to 1522, resulted in the first circumnavigation around the globe. Far less remembered is the fate of García Jofre de Loaísa (1490-1526) and Juan Sebastián Elcano (1476-1526), who headed a fleet of seven ships, which set sail in July 1525 intended to establish a permanent Spanish settlement in the Spice Islands (i.e., the Moluccas). Both died of scurvy a year later aboard the only galleon that reached the final destination; some weeks late, so did their substitute, Toribio Alonso de Salazar (?-1526).[7]

A fourth memorable scurvy-stricken journey occurred from 1535 to 1536. This time the victims were members of the second voyage under the command of Jacques Cartier (1491-1557). Having sailed up the Saint Lawrence River expecting to find a northern passage to the West Indies and forced to winter under harsh weather conditions, nearly all the men fell sick, and about 30% of them died. This percentage would certainly have been much higher had Cartier not learned from the native Iroquois about the antiscorbutic properties of the bark and leaves of the tree called *Annedda*. Another enterprise on behalf of the French crown that succumbed to scurvy was the frustrated attempt to carry on the fortified colony of Charlesbourg-Royal initiated by Cartier in 1541. Conducted by Jean-François Roberval (c. 1500-1560), this campaign

[6] Thomas Trotter, *Observations on the Scurvy; with a review of the opinions lately advanced on that disease, and a new theory defended, on the approved method of cure, and the induction of pneumatic chemistry* […] 2nd ed. (London: for T. Longman and J. Watts, 1792), 151.

[7] Kenneth J. Carpenter, *The History of Scurvy and Vitamin C* (Cambridge: Cambridge University Press, 1987), 1-5. Carpenter seems to be unaware that Vasco da Gama was not the author of the book-log in question. Thus, it is impossible to determine whether he or the anonymous writer of the log believed that good air could cure sailors with scurvy.

ended in 1543, just a year after it begun, with a death rate of 25%. Fortunately, thanks to a relief ship the survivors were able to go back to France.[8]

Still according to Carpenter, the British had been exploring the coast of Newfoundland since 1497. However, there are no historical records indicating whether those voyages were affected by scurvy. The same holds true regarding the second circumnavigation around the world in a single expedition, carried out from 1577 to 1580 by Francis Drake (c. 1540-1596). There is ample information suggesting that as a measure to prevent scurvy, Drake ensured that his men went onshore at intervals to gather fresh provisions.[9]

For instance, during Drake's stop at Henderson Island, in the South Pacific Ocean, his "men begun to receive good comfort, especially after drinking of one herb (not unlike that herb […] commonly call[ed] Pennyleaf)". In the Celebes Island, situated in central Indonesia, they enjoyed eating large crayfish. Finally, before the last leg back to England, "on the west coast of Africa," Drake's men relished on "'oysters and plenty of lemons'" which they found particularly "refreshing".[10]

Until news to the contrary, the first two English fatalities attributed to scurvy occurred in 1582, while the expedition heading to China commanded by Edward Fenton (?-1603) was returning home, after having encountered adverse storms in the South Atlantic Ocean. The next two casualties happened off the coast of Brazil at the start of the circumnavigation carried through between 1586 and 1588 by Thomas Cavendish (1560-1592). The journal of this voyage suggests that further fatalities were avoided by assuring provisions of fresh fruit during seven stoppages.[11]

Accompanied by John Davis (c. 1550-1605), Cavendish's next expedition in 1591 was a total disaster. To begin with both lost most of their men in a battle against the Portuguese at the Brazilian village of Vitória. After separating their ships each took a different direction. Cavendish died of unknown cause on his way to a site where he had found provisions during the last leg of his previous journey.[12]

That place was the Island of Saint Helen. Discovered by the Portuguese either in 1502 or in 1503, this formerly uninhabited island was successfully improved by them: thanks to the importation of livestock, poultry, fruit trees and vegetables, Saint Helen was turned into a strategic stopover for fresh food and water, as well as a transit recovery camp for sick mariners. Starting with Drake its location became known to the

[8] Ibid., 7-10. For a detailed discussion about the conifers considered candidates for the still unidentified *Annedda*, see Don J. Durzan, "Arginine, Scurvy and Cartier's 'Tree of Life,'" *Journal of Ethnobiology and Ethnomedicine* 2009, n. 5 (Feb. 2009): 1-16.
[9] Carpenter, 12-3.
[10] Ibid., 13.
[11] Ibid., 13-4.
[12] Ibid., 14.

English. Later on the same happened to the Dutch, in developing their Far East trade. When foreign ships began to lie in wait offshore Saint Helen to attack their carracks the Portuguese gave up calling in at that island.[13]

Carpenter does not mention Drake's and Cavendish's visits to Saint Helen. He briefly brings up this island while touching upon the Dutch voyages to the East Indies. In his words, together with Mauritius Saint Helen was one of the two islands where the Dutch established by the end of the 16th century "vegetable gardens and orchards" in order to maintain "regular supplies" of green vegetable and fresh fruits for their ships.[14]

Differently from Carpenter, Saint Helen was described as a paradisiacal haven by the Anglican divine and bishop Francis Godwin (1562-1633). This occurs in his playful short story *The Man in the Moone*, originally published in 1638 under the pseudonym of Domingo Gonsales, *Thy Speedy Messenger*. Quoting from Godwin, that island was a "blessed […] paradice, […] necessary for [the] refreshing of all travaillers out of the Indies". In its "South side, there is a very good harbour, and neere unto the same divers edifices built by the Portuguese to entertain passengers". Close to "this housing there is a pretty Brooke of excellent fresh water." Furthermore, there are "divers faire walkes" through fields "with fruit-Trees, especially Oranges, Limmons, Pomgranats, Almonds, and the like, which beare Fruit all the yeare long". In "garden Hearbs, […] Parsely, Cole-worts, Rosemary, […] Lettice" and other vegetables are grown. More importantly, Saint Helen "aboundeth with Cattel, and Fowle, as Goates, Swine, Sheepe, and Horses, Parridges, wilde Hens, Phesants, Pigeons, and wild Fowle".[15]

Grounded on hearsay accounts, as well as *The Principall Navigations, Voiages and Discoveries of the English Nation* composed by the English writer Richard Hakluyt (155-1616), Godwin's description of Saint Helen's wonders is not to be taken literally. Additionally, even though Godwin alludes to the constructions built by the Portuguese, he does not credit them for introducing into the island all that nutritious food. Truly serious is Carpenter's omitting in his historical account that the Portuguese were the first to grow trees and herbs and raise animals in Saint Helen; and, consequently, giving them due credit for also being engaged in the campaign against scurvy.

Coming back to the navigator John Davis, his fortune fared just a little better than Cavendish's. Unable to cross the Strait of Magellan he headed back to England, not before spotting the Falkland Islands. Undergoing famine and illness somewhere in the Tropics he barely made it home alive with about 14 of his 76 men. Carpenter reports that after Davis' ship was driven back from the Strait of Magellan its crew presented

[13] Andy Johnson, & Ron Shoesmith, "Introduction," in Francis Godwin, *The Man in the Moone or A Discourse of a Voyage Thither by Domingo Gonsales Thy Speedy Messenger* (Herefordshire: Logaston Press, 1996), 1-26, on 19-23.
[14] Carpenter, 23.
[15] Godwin, 1-41, on 5-6.

symptoms of scurvy. Resting on the coast of Argentina they were "'restored […] to perfect health'" after ingesting with fried eggs a herb identified by them as the antiscorbutic plant popularly called "scurvy grass".[16]

This generic term nowadays encompasses various vegetables belonging to genus *Cochlearia*, which nowadays comprises about 30 species, as well as many subspecies. Distributed in temperate and artic areas of the Northern hemisphere, these vegetables belong to the cabbage family of the Brassicaceae. With a strong peppery taste similar to horseradish and watercress the leaves of many *Cochlearia* species are indeed rich in vitamin C. In view of the location of Davis's crew the herb consumed by them could not have been the so-called 'common scurvy grass', or *Cochlearia officinalis* L., which extends from the coastal to the mountainous regions of western, northern and central Europe, including Britain. Instead of this species the variety eaten by them might have been the bitter cress *Cardamine glacialis* (G. Forst.) DC.[17]

