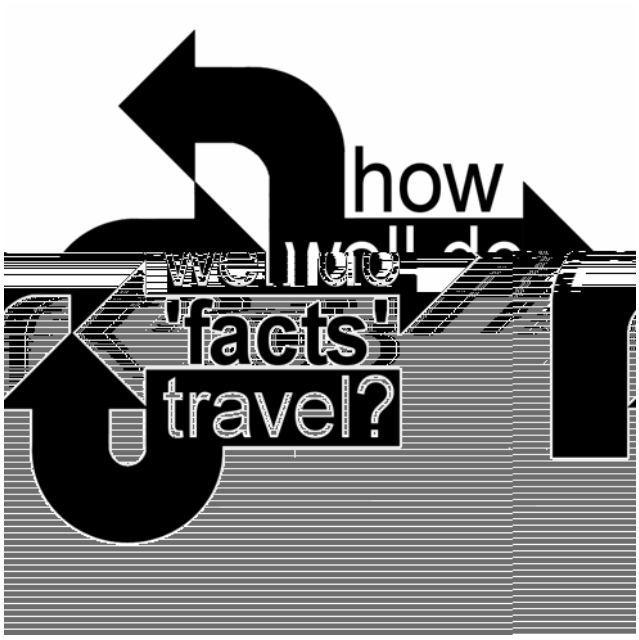
Working Papers on The Nature of Evidence:
How Well Do 'Facts' Travel?
No. 10/06

"A Thing Ridiculous"? Chemical Medicines and the Prolongation of Human Life in Seventeenth-Century England

David Boyd Haycock

Department of Economic History
London School of Economics

July 2006



“The Nature of Evidence: How Well Do ‘Facts’ Travel?” is funded by The Leverhulme Trust and the ESRC at the Department of Economic History, London School of Economics.

For further details about this project and additional copies of this, and other papers in the series, go to:

http://www.lse.ac.uk/collection/economichistory/

Series Editor:

Dr. Jonathan Adams
Department of Economic History
London School of Economics
Houghton Street
London, WC2A 2AE

Tel: +44 (0) 20 7955 6727
Fax: +44 (0) 20 7955 7730

‘A Thing Ridiculous’? Chemical Medicines and the Prolongation of Human Life in Seventeenth-Century England

David Boyd Haycock

Abstract

Sir Francis Bacon explored as a medical question the issue of how human life spans might be returned to the near-thousand years enjoyed by Adam and the Patriarchs. Extended old age seemed feasible: reports told of people living well into their centenary. Meanwhile, New World natives were said to live for several hundred years. The boundaries of old age in the seventeenth century were inconclusive, and the hope that life could be prolonged for decades beyond the allotted eighty years was a serious question. In 1633, one doctor observed that to “attaine to 100 is no wonder, having my selfe knowne some of both sexes”,

and the Patriarchs. There, he went so far as suggesting that "That which may bee repaired by Degrees, without a Totall waste of the first Stocke, is potentially eternall."[1] This reflection supported his earlier (unpublished) proposal that the "true ends" of human knowledge and thus the whole purpose of his programme for the advancement of learning was, "to speak plainly and clearly … a discovery of all operations and possibilities of operations from immortality (if it were possible) to the meanest mechanical practice."[2] Indeed, Graham Rees has written that the "aim of prolonging life represented the aims of Bacon's programme as a whole," and that he "marked out the prolongation of life as the first and highest objective of the new philosophy."[3]

Bacon was by no means the first to explore this medical question. In the second chapter of his late sixteenth-century best-seller, *Erreurs Popularires au Fait de la Médecine et Régime de Santé*, the French physician Laurent Joubert, Chancellor of the University of Montepellier, asked whether it was possible for medicine to considerably prolong the life of men, observing that such speculation "has always been intense and has excited the greatest minds." Objectively reviewing both sides of the

