MORTAL COIL

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MORTAL COIL

A SHORT HISTORY OF LIVING LONGER

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Acknowledgements

When writing my biography of Dr William Stukeley, my interest was caught by a book published in 1722 under the curious title *Long Livers: A Curious History of Such Persons of Both Sexes Who Have Liv'd Several Ages and Grown Young Again*. A few years later, when I was working with Professor George S. Rousseau at De Montfort University, Leicester, he asked me to investigate people who had lived to old age in the eighteenth century for his research into what he playfully called 'the geriatric enlightenment'. Shortly afterwards, I was struck by a remark in a book by Professor Steven Shapin that René Descartes had hoped to live five hundred years.

Profound old age, and the possibility of revived youth, looked like an interesting research proposal. With a reference from Professor Rousseau, in 2003 I was invited to participate as an Ahmanson-Getty Research Fellow at the William Andrews Clark Memorial Library, a satellite of the Center for Seventeenth and Eighteenth Century Studies at the University of California, Los Angeles. Professor Max Novak was running a nine-month programme, 'The age of projects: Changing and improving the arts, literature and life during the long eighteenth century, 1660–1820'. It was there that much of the research for this book was undertaken, and I am therefore particularly grateful to Professors Rousseau and Novak, and to the four other Fellows who participated in the programme: Dr Martin Gierl, Dr Sarah Kareem, Dr Kimberley Latta and Dr Alison O'Byrne. The hospitality of everyone at the Clark Library was fantastic, and I am grateful to all who contributed to my time there, in particular the librarians and the

participants in the 'Age of projects' conferences; also to Professor Linda Mitchell for introducing me to Samuel Hartlib and his circle, to Laura Myers for suggesting that this book could be written, and to John Kurtz for providing me with fine accommodation in Los Angeles.

No book on this subject can fail to acknowledge the work of Gerald Gruman. His substantial 1966 essay beat the path that I have followed. This book has been completed in spaces between my most recent project, a Wellcome Trust Research Fellowship working with Dr Patrick Wallis in the Department of Economic History at the London School of Economics and Political Science. Some of this work, on early modern medicines, has fed into my first two chapters; I have also been able to continue my interest in ageing through Professor Mary Morgan's kind invitation to participate in the department's Leverhulme Trust-funded project, 'The nature of evidence: how well do "facts" travel?' The lively discussions of this group have been a real pleasure, and I am particularly thankful to Mary and Patrick, and to everyone else in the 'Facts' team, for their contribution.

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Preface

'Every Man', Jonathan Swift observed, 'desires to live long; but no Man would be old.'[1] How many, however, have wished to live, youthfully, forever? As a human craving, immortality stretches down the millennia: the greatest surviving monuments of antiquity, the pyramids of Giza in Egypt, were raised (it would appear) in the belief that, beyond this mortal life, there lies another, better, endless existence.

Countless monuments have been erected, cities founded, battles fought, books written, in the hope that our names will not be forgotten, that our deeds will be recorded forever in the annals of history. But what of immortal flesh? What of the desire of escaping death's embrace, and continuing, physically, here on earth – forever?

History abounds with such myths and legends. In the eighth century BC, the Greek poet Hesiod described a distant Golden Age, when people remained perpetually young, living a peaceful, carefree existence in a bountiful paradise. Gilgamesh sought the herb 'Old Man Becomes Young', and discovered it at the bottom of the Persian Gulf. Carrying it home to Assyria, he stopped by a lake to swim; carelessly, he left the plant at the water's edge, where it was eaten by a snake. In Judaeo-Christian tradition, there is the Garden of Eden, where Adam and Eve lived what would have been immortal lives, if only they had not eaten the forbidden fruit.

These are myths. But recent advances in genetic technology and biomedicine seem to promise the opportunity of ever-lengthening youthfulness, ever-longer lives and – perhaps? – one day, immortality itself. As Professor John Harris of Manchester University has recently

written in the prestigious journal *Science*: 'New research now allows a glimpse into a world in which aging – and even death – may no longer be inevitable.' It is 'unlikely', Harris adds, 'that we can stop the progression to increased life-spans, and even "immortality"'. He thus advises: 'We should start thinking now about how we can live decently and creatively with the prospect of such lives.'[2]