The last English expedition consummated in the 16th century brought up by Carpenter is Hawkins' above-mentioned voyage to the South Atlantic Ocean in 1593. According to him, in "about mid-August" Hawkins and his men "were near the Equator, without having made any landing en route, and scurvy began to appear in the crew". Owing to "contrary winds, it was not until mid-October, and with only four men still healthy, that they were able to go ashore". That was at Santos on the coast of southeastern Brazil. There, under a flag of truce, "the Portuguese allowed them to trade cloth for oranges and lemons".[18]

In Hawkins' own words, this brought "great joy amongst my company; and many, with the sight of the oranges and lemons, seemed to recover heart". Next, he adds being "a wonderful secret of the power and wisedome of God, that hath hidden so great and unknown virtue in this fruit, to be a certaine remedie for this infirmitie". The oranges and lemons were divided among the "sicke men, which were so many, that there came not above three or foure to a share".[19]

As noted by Carpenter Hawkins recommends various measures to prevent the appearance of scurvy at sea, but only four to cure it after afflicting sailors. Regarding the latter he deems "most fruitful […] sower oranges and lemmons" and a formula "called Dr. Stevens his water". Also "beneficiall for this disease" is "oyle of vitry" – i.e., oil of vitriol or sulfuric acid. In Hawkins' view, however, "the principall of all, is the ayre of the land; for the sea is natural for fishes, and the land for men". Carpenter readily calls

[16] Carpenter, 14.
[17] Ibid., 14.
[18] Ibid., 15.
[19] Hawkins, 81-2.

attention to the fact that for "all his belief in the special, curative virtues of oranges and lemons, Hawkins apparently had no idea of carrying them as preventives"[20].

On the whole, Carpenter's historic survey of scurvy is not as thorough as suggested by title of his book. The same holds true for its first chapter. Titled "The Explorers' Sickness (1498-1700)", this chapter deals with the seafaring undertakings of the European nations venturing on long maritime voyages. Yet, as pointed out above, Carpenter leaves aside the pioneer efforts of the Portuguese to counteract scurvy. For instance, he is ready to think no more of da Gama's experience with oranges, contending that the latter "was convinced that landing places differed significantly in the quality of their air and that this could vitally affect his men's health". Furthermore, in the case of Saint Helen he does not question whether the Dutch's idea of growing vegetables and fruits had been borrowed from the Portuguese.[21]

In the second chapter, devoted to the writings of learned men between 1540 and 1700, Carpenter does not mention not a single Luso-Hispanic or French authority.[22] Such possibility is entirely ruled out in the next two chapters, which focus on "Scurvy in the British Navy (1770-1772)" and "Captain Cook and Pneumatic chemistry (1770-1815)".[23] In short, Carpenter made room only for the British when covering the 17th and 18th-century fight against scurvy.[24] As discussed in the following section, like many other scholars interested in the history of scurvy, Carpenter was driven by a still influential, even though inaccurate, historiographical tradition.

A persistent historiographical fallacy dominating the history of scurvy

Vale and Edwards assert that after the antiscorbutic property of vitamin C was established, the results of the trial that the Scotsman James Lind (1716-1794) conducted in 1747 began to be regarded as "a defining moment in proving that lemon juice was the cure for scurvy"[25]. As Lind reports in chapter IV of his *Treatise of the Scurvy*, first published in 1753, his "experiments" were carried out between May 20th and June 16th on board of HMS *Salisbury*, in which he acted as the ship's surgeon.[26]

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[20] Carpenter, 15-7; and Hawkins, 58-60. According to Carpenter, oil of vitriol was "made at that time by distilling ferrous sulfate."
[21] Carpenter, 1-28, on 2.
[22] Ibid., 29-42.
[23] Ibid., 43-74 and 75-97.
[24] Indeed, Carpenter, 98-132, moves on to the 1800s in chapter five, which is titled "Land Scurvy, Potatoes and Potassium (1810-1905)".
[25] Vale, & Edwards, 30.
[26] James Lind, *A Treatise of 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* (Edinburgh: for A. Millar, 1753), 180-239, on 191-3.

Just to remember, among several seamen afflicted with scurvy Lind chose twelve with similar signs of the disease, who remained lodged "in the forehold" and had "one diet common to all". Divided in six groups, each was given a different medicine, respectively, cider, elixir of vitriol, vinegar, sea water, and "an electuary recommended by an hospital-surgeon"; two other men "had each two oranges and one lemon given them every day […] upon an empty stomach". While these two remained only for "six days under this course, having consumed the quantity that could be spared" the men in the other five groups continued taking their remedies until the arrival of the *Salisbury* to Plymouth in mid June.[27]

Quoting from Lind, the "consequence was […] that the most sudden and visible good effects were perceived from the use of the oranges and lemons". One of the seamen who had taken them was "at the end of six days fit for duty". The other "was the best recovered of any in his condition". And being "deemed pretty well, was appointed nurse to the rest of the sick".[28]

In spite of those auspicious results, as pointed out by Vale and Edwards, Lind "did not give any emphasis to his lemon-juice experiment". In fact, because he "believed that there were multiple causes to the disease […] and that multiple solutions were therefore required", Lind "never advocated lemon juice as a single answer to scurvy".[29]

The belief that Lind had "proved" to "medical opinion that lemon juice cured scurvy" paved the way for additional misconceptions. One of them is that Lind's trial "had as much impact in the eighteenth century as it would have had now". Another assumption "without foundation" is that "the delay" in introducing lemon juice into the British Navy "was due to bureaucratic inertia and snobbish obstruction by officials and admirals". Lastly, "only when 'disciples' of Lind, notably Gilbert Blane [1749-1834], gained positions of influence in the system", were "they able to persuade their naval masters to see reason and issue lemon juice".[30]

That is precisely the historiographical perspective that guides Carpenter. Quoting from him, after the "Lords of the [British] Admiralty [had] agreed to a daily allowance of three-quarters of an ounce" of lemon juice in 1795, "there was a dramatic decline in the incidence of scurvy from 1796 on". For that matter, over "the period from 1795 to 1814, the Admiralty records show a total issue of 1.6 *million* gallons of lemon juice". Owing to this, "the problem of scurvy was solved just in time to maintain the resistance to Napoleon through the continental blockade [1806-1814], whereas the

[27] Ibid., 192-3.
[28] Ibid., 193.
[29] Vale, & Edwards, 30. The arguments brought forward by the two scholars are grounded on Michael Bartholomew, "James Lind and scurvy: A Revaluation," *Journal for Maritime Research* 4, n. 1 (2002): 1-14. Another work with a similar view is Eric Martini, "Comment Lind n'a pas découvert le traitement contre le scorbut," *Histoire des sciences médicales* 39, n. 1 (2005): 79-92.
[30] Ibid., 30-2.

French Services were less fortunate" regarding this disease. "It is a humbling moral to the story that […] the final solution came from […] a return to the practical experience of previous centuries". Carpenter concludes stating that, having the necessary humility, "Blane […] could say: 'Lemons and oranges […] are the real specifics […] [as] first ascertained […] by Dr. Lind'." Yet, upon "what principle their superior efficacy depends […] I am at a loss to determine".[31]

Thus, like many other historians, also Carpenter is committed to the idea that thanks to 'followers' such as Thomas Trotter and Gilbert Blane, Lind's earlier 'advocacy' of lemons and oranges finally came into effect. Considering that Lind adhered to the 'putrid theory of disease', while Trotter and Blane moved on to different theoretical frameworks, this is a simplification of the debate about scurvy going on in late 17th-century Britain.[32] Finally, it comes to no surprise that historians led by the same historiographical view harbored by Carpenter tend to construe a narrative converging onto Lind, later on culminating with the 'discovery' of vitamin C.[33]

As put by Vale and Edwards, based on empirical evidences, many seafarers and naval surgeons came to the conclusion that scurvy appeared to be "linked with salt diet, bad weather and the rigours of life at sea". Long before Lind, some "noticed that citrus fruit seemed to provide a cure". Others believed that the answer lied "in the consumption of fresh meat, vinegar, wine, […] spruce beer, and weak acids which would stimulate the digestive system".[34] Still, as discussed in the next section, there were those who advocated 'scurvy grass' and other antiscorbutic herbs.

Traditional antiscorbutic herbs

According to Elwyn Hugues, an interesting aspect of the history of scurvy is the belief in the existence of two 'different forms' of the disease – namely, sea and land scurvy. Needless to say, the first type is related to the reappearance of the disease in the 16th century onboard ships crossing oceans. The second form derives from ancient reports of prolonged military campaigns and other overland journeys coupled with early modern accounts of incidences among non-seafaring populations afflicted with

[31] Carpenter, 95-6. The italics are Carpenter's. The passage quoted from Blane comes from a secondary source.