---

[1] *History Naturall and Experimentall, of Life and Death. Or of the Prolongation of Life*, translated from the Latin by W[illiam] R[awley] (London: printed by John Haviland for William Lee, and Humphrey Mosley, 1638), "The Preface," unpaginated. Rawley (who had been Bacon's last secretary) brought out his translation following an 'unofficial' version had appeared earlier in the same year under the title *The Historie of Life and Death*. The book was first published as *Historia vitae & mortis, sive, titulus secondus in Historiâ naturali & experimentali ad condendam philosophiam: quae est Instaurationis magnae pars tertia* (London: printed by John Haviland for Matthew Lownes, 1623). See Charles Webster, *The Great Instauration: Science, Medicine*

argument, Joubert had concluded that it *was* possible to “elongate the terms of all ages, and thus of all life, by medicine, even further than is ordered by Nature.”[4] But Joubert had not proposed a clear way it was to be done. Bacon’s *Historia Vita et Morbis*, in the depth of its exploration into the causes of ageing and the range of

abreviation of man *Life*, in the several Ages of the *World*; yet must understand it was not *equally* so in all parts of the *World* together; but *places* and *climates*, and manner of *living* of a people, cause much *difference* in the *protraction* of their *lives*, that at the same time, some people of *peculiar places*, were

places

to be Parr’s *premature* death on the smoky atmosphere of London compared to the fresh air of Shropshire, compounded by his sudden

through the seventeenth century and is repeated, for example, by the Flemish physician Jean Baptiste van Helmont.[22]

These were all impressive, almost wondrous, records. They

Vaughan's description reflects the common contemporary belief that the Earth, like all living things, was growing old and would itself eventually die. As the vitality of the Earth waned, so the things living upon it became less vibrant: like men, who had been made perfect but had then degenerated, so the Earth had decayed from its physical perfection on the first day of Creation. In 1632 the poet Henry Reynolds reflected, "I have thought upon the times wee live in, and am forced to affirme the world is decrepit, and, out of its age & doating estate, subject to all the imperfections that are inseparable from that wracke and maime of Nature."[26]

According to such a view, there was little that could be done to recover the long lives of our ancestors. The world was drawing inevitably, inexorably, to a close. Time was coming to an end, human flesh crumbling. The troubled political events of the seventeenth century — together with the apparent increasing incidence of diseases such as syphilis, smallpox, scurvy, plague and rickets — seemed to indicate as much. As Dr Richard Browne wrote in 1683 in his footnotes to Roger Bacon's *The Cure of Old Age, and Preservation of Youth*, "we must conclude the World is in its testy old Age," and the Second Coming was nigh.[27]

Although Bacon called his times "this autumn of the world," and he appears to have held millenarian beliefs, he rejected such a pessimistic view of natural history and the irreversibility of human mortality.[28] If this *was* the Earth's dotage, for Bacon it was to be a ripe old age of profound wisdom and great learning, in which European scholars would pluck the

[26] Henry Reynolds, *Mythomystes* (1632), quoted in Guibbory (1986), 6.
[27] Roger Bacon, *The Cure of Old Age, and Preservation of Youth*, translated out of the Latin by Richard Browne (London: printed for Tho. Fisher at the Angel and Crown, and Edward Evets at the Green Dragon, in St Pauls Church-yard, 1683), 6—7.
[28] See Guibbory (1986), 50.

final fruits of God's benevolent creation.[29] Hence Bacon frequently cited Daniel's Old Testament prophecy touching upon the end of days: "Many shall go to and fro, and knowledge shall be increased."[30] This was the

some degree, [and] the retardation of age."[33] In the decades after Bacon's death Salomon's House became the model for numerous scientific societies, culminating in 1660 with the foundation of the Royal Society of London – whose importance we shall come to shortly.