The potential realization of the dream of perpetual youth may look like a miracle of modern science. But, as I show in this book, it is something that Western scientists and philosophers have been dreaming of – and working towards – for the past four hundred years. Ever since the 'scientific revolution' – the era in which classical and medieval ideas of science, religion and the natural world started to be questioned and rejected – the dream of perpetual youthfulness has tantalised. This book uncovers the archaeology of that profound idea, investigating some of the names (some famous, others almost unknown, but none without interest) who have sought a route to perpetual youthfulness. They include some major names in the establishment of modern Western science, including Sir Francis Bacon, René Descartes and Robert Boyle. In more recent times, there have been Nobel laureates such as the Russian biologist Ilya Ilyich Metchnikoff and the French surgeon Alexis Carrel. Others whose works and interests have crossed the path or influenced this search include Jonathan Swift, Jean-Jacques Rousseau, the Comte de Buffon, Albrecht von Haller, the Marquis de Condorcet, Benjamin Franklin, Christoph Wilhelm Hufeland, William Godwin, Mary Shelley, Thomas Malthus, Charles Darwin, Sigmund Freud, Alexander Graham Bell and Julian and Aldous Huxley.

Not all the people I write about expected, or wanted, immortality: a few decades – or even centuries – more, seemed enough. But underlying this ambition, from Sir Francis Bacon in the sixteenth century through Descartes to such Enlightenment luminaries as Condorcet and Godwin and onto our own day, this was the direction in which these studies clearly pointed. My concern, therefore, is not the immortality of the soul; I leave the history of that immense subject to others. This is the chronicle of the search for the prolongation of physical human life on earth and for the possibility of immortal flesh in Western science and medicine. I chart it from the early years of the seventeenth century right up to the first decade of the twenty-first. It is an immense and, I hope, memorable story.

CHAPTER 1

The History of Life and Death

> To live forever, and to become immortall here on earth, is a thing impossible: but to prolong a mans life free from violent sicknesses, and to keep the humors of the body in a temperate state, I verily believe it may be done . . .
>
> Sir William Vaughan, *Directions for Health, Naturall and Artificiall* (1633)

Late March, 1626 A chill wind blows tufts of snow, seeming reluctant to touch the icy ground. The philosopher's coach, which he shares with Dr Witherborne – Scots physician to King James – jogs and rattles through hardened ruts on the Highgate road. Bound in fur-lined coats, feet tucked in leather boots, the men are hardly warm. But they are out, none the less, to take the health-giving country air, free from the noxious, sulphurous fumes of the London smoke.

Sir Francis Bacon, now sixty-six years old and ailing, takes this daily journey as a health-benefiting exercise. Though his hair is grey and his face lined with age, though he has suffered and still suffers those blows of outrageous fortune which have cast him down from highest political office, he is today as much filled with ideas and exuberance and imagination as he was more than forty years before. Then, as a young student at Cambridge University, he had first questioned the teachings of Aristotle. And now a thought comes to his lively mind. He has often wondered if flesh, like fruit, might not be long preserved in snow, and

quite as well as it is in salt. With his vivid, viper eyes, he has spied something from the window of the coach, and here is a chance to conduct an experiment. He calls loudly for his huddled driver to halt.

As the coach horses blow air like steam through their nostrils, the philosopher and the doctor clamber from the carriage, trudge through snow, and knock at the door of a cottage at the foot of Highgate Hill. A poor woman opens it, no doubt amazed to see such eminent visitors. The philosopher produces coins and buys the chicken he had seen picking at scraps in the yard. The woman kills and eviscerates it, and the men help to stuff the bloody carcass with snow, before returning to their coach with the frozen bird. But the cold has chilled the old man, who has long been ill and weakening. His fingers swell red and stiff. He is suddenly overcome with fever; he falls into a fit, vomiting.

Dr Witherborne, realizing that Sir Francis is too weak to return to his Holborn lodgings, directs the coachman to the nearby home of Thomas Howard, Earl of Arundel. The Earl and his wife, however, are absent – imprisoned in the Tower of London on a whim of the king – and the beautiful Italian gardens of his Highgate villa are lost beneath sheets of snow. But the earl's servants prepare a guest-room for their eminent ailing visitor, warming the long-empty bed with a heated pan.

From there, on the following day, Sir Francis dictates a letter to his secretary, who has ridden up from London (perhaps bringing with him one of his master's medicines: opium and rose water, perfumed with cloves). He requests 'humble thanks' from the earl 'for a favour' and apologises for this unexpected stay. He had, he explains, been 'desirous to try an experiment or two, touching the conservation and induration of bodies. As for the experiment itself, it succeeded excellently well . . . But when I came to your Lordship's house, I was not able to go back, and therefore was forced to take up my lodging here, where your house-keeper is very careful and diligent about me.' He apologises for not having written the letter personally, 'but in troth my fingers are so disjointed with this fit of sickness, that I cannot steadily hold a pen'.[1]

Over the next few days the philosopher's cold and fever worsen. The bed, unslept in for a year, is damp. What was at first a cold advances into bronchitis – a deadly inflammation of the mucous membrane of the lungs. On the morning of Easter Sunday, the old man chokes on a discharge of bodily fluids, so copious it drowns him. Sir Francis Bacon,