[32] For an overview of Lind's ideas about scurvy, see Mark Harrison, "Scurvy on Sea and Land: Political Economy and Natural History, *c*. 1780-*c*. 1850)," *Journal of Maritime Research* 15, n. 1 (2013), 7-25, on 8-9. For Blane's understanding, see ibid., 11-2; and for Trotter's conceptions, ibid., 10-1, as well as Vale, & Edwards, 110-4.

[33] A good example is Bown's study, which after crediting Lind, Blane and James Cook (1728-1779) with the 'discovery' of a provisory solution to the 'mystery' of scurvy, concludes with the isolation, in 1933, of hexuronic acid, later renamed ascorbic acid.

[34] Vale, & Edwards, 30.

scurvy or "a range of conditions unrelated to [the] lack of vitamin C", confused with this disease.[35]

Initially vague, this distinction widened after the rise of iatrochemistry. In Hughes words, "characterized as 'alkaline' and 'hot,'" sea (or muriatic) scurvy usually was "treated with 'cooling' foods and medicines," especially citrus fruits. Conversely, "held to be 'cold' and 'acid,'" land scurvy "required 'hot' antiscorbutic" plants, such as "various members of the Cruciferae".[36]

To illustrate this duality, Hughes quotes from *An Essay Concerning the Nature of Aliments*, written by the Scottish physician and polymath John Arbuthnot (1667-1735). While "discussing the cure of the 'muriatick scurvy', 'common among Mariners'", Arbuthnot recommends "the avoidance of 'the hot Antiscorbuticks of the Mustard Kind'". Moreover, Hughes alludes to a passage in Lind's *Treatise of the Scurvy* to sustain that treatment of land scurvy "almost invariably included at least one preparation made from […] 'antiscorbutic' plants".[37] In the excerpt in question, Lind imparts that scurvy "is extremely frequent" in Greenland; the "natives make use of scurvy-grass […] and sorrel together". Prepared "with barley or oats in broths made of fowls, or flesh of rein-deer", these two herbs "recover the diseased most surprisingly in a short time, even after having lost the use of their limbs".[38]

Hughes also appeals to Lind to state that the Dutch physician Baudouin van Ronss, or Balduinus Ronsseus (c. 1527-1596), had "made a […] distinction between the use of oranges by seamen on long voyages and the dependence of ordinary land-dwellers on […] traditional" antiscorbutic herbs. Indeed, while arguing in favor of the efficacy of citrus fruits, Lind imparts that "*Ronsseus*, the first to write on this subject, mentions" such fruits. The latter reports that, "in all probability the *Dutch* sailors had by accident fallen upon this remedy, when afflicted with the scurvy, in their return from *Spain* loaded with these fruits, especially oranges". Experience "soon taught them that, by thus eating part of their cargo, they might be restored to health".[39]

Apparently Ronsseus was not as rigorous as portrayed by Hughes. For example, Carpenter imparts that the Dutch physician described scurvy "as a common disease in the damper, boggy parts of Holland, particularly in rainy seasons, and said it could be cured with scurvy grass and watercress, or infusions of them". Carpenter adds that

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[35] R. Elwyn Hughes, "The Rise and Fall of the 'Antiscorbutics': Some Notes on the Traditional Cures for 'Land scurvy,'" *Medical History* 34, n. 1 (Jan. 1990): 52-64, on 52.

[36] Ibid., 53-4.

[37] Ibid. Hughes' quotation comes from the 4th edition of Arbuthnot's work, which dates from 1756.

[38] Lind, 262-3 (and not 264, as indicated in Hughes, 53). The binomial name of common or garden sorrel is *Rumex acetosa* L. Due to the sharp taste of its leaves, it is also called spinach dock.

[39] Hughes, 53; and Lind, 205. The italics are Lind's. Based on Lind, 2 and 448, Ronsseus work on scurvy is an epistle, dating from 1564, titled *Quare apud Amsterodamum, Alecmariam, atque alia vicina, frequentissimé infeftet scorbutus?*

Ronsseus "also noted that Dutch sailors had found […] cure [from] the condition by eating oranges".[40]

Hughes' strict association between land scurvy and antiscorbutic plants derives from a passage in the book *The Surgions Mate*, originally published in 1617 – written by the businessman, diplomat, military surgeon and Paracelsian sympathizer John Woodall (1570-1643). Citing Hughes, "Woodall extolled the virtues of lemon juice as a cure for scurvy at sea". In so doing, "he carefully contrasted its value with that of […] traditional 'antiscorbutic' plants […] whose value extended, however, 'only to the cure of those which live at home'".[41]

Truly enough, Woodall is very enthusiastic about lemon juice. In his words, the "use of the juice of Lemons is a precious medicine and well tried". Being "sound & good, let it have the chief place". Some "Surgeons also give of this juice daily to the men in health as a preservative". However, such "course is good if they have store, otherwise it were best to keepe it for neede". Woodall suggests that in want of lemon juice, "use the juice of Limes, Oringes, or Citrons, or the pulpe of Tamarinds" and "in want of these use oyle of Vitrioll", for "of my experience, I can affirme that" it is "an especiall good medicine in the cure of Scurvy". Still, there were many other alternatives, judging from the various items listed in the subsequent pages dedicated to the disease.[42]

Reference to antiscorbutic herbs occurs in the preface of *The Surgions Mate*. Initially, Woodall regrets that this "lamentable disease […] has so long and so fiercely assailed Saylers and sea-men of all sorts more then Land-men". A little ahead, he states: "wee have in our owne countrey here many excellent remedies generally knowen, as namely Scurvy grasse, horse reddish rootes, Nasturtia Aquatica, Worme-wood, Sorrell, and many other good meanes". Next, he notes: "the truth is wee have so, but marke how farre they extend only to the cure of those which live at home". Or else, "it may bee sayd, they also helpe some sea men returned from farre". By the "the onely natural disposition of the fresh aire & amendment of diet, nature her selfe in effect doth the cure without other helps, as daily is seen".[43]

In short, differently from maintained by Hughes, Woodall is explaining that, even though England was rich in antiscorbutic plants, they were inaccessible to its seamen far away from home exploring the world. Two facts confirm this interpretation. First Woodall asks, "This […] being so, what should I spend my time in teaching […] those medicines to the Surgeons Mate?" Such plants "will not bee had at sea". And even

[40] Carpenter, 34, grounded on a secondary source.
[41] Hughes, 53.
[42] John Woodall, *The Surgions Mate: A Complete Facsimile of the Book Published in 1617* (Bath: Kingsmead Press, 1978) 177-96, on 185.
[43] Ibid., 177-8; originally mostly in italics.

"if they could bee had", they "will [not] suffice for the cure therof, where the disease raigneth fiercely".[44]

The second fact is that an apparent solution to the problem was found some decades later. The most famous is the one proposed by the Leipzig natural philosopher Andreas Valentin Moellenbrock (1623-1675) in a book written in Latin and published in 1674. Titled *Cochlearia curiosa*, it begins by distinguishing the "true scurvy grasse" from three similar species; and, further on it provides numerous recipes combining the proper grass with many other antiscorbutic herbs. So great was the interest of the British in this work, that its English translation by the physician Thomas Sherley (c. 1638-1678) was published two years later.[45]

According to Carpenter, Moellenbrock advocated that when the plant was dried with heat, its antiscorbutic property was lost. However, if distilled, its "active factor" – viz., the "'volatile salt of scurvy grass'" – evaporated in the water. This could have inspired the measure adopted in the late 1600s by the Dutch Company of supplying its ships with "freshly dried and powdered scurvy grass". Whenever scurvy appeared or was expected to arise, a "bag of this" powder was added and remained "for some hours into the water to be distilled". The expectation was that "the active principle in the grass would leach out into the water". Later on, "when it was boiled", this principle would "vaporize […] and finally recondense in the receiver".[46]

In short, by the end of the 17th century, mariners were consuming scurvy grass, even though not in fresh form. Perhaps Hughes would not have been so rigid in his dichotomy, were he to have been aware of Moellenbrock's book. However, he provides relevant information about a work preceding Moellenbrock's book on scurvy grass. Quoting from Hughes, it appears that "the earliest writer on scurvy to deal substantially with […] three antiscorbutics was Wierus" – i.e., Johann Wier or Weyer (1515/24-1588) – better known for his influential *On the Illusions of the Demons and on Spells and Poisons*, published in 1563.[47]

Wierus' *De scorbuto epitome* dates from one year later. In this work he gave close attention to watercress, or *Nasturtium aquaticum* (nowadays *N. officinale* W.T. Aiton) as well as brooklime, or *Beccabunga* (presently, *Veronica beccabunga* L.); in "an appendix" Wierus deals "specifically with *Cochlearia*". Likewise, he included two diagrams, one "of the whole plant" and another "of the leaves of a young plant in the winter". This caution

[44] Ibid., 178. The question mark is not Woodall's. Like other interferences, it was added here with the intention of making clearer his original writing.
[45] Carpenter, 23-4.
[46] Carpenter, 23. As discussed in a work currently in preparation, the year of 1680 witnessed a boom of English patented remedies having 'spirit' of scurvy grass as their main component.
[47] Hughes, 54.