In the "Dedication" to *Historia Vita et Morbis*, Bacon had stated his hope that it would prompt "the Nobler sort of *Physicians*" to "advance their Thoughts" on this subject, and encourage them to become "Coadjutours … in *Prolonging* and *Renewing* the *Life* of *Man;* Especially seeing we prescribe it to be done by Safe, and Convenient, and Civill wayes, though hitherto un-assayed."[34] As Webster has shown, in the 1650s Samuel Hartlib and his circle – some of whom would be involved in establishing the Society — advanced the Baconian project for the prolongation of life, in particular through the search for new, chemical medicines, the philosopher's stone, the elixir of life and even, perhaps, a universal medicine. The possibility that chemical medicines could be used to cure diseases had been given

consumin

the philosophers' stone – could be found to cure disease and maintain health.

As Alan Debus has shown, Paracelsian chemical theory made significant inroads into medical thought and practice in seventeenth-century England. When in the 1630s Dr James Hart explored the possibilities of prolonging human life through careful regimen, he observed:

> one may aske what is the ordinary period whereunto the life of man by meanes of art may be prolonged? Our ordinary Authours, as wee have said, assigne 100 or 120 [years]: but wee have a certaine sort of people, who in shew, would seeme to transcend vulgar understanding, and tell us strange things of the

he conceded in *Novum Organum* that chemists had "made several discoveries," and (albeit accidentally) "presented mankind with useful inventions,"[42] it was undoubtedly (al)chemists Bacon was attacking when he noted the "many silly and fantastical fellows who, from credulity or imposture" had "loaded mankind with promises, announcing and boasting of the prolongation of life, the retarding of old age, the alleviation of pains, the remedying of natural defects, the deception of the senses, the restraint and excitement of the passions, the illumination and exaltation of the intellectual faculties, the transmutation of substances," etc.[43] Potable gold and the other "*Chymicall Medicines*" of the Paracelsians thus received short shrift in his *Historia Vita et Morbis*, for they "first puffe up with vaine hopes, and then faile their Admirers."[44]

For Bacon, the prolongation of life was a laborious task, not to be quickly won. As he explained in *The Advancement of Learning*, only someone who had studied "perfectly" the processes of the human body, and who had investigated thoroughly the effects of diets, baths, ointments and "proper Medicines," would be able to prolong their life — or at the least "renew some degrees of youth, or vivacity." In both the *Advancement* and (at greater length) *Historia Vita et Morbis*, Bacon expounded a complex scheme involving careful regimen, exercise, dress, climate, and "seasonable sleep." These along with regular purging, phlebotomy, and "attenuating Diets, which restore the Flower of the Body," supplements of opiates and nitre, and (literally) blood baths, were all means that could reduce the effects of ageing and restore bodily

---

alchemy in *The Wisdom of the Ancients*," in Brian Vickers (ed.), *Essential Articles for the Study of Francis Bacon* (London: Sidgwick & Jackson, 1972), 51—92.

[42] Bacon (1620), part 2, Aphorisms, no. 85.

[43] Bacon (1620), part 2, Aphorisms, no. 87.

[44] Bacon, (1638), Preface, unpaginated.

their beliefs in astrology, natural magic and superstition: beliefs that did not stand up to the rigours of Bacon's legalistic, empirical method.[50]

Bacon's position indicates the ambivalence in which chemistry was

and climate, noting that “there are also places at this day, whereunto a Life of three hundred years is ordinary.”[53] Those who lived cheerfully “far from the cares, usuries, busie affaires, and stormes of their age” were likely to live longest. Helmont also advised his readers to avoid “carnal Lust,” gluttony, drunkenness, tobacco, frequent baths, bloodlettings, “loosening medicines,” and to live away from bad climates and contagious air.[54]