Lord Verulam and Viscount St Albans, the greatest English philosopher of his age, is – somewhat unexpectedly – dead.[2]

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Why, exactly, did Sir Francis Bacon stop his coach that freezing winter's day to stuff a chicken with snow? The answer is probably this: ironically, his fatal, icy experiment was part of his dream of restoring humans to that immense longevity they had enjoyed before the Fall. 'Knowledge', as Bacon famously declared, 'is power.' And 'the true

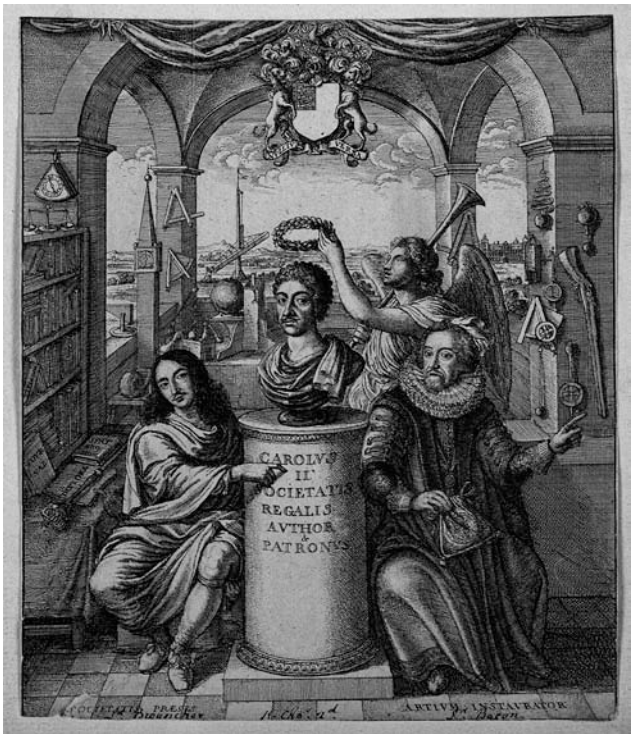

Figure 1.1 Sir Francis Bacon: engraving by Wenceslaus Hollar (after a design probably by John Evelyn), from the frontispiece to Thomas Sprat's *History of the Royal Society of London* (1667). In the *History of Life and Death* (1623), Sir Francis Bacon laid out his ideas on how he believed human immortality might be achieved. In this allegorically charged representation, the long-dead Bacon is on the right, sitting with the Royal Society's first president, William Brounker, beside a bust of its founding patron, Charles II.

ends of knowledge', as he observed in 1603, involved the restoration of humankind to 'the sovereignty and power' over the whole of nature. This was the knowledge and authority Adam had briefly enjoyed in the Garden of Eden, when he had given names to all the animals in creation. But it was not only this: 'to speak plainly and clearly', wrote Bacon, 'it is a discovery of all operations and possibilities of operations from immortality (if it were possible) to the meanest mechanical practice'.[3]

Who was this philosopher who thought it might be possible to live young and healthy, perhaps forever? Francis Bacon was born in London in 1561, second son of Sir Nicholas Bacon, a self-made man who had risen from the ranks of Suffolk yeomanry to become Queen Elizabeth's Lord Keeper of the Privy Seal. Francis grew up at his father's country estate at Gorhambury, near St Albans in Hertfordshire. At the age of twelve he went to Trinity College, Cambridge; at fifteen he travelled to France as companion to the English ambassador; at seventeen he began legal studies at the Inns of Court in London. From there, his rise to power was slow but steady: in 1594 Elizabeth made him one of her learned counsel; under James I he became attorney general; then, in 1618, he achieved the highest legal position in the land, that of Lord Chancellor. In his brief years of power he kept a well-heeled, well-dressed court that was said to rival the king's. He was arrogant, ambitious, ostentatious, homosexual, and it was alleged that Bacon's ganymedes and favourites took bribes on his behalf.[4] The poet Alexander Pope would later characterize him as 'The wisest, brightest, meanest of mankind'.[5] When it came, his fall was sudden and rapid: in 1621 he was accused of accepting expensive gifts from plaintiffs, was impeached, and confessed 'I am guilty of corruption'.[6] He was amazed, since his crime was not uncommon.

He was fined, briefly imprisoned in the Tower of London, and banished from court. His faithless friends and handsome servants vanished. He sold his beloved house in the Strand, retiring 'from the stage of civil action' to his private chambers at Gray's Inn. There he turned his full attention during his final years to the reform of philosophy and science.