"suggests that he was anxious that the plant should be correctly recognized" and "not to be confused with the species called *Telephium* or *Britannica*".[48]

Subsequent "writers on scurvy borrowed extensively, either directly or indirectly, from Wierus". One of them was Moellenbrock. The latter in particular, besides occasionally referring to Wierus, paid another tribute to his predecessor. His *Cochlearia curiosa* brings two plates respectively depicting the "true scurvy grass" and the variety named *Britannica*. The first is shown in Figure 1. To allow a comparison, a 19th-century drawing of *Cochlearia officinalis* L. is reproduced in Figure 2.[49]

Figure 1. Diagram of *Cochlearia officinalis* L. in the English version of Moellenbrock's *Cochlearia curiosa*[50]

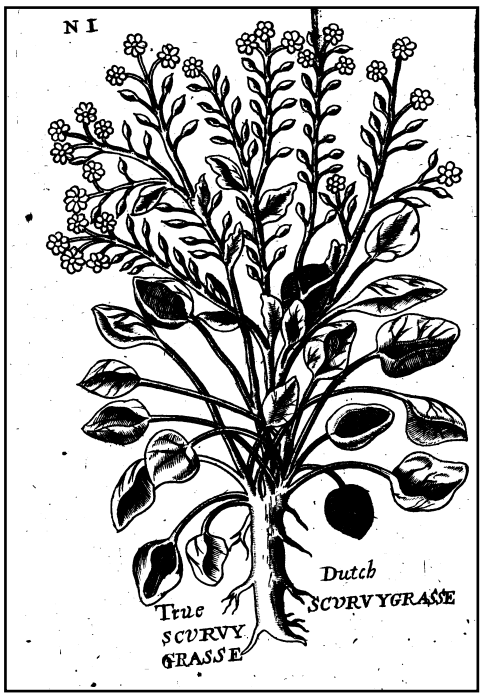

Figure 2. Drawing by Walter H. Fitch (1817-1892) of *Cochlearia officinalis* L.[51]

Quoting from Hughes, by the middle of the 17th century, "the antiscorbutic [herbal] trio" that proved to be "an established feature in all works on scurvy" was made up of *Cochlearia officinalis* L., *Veronica beccabunga* L., and *Nasturtium officinale* W.T.

[48] Ibid.

[49] Ibid. In Sherley's translation of Moellenbrock's, *Cochlearia curiosa: or the Curiosities of Scurvygrass, Being an exact Scrutiny and careful Description of the Nature and Medicinal Vertue of Scurvygrass* (London: for William Cademan, 1676), the abovementioned drawings are respectively inserted right after pp. 176 and 178.

[50] Moellenbrock, [Plate] N I

[51] *Illustrations of the British Flora: A series of wood engravings, with dissections, of British Plants drawn by W. H. Fitch, F.L.S., with additions by W. G. Smith, F.L.S., and others* […]. Fifth revised edition (London: L. Reeve & Co., Ltd., 1924), 118, Plate 86

Aiton. Browsing Moellenbrock's *Cochlearia curiosa* confirms Hughes' view. This means that these three plants were the most common ingredients making up antiscorbutic formulas, which usually contained many other components. Among the latter, there were many more or less frequently mentioned plants equally gifted with antiscorbutic virtues. For that matter, according to Lind, Wierus had observed that, "there is nothing specific in the common antiscorbutic herbs, as they are called". The truth is that "all acrid plants […], as also many aperient roots, and warm seeds, are highly serviceable".[52]

In brief, the history of scurvy encompasses the employment of a wide range of medicines, including antiscorbutic herbs. With this in mind, the time has come to look into the plants recommended by three 18th-century Luso-Brazilian surgeons.

Luso-Brazilian antiscorbutic herbs

Brazil remained Portugal's continentally sized colony in South America until 1822. Before Brazil's independence from its mother state, due to the invasion of Portugal by Napoleon's troops, in November of 1807 the Portuguese royal family, state officials and an entourage totaling a few thousand people abandoned Lisbon to settle in Brazil's capital, the city of Rio de Janeiro. One of the consequences of this is that, perhaps for the first time ever, Portuguese physicians considered establishing a medical career in Rio de Janeiro, which in 1815 became the seat of the United Kingdom of Portugal, Brazil and Algarves.

Before that, rather than physicians, only lay healers would venture a living in Brazil, whose unevenly populated inhabitants mainly consisted (apart from indigenous, tribal peoples) of penniless slaves and free, yet poor laborers.[53] Owing to these circumstances, the care for the sick was mostly left to historically untraceable, empirical healers (ranging from native shamans to foreign adventurers acting as root-cutters, barber-surgeons and the like).

An exception to this rule is three 18th-century surgeons born in Portugal, who came to Brazil either temporarily or for good. These three licentiates in surgery acquired posthumous immortality for having submitted the medical experience they had gathered in Brazil to the press. One of them is Luis Gomes Ferreyra (c. 1686-1764), who wrote a book titled *Erario Mineral, dividido em doze tratados* (Mineral treasury, divided in twelve treatises), first published in 1735 (Figure 3).

[52] Hughes, 54.
[53] Slavery was formally abolished in Brazil in 1888.

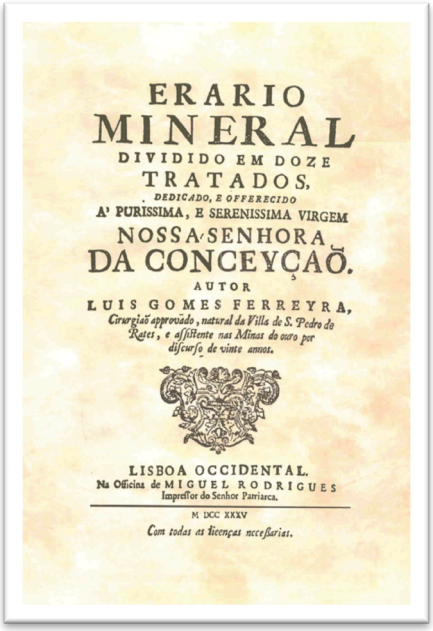
ERARIO
MINERAL
DIVIDIDO EM DOZE
TRATADOS,
DEDICADO, E OFFERECIDO
A' PURISSIMA, E SERENISSIMA VIRGEM
NOSSA SENHORA
DA CONCEYÇAÕ.
AUTOR
LUIS GOMES FERREYRA,
Cirurgião approvado, natural da Villa de S. Pedro do Rates, e assistente nas Minas do ouro por discurso de vinte annos.
LISBOA OCCIDENTAL.
Na Officina de MIGUEL RODRIGUES
Impressor do Senhor Patriarca.
M. DCC. XXXV
Com todas as licenças necessarias.

Figure 3. Original title page of Gomes Ferreyra's *Erario Mineral*, first published in 1735

The second licentiate is Jozé Antonio Mendes - by far, the less known of the three surgeons focused here. His work, initially printed in 1770, bears an extremely long, down-to-earth title, which provides a good picture of the dreadful health care conditions in the Brazilian hinterland in the 1700s. In English, the title reads as follows: "Miners' Government, very necessary for those living far away from instructors [like] six, eight, ten and more leagues, [and] for this reason having their domestic servants and slaves suffering from ailments, which [because of] the tardiness of remedies are made incurable and often fatal" (Figure 4).[54]


GOVERNO
DE
MINEIROS
MUY NECESSARIO
PARA OS QUE VIVEM DISTANTES DE PROFESSORES
SEIS, OITO, DEZ, E MAIS LEGOAS,
PADECENDO POR ESTA CAUZA
OS SEUS DOMESTICOS E ESCRAVOS
QUEIXAS, QUE PELA DILAÇAM DOS REMEDIOS
SE FAZEM INCURAVEIS, E AS MAIS DAS VEZES MORTAES:
OFFERECIDO
AO SENHOR CORONEL
ANTONIO SOARES
BRANDAÕ,
AUCTOR
JOZE ANTONIO MENDES,
LISBOA
Na Offic. de ANTONIO RODRIGUES GALHARDO,
Impressor da Real Meza Censoria.
ANNO MDCCLXX.
Com licença da mesma Meza.