In these respects, Helmont’s practical guidelines were little different from those advocated by the sixteenth-century Italian nonagenarian Luigi Cornaro in his *Discorsi della vita sobria*.[55] But Helmont believed that medicines also had a role to play in advancing human life spans. The Tree of Life that grew in the Garden of Eden, and which had promised by its fruits eternal life to Adam and Eve, was his medicine of choice for indefinitely prolonging life, and his arbiter of what could be achieved through Nature’s bounty. Whilst the Paracelsian *Arcana* could cure diseases, Helmont wrote that the Tree of Life “chiefly concerns the preservation and renewing, or making young again of the vital Faculties.”[56] Helmont believed that the closest equivalent to this medicine “was to be fetched out of a most wholesom, odoriferous, balsamical, and almost immortal Shrub.”[57] The most likely candidate for such a “shrub,” was the “Cedar in *Libanus*” from which Noah had made the Ark. It was not enough, however, simply to use the fruit, bark, leaves or sap from this “Cedar of the Shoar of *Palæstina*.”[58] Helmont’s method depended upon

---

[53] Helmont (1662), 810.
[54] Helmont (1662), 754.
[55] Bacon wrote in *Historia Vita et Morbis* that Cornaro (1467—1566), by his sparse d

distilling the wood in a sealed glass vessel for many months “with a like weight of the Liquor Alkahest.”[59] Yet here was the rub: for what, exactly, was the Liquor Alkahest?

As Paulo Porto helpfully explains, Helmont’s Liquor Alkahest “was an important means for preparing medicines and for unveiling some of the deepest secrets hidden in natural bodies. … only through the alkahest would the physician be able to cure hitherto ‘incurable’ diseases, and to prepare a medicine for prolonging human life.”[60] It was Helmont who fully developed the idea of the Liquor Alkahest from a hint he found in Paracelsus, as well as the Dutch chemist Johann Rudolph Glauber, who saw it as the key to discovering a range of remarkable medicines. Both men would be enormously influential on the pursuit of chemistry and the search for chemical medicines in England from the 1640s until the end of the century, and the Alkahest became the elusive goal sought by numerous chemists working in England. Such was the interest in chemistry of many of these early Fellows that it could be asserted in 1703 by John Pickering — who claimed friendship with Thomas Herbert, Earl of Pembroke, a former president — that this “Royal Academy” had been “made up” by Charles II, Robert Boyle “and other Great and Ingenious Practitioners” to search for the “great Medicine” (by which he probably meant the Liquor Alkahest) though “without success.”[61] Whatever credit we may give to Pickering’s claim, it is certainly the case that Robert Boyle, as well as Sir Kenelm Digby, Thomas Henshaw and Charles II were all keenly interested in chemistry, and were all involved in the foundation of the Society.

---

[59] Helmont (1662), 811.

[60] Paolo Porto, “Summus atque felicissimus salium”: The medical relevance of the liquor alkahest.’ *60662), 81.*

Immediately upon his Restoration, Charles invited Nicaise Le Fèvre, formerly the King of France's chemist, to England.[62] According to Le Fèvre (who in December 1661 became a fellow of the Royal Society), in the spring of 1663 Charles commanded him to apply himself wholly to the preparation of the famous "cordial" invented earlier in the century by another chemist, Sir Walter Raleigh. A devoted Paracelsian, Le Fèvre asserted that by producing this "Great *Cordial*" he would "prove the great advantages that the modern *Pharmacie* carrieth legitimately above the ancient, by reason that it is enlightened with the glorious lights of *Chymistry*." Raleigh's cordial included everything considered good in contemporary medicine for preserving and prolonging life. Ingredients included hart's horn (because "there are but few Animals that can equal the Hart for length of life, since he lives whole Ages") and gold ("because it re-establishes and augments the radical Moisture and the natural Heat").[63] At the suggestion of Sir Kenelm Digby and Sir Alexander Fraiser (the king's chief physician), Le Fèvre added "the Flesh, the Heart, and the Liver of *Vipers*" to Raleigh's recipe, because this snake renews its skin annually, and so "the remedy it yields may also produce in us Renewing Principles and Faculties."[64] Raleigh'