Figure 4. Original frontispiece of Antonio Mendes' *Governo de Mineiros*, 1770

Gomes Ferreyra's and Antonio Mendes' books were published in Lisbon after their authors returned to the Portuguese metropolis. Before having done so in 1731, Gomes Ferreyra had moved continuously between the East Indies and Brazil.[55] Antonio Mendes, in turn, remained for about three decades in Portuguese America, mainly in the diamondiferous region of Minas Gerais, prior to equally going back to his homeland at an unknown date.[56]

[54] 'League' is a former measure of distance on land corresponding to about three miles. For a brief account of medical care in Brazil between until the 18th century, see Charles R. Boxer, "Some Remarks on the Social and Professional Status of Physicians and Surgeons in the Iberian World, 16th-18th Centuries," *Revista de História* 100 (1974): 197-215.

[55] Júnia F. Furtado, "Arte e Segredo: O Licenciado Luís Gomes Ferreira e Seu Caleidoscópio de Imagens," in Luís Gomes Ferreira, *Erário Mineral*, ed. J.F. Furtado (Belo Horizonte; Rio de Janeiro: Fundação João Pinheiro, Centro de Estudos Históricos e Culturais; Fundação Oswaldo Cruz, 2002) I: 3-30, on 7-24.

[56] Márcia M. Ribeiro, "Nem Nobre, Nem Mecânico: A Trajetória Social de um Cirurgião na América Portuguesa do Século XVIII," *Almanack Brasiliense* 2 (Nov. 2005): 64-75, on 66. Additionally, Carlos A.L. Filgueiras, "O Cirurgião José Antonio Mendes e Seu Livro *Governo de Mineiros*, de 1770," in *Congresso Luso-Brasileiro de História das Ciências: Livro de Actas*, ed. C. Fiolhais, C. Simões, & D. Martins (Coimbra: Imprensa da Universidade de Coimbra, 2011) 614-632, on 614.

The third name belonging to this group of Portuguese-born surgeons attempting a better life in Brazil is João Cardoso de Miranda (?-1773), whose formulas to counter scurvy are endorsed in Gomes Ferreyra's *Mineral Treasury* and in Antonio Mendes' *Miners' Government*.[57] Differently from his two colleagues, Cardoso de Miranda settled down permanently in Brazil. Also unlike them, today we know a little more about him. This is largely due to a bio-bibliographical study carried out by the Portuguese physician and medical historian Augusto da Silva Carvalho in the first quarter of the 20thcentury, which attributes to Cardoso de Miranda the authorship of a short work issued anonymously in 1749. In English its title is: "Prodigious lagoon discovered by the yerba mate woods at the Sabará Mines, which has cured various people from the ailments, which are exposed in this Relation."[58]

Cardoso de Miranda had a checkered career. To begin with, in 1719, he went to Spain and France. It seems that "what he saw and heard there made him reject what he had learned [previously], especially regarding the [Galenical] polypharmacy of the time". After returning to Portugal, he practiced for "three years in the Hospital of [the city of] Porto", and obtained his "letter of surgery" in 1722. Four years later, Cardoso de Miranda "already was in Baía" (or Bahia, the first capital of Brazil). There he eventually engaged in the commerce of sugar, tobacco, and slaves.[59]

In a "Defensive Letter" began in 1748 but completed only in 1754, Cardoso de Miranda attributes his involvement in trading activities to "a very persistent disease in the eyes, which had taken out his means to live on surgery". In fact, this handicap is what led Cardoso de Miranda to check in person, in 1749, the supposedly health-giving

[57] Luis Gomes Ferreyra, *Erario Mineral dividido em Doze Tratados* [...] (Lisboa Occidental: Na Officina de Miguel Rodrigues, 1735; facsimile edition Belo Horizonte: Centro de Memória da Medicina de Minas Gerais, 1997) 476-7. José Antonio Mendes, *Governo de Mineiros mui necessário para os que vivem distantes de professores, seis, oito, dez e mais léguas, padecendo por esta causa os seus domésticos e escravos queixas, que pela dilação dos remédios se fazem incuráveis, e as mais das vezes mortais*, ed. Carlos A. L. Filgueiras (Belo Horizonte: Secretaria de Estado de Cultura de Minas Gerais; Arquivo Público Mineiro, 2012) 108, 110, and 112.

[58] Augusto da Silva Carvalho, "A Prodigiosa Lagoa e O Seu Autor," in João Cardoso de Miranda, *Prodigiosa Lagoa descuberta nas congonhas das Minas do Sabará, que tem curado a varias pessoas dos achaques, que nesta Relação se expõem* [...] (Coimbra: Imprensa da Universidade, 1925), ix-xxxviii, on ix-xv and xxix. Cardoso de Miranda's *Prodigiosa lagoa* was reprinted in 1820 and 1925. Today called Lagoa Santa, this lagoon is close to the capital of the state of Minas Gerais. There are at least four 18th-century manuscripts reporting the therapeutic virtues of that lake, as detailed in Maria H.R. Beltran, & Vera C. Machline, "Recursos brasileños de agua mineral: la fama efímera de Lagoa Santa," in *Farmacia, historia natural y química intercontinentales*, ed. Patricia Aceves Pastrana (México DF: Universidad Autónoma Metropolitana, 1996), 229-39, on 233-6.

[59] Carvalho, 1925, xv-xvii. Largely derived from Carvalho, many references to Cardoso de Miranda occur in Lycurgo de C. Santos Filho, *História Geral da Medicina Brasileira* (São Paulo: HUCITEC; Editora da Universidade de São Paulo, 1991) I: 42, 129-130, 184, 189, 191, 209-212, 323, 335, 360; II: 410. The surgeon is also mentioned in the notable survey by Francisco da S. Innocencio, *Diccionario Bibliographico Portuguez: Estudos de Innocencio Francisco da Silva applicaveis a Portugal e ao Brazil* (Lisboa: Na Imprensa Nacional, 1859; facsimile re-impression Lisboa: Imprensa Nacional; Casa da Moeda, 1998) III: 338.

properties of the waters collected from the "Prodigious lagoon", whose virtues had originally been "discovered" by newly arrived settlers around 1733.[60]

As if the eye disorder and uncertainties of ultramarine commerce were not enough problems, Cardoso de Miranda also got involved in several contentions due to a recipe of his own contrivance allegedly to treat scurvy. The debate, which went on until October 1752, generated at least eight sets of writings (the better part of them still in manuscript), a third of them composed – or better, dictated – by the surgeon. Everything began with a letter in which Cardoso de Miranda asked the Main Physician of the Portuguese Kingdom (in Portuguese, *Fysico Mór*) the approval of the antiscorbutic formula he had recently perfected.[61]

Dated December 6th, 1731, this epistle – bound to be irrevocably lost in a cranny of the extremely bureaucratic Portuguese administration – was published in 1735, in the aforementioned *Mineral Treasury*. More precisely, inserted between a brief introduction and a longer series of remarks penned by Gomes Ferreyra, this letter is transcribed in the last treatise of his *Mineral Treasury*, with the title "Do Escorbuto, ou Mal de Loanda" (Of scurvy, or illness of Loanda (i.e., the former name of today's Luanda, the capital of the African country of Angola).[62]

However, as Cardoso de Miranda informs in an "Apology" dating from 1752, the antiscorbutic recipe reproduced in Gomes Ferreyra's book bore a number of mistakes having to do with the true weight of a couple of ingredients.[63] Thus, to ensure that the correct measures were made public, the letter of 1731, after the mistakes were set right, was reprinted later in the two editions of a book comprising more than two hundred pages, with Cardoso de Miranda's name in its title page. This work – whose frontispiece is reproduced in Figure 5 – was firstly issued in 1747. Its title is: *Relação Cirurgica, e Medica, Na qual se trata, e declara especialmente hum novo methodo para curar a infecção escorbutica, ou mal de Loanda, e todos os seus produtos, fazendo para isso manifestos dous especificos, e muy particulares remedios* (Surgical, and medical relation, In which it is dealt and declared especially a new method to cure the scorbutic infection, or illness of Loanda, and all its products, making for this manifested two specific and very particular remedies). The title page of the second edition bears the year of 1741. This unlikely date

[60] Carvalho, x-i, xxii-iv, xxix.
[61] Carvalho, xvii-xxxii.
[62] Carvalho, xvii-iii; xxix; Ferreyra, 476-88, on 479, Cardoso de Miranda reports that he had been having eye problems for five months, which suggests they had began around August 1731. Therefore, Cardoso de Miranda visited the "Prodigious Lagoon" only 18 years later.
[63] Carvalho, xxviii-xxx. The units of weight provided in Gomes Ferreyra's book are 'octaves' instead of 'ounces'.

is surely a typographical mistake. This is confirmed by the fact that the licenses inside it suggest that it was published either at the end of 1751 or in the beginning of 1752.[64]

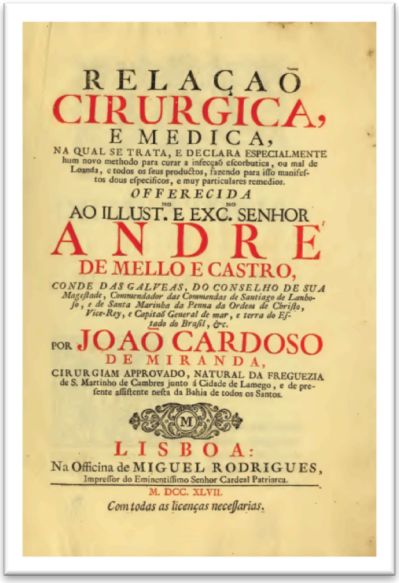
RELAÇAÕ
CIRURGICA,
E MEDICA,
NA QUAL SE TRATA, E DECLARA ESPECIALMENTE hum novo methodo para curar a infecçaõ escorbutica, ou mal de Loanda, e todos os seus productos, fazendo para isso manifestos dous especificos, e muy particulares remedios.
OFFERECIDA
AO ILLUST.mo E EXC.mo SENHOR
ANDRE'
DE MELLO E CASTRO,
CONDE DAS GALVEAS, DO CONSELHO DE SUA Magestade, Commendador das Commendas de Santiago de Lambofo, e de Santa Marinha da Penna da Ordem de Christo, Vice-Rey, e Capitaõ General de mar, e terra do Estado do Brasil, &c.
POR JOAÕ CARDOSO
DE MIRANDA,
CIRURGIAM APPROVADO, NATURAL DA FREGUEZIA de S. Martinho de Cambres junto á Cidade de Lamego, e de presente assistente nesta da Bahia de todos os Santos.
LISBOA:
Na Officina de MIGUEL RODRIGUES,
Impressor do Eminentissimo Senhor Cardeal Patriarca.
M. DCC. XLVII.
Com todas as licenças necessarias.

Figure 5. Frontispiece of the first edition of Cardoso de Miranda's *Relação Cirurgica, e Medica*, published in 1747

Except for their respective licenses, both editions are practically identical. The aforementioned letter of 1731 closes chapter 1, whose title is: "Do Escorbuto, a que tambem se chama mal de Loanda, sua definição, differenças, causas, sinaes, prognosticos, e cura (About scurvy, which is also called illness of Loanda, its definition, differences, causes, signs, prognoses, and cure).[65] Moreover, as promised in the subtitle of his *Surgical, and Medical Relation*, Cardoso de Miranda provides two recipes for scurvy derived from his 'specific medicine' of 1731

As detailed elsewhere, Cardoso de Miranda suggests in this chapter three different causes for scurvy right after alluding to a distinction between cold and hot symptoms produced by a certain "scorbutic acid".[66] According to a note, this differentiation is borrowed from the work *Manifestacion de Cien Secretos del Doctor Juan Curvo Semmedo* (Manifestation of one hundred secrets of Dr. Juan Curvo Semmedo) written by the Spanish physician Francisco Suárez de Rivera (c. 1680-1754).[67] Originally published in 1736, this work is a compilation of 'secret' medicines conceived by the Portuguese physician João Curvo Semmedo (1635-1719). Apropos, so popular were Semmedo's chemical remedies that concoctions attributed to him were sold up to the 19th century.[68] Coming back to Suárez de Rivera, in the "Proem" to his *Manifestacion*, he

[64] Carvalho, xix-xxii; xxix. Innocencio, 338, led by the mistaken date (1741) supposed that this book had three editions.

[65] The epistle of 1731 is in João Cardoso de Miranda, *Relação Cirurgica, e Medica, Na qual se trata, e declara especialmente hum novo methodo para curar a infecção escorbutica, ou mal de Loanda, e todos os seus productos, fazendo para isto manifestos dous especificos, e muy particulares remedios* [...] (Lisboa: Na Officina de Miguel Rodrigues, 1747), 21-6.

[66] Vera C. Machline, & Márcia H.M. Ferraz, "As Causas do Escorbuto segundo João Cardoso de Miranda," in *Congresso Luso-Brasileiro de História das Ciências: Livro de Actas*, ed. C. Fiolhais, C. Simões, & D. Martins (Coimbra: Imprensa da Universidade de Coimbra, 2011) 675-682. Also Vera C. Machline, & Márcia H.M. Ferraz, "O Escorbuto na 'Relação Cirurgica, e Médica' de João Cardoso de Miranda," in *Atas do 6º. Colóquio do Polo de Pesquisa sobre Relações Luso-Brasileiras: Pontes para o Presente*" (Rio de Janeiro: Polo de Pesquisa sobre Relações Luso-Brasileiras, Real Gabinete Português de Leitura, 2012) 1-13.

[67] Miranda, 4.

[68] Maria do S. Barroso, "João Curvo Semedo: Em Busca da Química da Vida," *Cadernos de Cultura* 18 (Nov. 2004): 49-53, on 50-1. For additional information about Semmedo, see José P.F. de Sousa Dias, "Inovação Técnica e Sociedade na Farmácia da Lisboa Setecentista," Doctoral thesis (Lisboa: Universidade de Lisboa, 1991) 57-81.

explains that there were two kinds of scurvy depending on the nature of the ferment that generated the disease: an acid ferment caused 'cold' scurvy, while a toxic, acrid and colliquant one provoked 'hot' scurvy.[69]

Cardoso de Miranda, in turn, proposed three causes for scurvy. The first one was an acid condition in the blood ensuing from immoderate intake of corrupt and salty food, as well as from continuous exposure to "saliferous," marine vapors. The second cause was coagulation and acidosis of the blood of people prone to a hypochondriac disposition and performing little exercise. The third cause was the slowing down of the blood flow and acidosis of this bodily fluid due either to inordinate heat or to excessive cold.[70] From another angle, the first cause derived from the living conditions during transoceanic journeys in early modern times. The second was a commonplace, mentioned by many authors.[71] However, in view of Cardoso de Miranda's engagement in the slave trade, perhaps it also had to do with the physical and mental state of the African peoples confined in slave ships. Furthermore, it might have been an echo of an older association involving the spleen, melancholy and scurvy, still to be duly explored. Lastly, the third cause appears to derive from Suárez de Rivera's dual theory.

Far from unconventional, Cardoso de Miranda's proposal of more than one origin for scurvy was in tune with the medical theories in vogue outside the Iberian Peninsula. As a consequence of the distinction between sea and land scurvy, coupled with the rise of iatrochemistry, beginning in the 1600s many physicians attributed more than one cause to scurvy. For instance, as noted by Carpenter, the Oxford professor Thomas Willis (1621-1675) advocated in 1667 that scurvy could arise either from an acid or an alkaline blood condition. Five years later, in 1672, the physician Walter Charleton (1619-1707) added to Willis' two a third variety, 'rancid scurvy'. By the way, he recommended that only scurvy occasioned by an alkaline state should be treated with scurvy grass due to the 'hot' quality of this plant.[72]

Another similarity between Cardoso de Miranda's formulas and other coeval European antiscorbutic recipes is the combination of ingredients proceeding from both the mineral and vegetable kingdoms, like antimony and a plant called *mastruço* in Portuguese. Usually employed in the plural form in Portugal (viz., *mastruços*), its current binomial name is *Coronopus didymus* (L.) Sm., shown in Figure 6. Due to its wide distribution, this member of the Brassicaceae family is called American wormseed, being that in England in particular, it is known as garden cress. For that matter,

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[69] Francisco Suárez de Rivera, *Manifestacion de Cien Secretos del Doctor Juan Curvo Semmedo, experimentados é ilustrados por el Doctor Rivera* (Madri: Imprenta de Domingo Fernandez de Arrojo, 1736) 16-7. For an overview about this Spanish physician, see Luis S. Granjel, *Francisco Suarez de Rivera: Médico salmantino del siglo XVIII* (Salamanca: Ediciones del Seminario de Historia de la Medicina Española, 1967) 11-9 and 45-57.