Boyle's interest in chemistry had begun in the early 1650s. His first tutor in chemical methods was the Harvard-educated physician George Starkey. Starkey had arrived in England in 1651, claiming, according to Samuel Hartlib, to have already "done a number of most strange and desperate cures."[66] Starkey told Boyle that he was close to establishing the recipe of "an admirable medicine of a perpetual vertue … with a most desirable quicknesse & protractive of Old age Espetially."[67] And he claimed to know an "Adept" in Massachusetts who possessed the secret of making the philosopher's stone, and had used it to restore the hair and teeth of an old lady and made a withered peach tree bring forth new fruit.[68] Together, he and Boyle produce a copper-based chemical medicine, "ens veneris," which was inspired by their readin

Cambridge graduate, gained considerable renown in London with his chemical medicine of potable gold.[71] By the mid century the London empiric Salvator Winter was claiming that “by the Bl

and mind will depart away."[74] A London colleague of Starkey's, the self-styled "Unlearned Alchymist" Richard Mathew, prescribed a chemical pill for about three weeks to a gentleman suffering from syphilis. Mathew was both startled and impressed when the man came "and shewed me his naked body, which I was loath he should, and [there was] not one hair upon him, but a fresh skin, as of a young child." The gentleman told Mathew that "he was as well as ever he was in all his life," and what made Mathew "more to wonder, was that the nails of his hands did then begin to peep out, like the little white that is at the root of our nails."[75] Mathew also claimed that, "although to many it may seem incredible," it was reported to him by another gentleman that an old lady "aged betwixt eighty and ninety" who had taken his pills "for some years … now hath young teeth growing in her head;" her periods had also returned "as when she was but 20 years old."[76] Boyle likewise records how Le Fèvre told him how a friend took a restorative medicine that made his finger nails fall out, and that "this Gentleman keeps [them] yet by him in a Box for a rarity." Le Fèvre had also given this medicine to a seventy-year-old female servant, and claimed that her periods resumed, and also to an old hen, which moulted its feathers, grew new ones, and laid more eggs than usual.[77] If true, these wer

symptoms as clear signs of rejuvenation: they were the seventeenth-century equivalent of chemotherapy.

Despite distancing himself from many low bred, unskilled empirics and eventually criticising some Helmontian ideas in *The Skeptical Chymist*, Boyle did not doubt that one day the elixir would be discovered. In a short, anonymously published essay of 1678, *Of a Degradation of Gold Made by an Anti-Elixir: A Strange Chymical Narrative*, Boyle gives an account of an "Experiment" with a tiny quantity of what he calls variously an "*Anti-Elixir*," "*Anti-Philosophers Stone*" or "Medicine" obtained from a stranger who had travelled in the East. The experiment was, as Boyle states using contemporary scientific terminology, a "matter of Fact," since it took place before "a Witness" who was an "experienced Doctor of Physick." In the essay Boyle recounts his experiment to "an Assembly of *Philosophers* and *Virtuosi*," headed by a "President" — terminology clearly suggestive of the Royal Society. A dark reddish powder, Boyle claims, was transmuted gold into a lesser, silver-like metal: given this apparent success of the "anti-elixir," one of Boyle's interlocutors (the essay is presented as a dialogue) asserts, "I see not why it should be thought impossible that Art may also make a *true Elixir*."[78]

It did not seem improbable to Boyle, therefore, that an elixir — whose effects would include the prolongation of human life — existed somewhere in Nature. It was simply waiting to be found by the patient and (in particular) pious chemist. The chemist Benjamin Worsley had made this last point clear to Boyle in the late 1650s, telling him that any sure-

and as Worsley argued at length, if you could overcome sin (through faith), you could overcome death. In Worsley's opinion, if "all the Gates & Avenues of death" were "rightly" known, "wee should not thincke it either Enthusiasticke or Ridiculous either to affirme or to expect a freedome <or> Liberation from the common state of mortality & corruption."[79] But Worsley did not confine his argument to faith alone: he made the Helmotian argument that as there were "severall simples & living creatures" that could "take away the life of man … soe the Lord hath put a power in other simples to stregthen & quicken it." The "generality of Phisitians" had mistakenly "sought out the medicinall properties of things in a blended & confused manner": another way of searching might prove more fruitful. Worsley does not name this method, but as he reiterates throughout his letter, he was certain that death was neither "absolutely fatall" nor "necessary."