[70] Miranda, 4-5.

[71] See for instance Harrison, 8-12.

[72] Carpenter, 41; and Gil Felippe, *No Rastro de Afrodite: Plantas Afrodisíacas e Culinária,* 2nd ed. (São Paulo: Ateliê Editorial; Editora Senac São Paulo, 2004), 125-6.

popularly known as mustards or crucifers, family Brassicacea comprises species of economic interest such as cabbage, broccoli and cauliflower. Mentioned by Woodall, horseradish – whose binomial name is *Armoracia rusticana* G. Gaertn., B. Mey. & Scherb. or *Chloclearia armoracia* L. – also belongs to the Brassicaceae.[73]

Figure 6. Drawing by Walter H. Fitch (1817-1892) of *Coronopus didimus* Sm.[74]

The inclusion of *mastruços*, together with a non-specified 'cochlearia' in Cardoso de Miranda's recipes probably derives from Suárez de Rivera's recommendatio to use both plants in the treatment of scurvy. Quoting from the latter's *Manifestacion de Cien Secretos*, all trustworthy "Practitioners" warn that "great care" is to be taken when using "hot, or acrid, antiscorbutics, like cochlearia, *mastuerzo*, &c. because [they] are always harmful to bodies with a hot, sulphuric temperament".[75]

The combination of vegetable and mineral ingredients applies to Cardoso de Miranda's recipe of 1731, as well as to the two main compositions derived from it

[73] Luzia I.F. Jorge, Vicente de O. Ferro, & Maria R.W. Koschtschak, "Diagnose cComparativa das Espécies *Chenopodium ambrosioides* L. (erva-de-santa-maria) e *Coronopus didymus* (L.) Sm (mastruço): Principais Características Morfo-histológicas e Químicas," *Revista Brasileira de Farmacognosia* 1, n. 2 (Dec. 1986): 143-53, on 151-2.

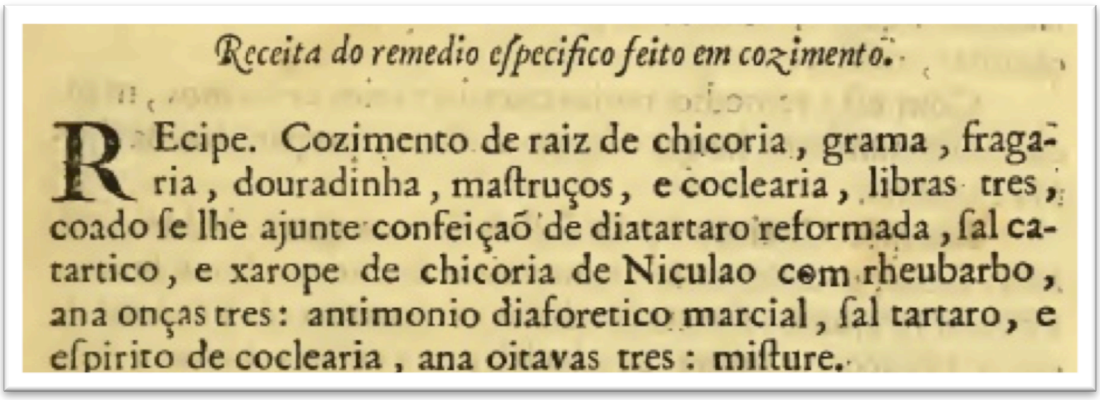
[74] *Illustrations of the British Flora*, 141 Plate 109.

[75] Suaréz de Rivera, 17-8.

described in his *Surgical, and Medical Relation* under heading "Cure", to wit, the longest section in chapter 1. In his words, the first one is "made by cooking," while the other is "made as a confection, or electuary"[76].

Reproduced in Figure 7, the first recipe comprises the following steps: cook "chicory root, grass, *fragaria* (or strawberry), *douradinha*, *mastruços*, and cochlearia, three pounds"; after straining add "confection of reformed bitartarate, cathartic salt, and Nicolao's chicory syrup with rhubarb, each three ounces; next add "martial diaphoretic antimony, tartarate salt, and spirit of cochlearia, each three octaves", finally, mix everything.[77]

Figure 7. "Recipe of the specific medicine made by cooking", in Cardoso de Miranda's *Surgical, and Medical Relation,*


Receita do remedio eſpecifico feito em cozimento.

REcipe. Cozimento de raiz de chicoria, grama, fragaria, douradinha, maſtruços, e coclearia, libras tres, coado ſe lhe ajunte confeiçaõ de diatartaro reformada, ſal catartico, e xarope de chicoria de Niculao com rheubarbo, ana onças tres: antimonio diaforetico marcial, ſal tartaro, e eſpirito de coclearia, ana oitavas tres: miſture.

In short, like many of its kind, also Cardoso de Miranda's formula comprises several plants. Besides *mastruço* and cochlearia, whose antiscorbutic property is acknowledged by Suárez de Rivera, it includes an unspecified member of genus *Fragaria*, famous for its strawberries, as well as a herb popularly called *douradinha*, perhaps *Waltheria douradinha* St. Hil. Equally noteworthy is common chicory, or *Chicorium intybus* L., which has long been used in many traditional medicines.

Cardoso de Miranda's recipe "of the specific medicine made as confection" has less ingredients. It simply contains cathartic salt, and "confection of reformed bitartrate", each three ounces" besides half a pound of "Nicolao's chicory syrup with rhubarb".[78] In other words, it has no fresh antiscorbutic herbs.

[76] Miranda, 11-2; 12-3; section "Cure" begins on 7 and ends on 16.
[77] Ibid., 11-2; my emphasis.
[78] Ibid., 12.

In addition, its preparation is rather painstaking. To begin with, the cathartic salt must be thoroughly "macerated." Next, after being placed in a convenient recipient, "Nicolao's syrup" is to be added to it and both should be dissolved; after adding "confection of bitartrate", everything is to be mixed together "with a spoon or a spatula, many times throughout the day". Once well mixed, "well-grinded tartare salt, and martial, diaphoretic antimony" is to be put in. All that will result in "some fermentation". Owing to this, a large vessel is necessary. After "three, or four days" this concoction should be stored in "earthenware" or in a tinplate recipient. As this remedy is not supposed to corrupt "for years", it is particularly useful to those at sea or residing "where there are no dispensaries" or other shops capable of preparing it.[79]

In the first edition of his *Surgical, and Medical Relation*, Cardoso de Miranda imparts that he has been using the recipe "made by cooking" for over "ten years" regardless of the different "symptoms, and apparent sicknesses" occasioned by "this infection". He also provides five supplementary formulas – in case of acute symptoms, coupled with high fever; if patients have "diarrheas, [or] dysenteries"; and simply to strengthen "various sick".[80] As for the formula "made as a confection, or electuary" after detailing its proper use, Cardoso de Miranda offers a further recipe to treat the skin sores generated by scurvy.[81]

Antonio Mendes devotes the penultimate chapter of his *Miners' Government* to scurvy. Quoting from him, it was not his "intention [to] speak about this ailment, since it has been extensively treated by the Licentiate João Cardoso de Miranda". However, to satisfy those curious to know about this disease, which "kills many people" in Minas Gerais, he decided to explain "its causes, signs, prognosis, and the briefest, and gentlest way to remedy it".[82]

Further on, while discussing prognosis, Mendes states that before Cardoso de Miranda had written about it, scurvy had been responsible for the death of "many people, especially Negroes", because "instructors" did not know about it nor had a "safe method of curing it". Mendes admits that "it is not fair" to say being his the remedy he uses. Actually, it is "of that Author", who composed it arduously and generously made it public. The only difference between Cardoso de Miranda's recipe and his prescription is that Mendes adds "some syrups specific for scurvy, due to [his] having great experience with them". He also does this to sweeten Miranda's remedy.[83]

Antonio Mendes also provides a number of prescriptions of his own creation. Noteworthy is his recommendation of rubbing "sour lemon and grinded salt" on the

[79] Ibid., 12-3.
[80] Ibid., 11-2.
[81] Ibid., 12-6.
[82] Mendes, 108-15, on 108.
[83] Ibid., 110.

gums and tongue of scurvy-stricken patients. But this is to be done only at the beginning of disease, and the patient has little appetite. If scurvy is in an advanced stage, Mendes prescribes "the remedy *butyrum antimonii*, which is butter of antimony"[84].

Moving on to Gomes Ferreyra, after transcribing Cardoso de Miranda's "Letter to the Main Physician" of 1731, he added a few interesting notes. To begin with, to treat gums affected by scurvy, he recommends using a certain "Egyptian ointment" dissolved in an alcoholic liquor similar to rum, called *aguardente* in Brazil. Additionally, in case "scurvy occurs at sea, or any other part, where the herbs to be cooked are not found", he suggests an alternative formula for a second concoction of his own contrivance to treat this particular problem.[85]

Gomes Ferreyra's most relevant observation is his agreeing that the "herb *mastruços* is […] medicinal for many illnesses" as noted in many parts of his book. According to him, two names are associated to this plant. "In the City of Bahia it is called *mastruços*" while "in Minas" it is known as "*herva de Santa Maria*". Gomes Ferreyra assures that he is only saying this because Cardoso de Miranda had no information about "the other name" of this plant, which he had seen in "many parts" of Portugal.[86]

Still citing from Gomes Ferreyra, this herb is very similar to the one "called *orgevão* […] which grows in humid and good [i.e., fertile] soil". Known in English known as common vervain or holy herb, the latter is *Verbena officinalis* L. Differently from the leaves of *orgevão*, the ones of the "*herva de Santa Maria* […] have a bad, foul, and fetid smell"[87].

Nowadays spelt *erva-de-santa-maria* in Portuguese, this herb used to be considered a crucifer named *Chenopodium ambrosioides* L. Since 2002, however, its binomial name has changed to *Dysphania ambrosioides* (L.) Mosyakin & Clemants. In English it has many common names, such as lesser swinecress, wormseed, and Jesuits' tea. The same occurs in Brazil, where it comprises numerous popular cognomens. On the other hand, in spite of the various "morphological and organoleptic differences" between this species and *Coronopus didymus*, the two plants are often confused. As a result of this, even today *erva-de-santa-maria* is the most common synonym of *mastruço*.[88]

Far more widely distributed in Brazil than *C. didimus*, *D. ambrosioides* is toxic; an overdose of its essential oil, which contains about 60% of ascaridol, may lead to death. Conversely, *C. didimus* indeed has antiscorbutic properties and its essential oil smells

[84] Ibid., 111-5. Similarly to Cardoso de Miranda's work, this takes place under heading "Cure."
[85] Ferreyra, 485-6.
[86] Ibid., 483-4; my emphasis.
[87] Ibid., 484.
[88] Jorge, Ferro, & Koschtschak, 143; 151.

like mustard, "which grants to it a characteristic fetid odor". In the light of these facts, Gomes Ferreyra seems to have mixed up these two plants.[89]

Both species are mentioned in the former bestseller of Brazilian materia medica written by the Polish-born physician Piotr Ludwik Napoleon Czerniewicz (1812-1881). Better known in Portuguese as Pedro Luiz Napoleão Chernoviz, he completed his medical studies in Montpellier in 1838. In 1840, he moved to Rio de Janeiro, where he developed a successful career in medicine. Nevertheless, Chernoviz moved back to France in 1855.

With the hope of providing medical guidance to the rural populations of Brazil afflicted by the lack of proper health care, Chernoviz wrote two manuals in Portuguese. The first one is *Formulário e Guia Médico* (Prescription vade mecum and medical guide), originally published in 1841 as a single volume. The second is *Dicionário de Medicina Popular e das Ciências Acessórias para Uso das Famílias* (Dictionary of popular medicine and accessory sciences for the use of families), whose two volumes were first issued in 1842 and 1843. Later on, both works went through several reprints and re-editions. Just to give an idea, the second printing of the 19th and last edition of *Formulário e Guia Médico*, which little by little was expanded so as to comprise two volumes, dates from 1927. The sixth and last edition of *Dicionário de Medicina Popular* took place in 1890.[90]

In Chernoviz' *Formulário e Guia Médico*, there is an entry for *herva de Santa Maria*, and another one for *mastruço*. Under heading *Herva de Santa Maria*, this popular name is identified as *Chenopodium ambrosioides* L., spontaneously occurring in many countries, including Brazil, Mexico and Portugal. After describing its most conspicuous morphological characteristics, Chernoviz informs that this plant, which has an "aromatic and particular odor", is an efficient vermifuge, "frequently used in Brazil".[91] However, nothing is said about its toxic nature, nor its supposed virtue to treat scurvy.

In the entry headed *Mastruço*, Chernoviz imparts that its binomial name is *Lepidium sativum* L., notable for its "acrid taste". Cultivated in Portugal and Madeira, this plant is acknowledged as being "antiscorbutic", Next, Chernoviz explains that in Rio de Janeiro *mastruço* is the common name given to *Senebiera pinnatifida* DC. With an "acrid and spicy taste", this plant is also labeled "antiscorbutic". [92]

In other words, Chernoviz initially associates *mastruço* with a member of the Brassicaceae family, popularly called garden cress, to distinguish it from similar edible

[89] Jorge, Ferro, & Koschtschak, 151.
[90] For further information about Chernoviz and his works, see Maria R.C. Guimarães, "Chernoviz e Os Manuais de Medicina Popular no Império," *História, Ciências, Saúde - Manguinhos* 12, n. 2 (May-Aug. 2005): 501-14.
[91] Pedro L.N. Chernoviz, *A Grande Farmacopéia Brasileira: Formulário e Guia Médico: Um Guia das Plantas Medicinais Brasileiras* (Belo Horizonte: Itatiaia, 1996) II: 879-80.
[92] Ibid.

herbs, such as watercress and mustard. Apropos, according to some scholars, this might have been the species described by Dioscorides (c. 40-c. 90), in Book II of *De materia medica*, as having hot and sharp seeds, good for treating assorted ailments. Yet, scurvy is not among them. Nonetheless, possibly owing to the hot and sharp taste of the plant, as well as its seeds, *L. sativum* eventually came to be regarded as an antiscorbutic herb.[93]

Afterwards, Chernoviz relates *mastruço* to *S. pinnatifida*. Far from being a third species, this binomial name is presently considered a synonym of the aforementioned *C. didymus*. In short, until news to the contrary, it appears that – in scholarly terms – only one Luso-Brazilian antiscorbutic herb was consecrated throughout time.

Conclusion

Beginning in ancient times, the history of scurvy comprises many episodes. In fact, it congregates far more events than the ones culminating with the formal introduction, by the late 1700s, of juice of citrus fruits onboard ships of the British Royal Navy. One of such less explored episodes is the empirical acknowledgment that, in addition to citrus fruits – other vegetables such as wild celery, fresh onions and sweet potatoes – were noted to be equally antiscorbutic.[94] The same holds true of an undetermined number of acrid-tasting herbs far less studied than the plants focused by Hughes.

The latter's herbal trio comprises common scurvy grass, brooklime and watercress, respectively, *Cochlearia officinalis* L., *Veronica beccabunga* L. and *Nasturtium officinale* W.T. Aiton. Furthermore, as seen here, one species stood out within the Luso-Brazilian world. Often confused with *Chenopodium ambrosioides* L., such herb is *Coronopus didymus* (L.) Sm. That was accomplished through a chain including the names of the physicians Curvo Semmedo and Suárez de Rivera, as well the surgeons Gomes Ferreyra, Cardoso de Miranda and Antonio Mendes.

[93] Dioscorides, *Plantas y remédios medicinales (De materia medica)*, intr., transl. and notes Manuela García Valdés (Madrid: Gredos, 1998) I: 334-5, including n. 187.

[94] For further information about such vegetables, see for instance Egon H. Kodicek, & Frank G. Young, "Captain Cook and Scurvy," *Notes and Records of the Royal Society of London*, 24, n. 1 (Jun. 1969): 43-63, especially 48-51.