Though deeply pious, Boyle does not appear to have laid out a theological route to immortal life on Earth. But he did set real store by the efficacy of chemical medicines. In a work-diary from the last years of his life we find an intriguing record, where Boyle records how an unnamed "person" who had recently performed "some extraordinary things in Chymistrie" told him that in Italy he had known "an excellent Artist" – that is, one adept at alchemy. This Venetian claimed that though he "seemed to be at most between 40 & 50 year old yet <in> reality he was more than 173 years of age." Boyle writes that though this story seemed "scarce credible," he was "less disposd" to dismiss it because the person who told it to him appeared to be "noe Charleton but a plain honest German of good repute" amongst some of Boyle's friends. Furthermore, from Boyle's

[79] That Worsley is the author and Boyle the intended recipient of this undated letter is not certain, but seems likely, and it has been included in Boyle's most recent collection of correspondence: see Hunter et al (2001), 1.301—318, quote from p. 308. See also Donald R. Dickson, "Thomas Henshaw and Sir Robert Paston's pursuit of the Red Elixir: An early collaboration between Fellows of the Royal Society," *Notes and Records of the Royal Society of London* 51 (1998): 57—76.

other conversations with hi

Paracelsus and Jacob Duchesne, Digby attempted the revivification of plants and animals, and claimed success in re-engendering live crayfish

century” longer.[88] In fact, Descartes died in Stokholm in 1650. On hearing the news, Samuel Hartlib — who had his own ideas of how human life could be prolonged — recorded in his diary that “Cartes designe was to make a compleate Philosophy. In reference to this scope imagining that it was possible in nature to prolong ones life to a thousand years.”[89] It is [89] [89] notable that Descarte’s early death did not chaste

what he calls “the great Production.” But having received Oldenburg’s “universall inspection” of the matter, it “commands me to be more then Neuter, in this beliefe.”[94] In the memorandum to another lost letter, sent to the obscure French chemist Mr To

way “the life of many dying persons” can be “maintain’d, for some time,” by making them drink hot, spirituous liquors. Martel’s bald conclusion was that “there is no reason to despair of finding out such Medicins” as would one day fulfil Bacon’s dream of prolongevity.

might one day be able to shed their skins and metamorphose. But whilst “[s]ome means” may yet be found by physicians to ‘for the proroguing’ of [illegible] diseases of old age, “and keeping them off for a time; and for the mitigation of their violent assaults, but for the total preventing, or the absolute curing, let no man living hope for.”

and unconcern to submit to that Dissolution which is the necessary Condition of our perishable Materials, and of our nice and frail Structure and Composition: And to account it a Blessing that we have survived,

LONDON SCHOOL OF ECONOMICS
DEPARTMENT OF ECONOMIC HISTORY

WORKING PAPERS IN: 'THE NATURE OF EVIDENCE: HOW WELL DO "FACTS" TRAVEL?'

For further copies of this, and to see other titles in the department's group of working paper series, visit our website at:
http://www.lse.ac.uk/collections/economichistory/

2005

01/05: Transferring Technical Knowledge and innovating in Europe, c.1200-c.1800
Stephan R. Epstein

02/05: A Dreadful Heritage: Interpreting Epidemic Disease at Eyam, 1666-2000
Patrick Wallis

03/05: Experimental Farming and Ricardo's Political Arithmetic of Distribution
Mary S. Morgan

04/05: Moral Facts and Scientific Fiction: 19th Century Theological Reactions to Darwinism in Germany
Bernhard Kleeberg

05/05: Interdisciplinarity "In the Making": Modelling Infectious Diseases
Erika Mattila

06/05: Market Disciplines in Victorian Britain
Paul Johnson

2006

07/06: Wormy Logic: Model Organisms as Case-Based Reasoning
Rachel A. Ankeny

08/06: How The Mind Worked: Some Obstacles And Developments