Once Bacon was released from the affairs of the English Renaissance state, his plan was to write six essays which would form the third part of his 'Great Instauration', the comprehensive philosophical

programme he had been preparing and part-publishing over the past twenty years. The first of these essays would be on winds, the last, on life and death. But, on finishing his *Historia Ventorum*, he changed his mind about their order. Given what, he explained, was 'the extreme profit and importance of the subject, wherein even the slightest loss of time should be accounted precious',[7] why wait till he had written four more essays? There could be no hanging around in the search for immortality!

Thus, over the winter of 1622, Bacon wrote his newly promoted dissertation – he called it *The History Naturall and Experimentall, of Life and Death.* It was completed in Latin in January 1623 and published later that year. It carried the subtitle 'of the Prolonging of Life'.[8] In Bacon's youth the French physician Laurent Joubert, Chancellor of the University of Montpellier, had pondered the question whether it was possible for medicine considerably to prolong the life of men, observing that such speculation 'has always been intense and has excited the greatest minds'. Objectively reviewing both sides of this argument in the second chapter of his best-selling *Erreurs populaires au fait de la médecine et régime de santé*, 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'.[9]

But Joubert had not proposed a clear way this was to be done. Bacon's *History of Life and Death*, in the depth of its detail and the range of its applications and speculations, was a work unprecedented. Bacon was well qualified to undertake the task: as his secretary and executor William Rawley subsequently observed, 'if there were a Beame of Knowledge, derived from God, upon any Man, in these Modern Times, it was upon Him'.[10] Even a Frenchman, writing in the 1660s, could remark that Bacon 'undoubtedly is the greatest Man for the Interest of Natural Philosophy that ever was'.[11]

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The fundamental framework for Bacon's belief that life could be vastly prolonged was the Bible. The first chapters of Genesis make it clear that, if Adam and Eve had not eaten the forbidden fruit, they would have enjoyed eternity on earth. In the Middle Ages the Oxford friar Roger Bacon had recorded that 'man naturally is immortal'.[12] In 1644

the puritan pamphleteer Richard Overton began his tract, *Man's Mortalitie*, by explaining that God created Adam and Eve 'both innocent and free from sin, and so from *Death* and mortality: *For the wages of Sin is Death* . . . Thus Man was gloriously immortall.'[13] It was in Eden that mankind had lost this golden opportunity of illimitable life – in fact, had been denied that authority over nature that God had first granted to Adam and to which Francis Bacon hoped we would one day return.

Sin had frayed the sturdy fabric of God's creation. 'If you inquire therefore into the ruines of human nature,' wrote Richard Steele in 1688, 'the answer will be, that *Sin* is the *moth*, which, being bred therein, hath fretted the garment, withers the man, and layes his honour in the dust.'[14] We were pale imitations of our first parents: in Bacon's day (a time when those who cared about such things believed God had created earth on an autumn afternoon in 4004 BC), it was held that Adam had possessed universal, encyclopaedic knowledge and a perfect memory. According to the philosopher Joseph Glanvill, writing in 1661, Adam's understanding of the world's complexities had been enhanced by the power of telescopic sight, so that he could see in all its finery 'the Coelestial magnificence' of the heavens. Perhaps, Glanvill thought, Adam had even possessed microscopic sight, so that 'he saw the motion of the bloud and spirits through the transparent skin'.[15]

Not only were Adam and Eve perfect in knowledge, they were physically faultless, too. According to the late Elizabethan astrologer Simon Forman, 'when he was created ther was noe creatur in beauty shape and wisdom like Adam'. His genitals had not embarrassed him, because 'before his Fall he had no genitors, but [only] after he was put forth of paradice, his genitors began to growe forth of him'.[16] According to George Walker, writing in 1641, Adam and Eve's skin was 'faire, white, and ruddie, was comely in itselfe, and beautifull to their own eyes'. For Samuel Pordage, writing twenty years later, Adam had been gifted with incredible strength, and was physically indestructible.[17] There was seemingly nothing that this almost bionic, immortal man had not seen or understood. It was obvious to anyone in seventeenth-century England that modern men and women fell far short of such delightful excellence.

It was, of course, the Fall that cut short this all-too-brief Golden Age. God had told his first children that they could eat the fruit of any of the

trees in Eden, *except* that from the one growing at its centre. 'God told us not to eat the fruit of that tree or even touch it', Eve said to the Serpent: 'if we do, we will die.' But this was the Tree of the Knowledge, the Serpent explained. He encouraged her to eat, and Eve, thinking 'how wonderful it would be to become wise', ate the fatal fruit. And Adam also ate the fruit. Then, realizing they were naked, in shame they covered their genitals, and hid themselves from God.[18]

But no one can hide from God. Discovering that they had eaten from the Tree of Knowledge, He cast them from Eden. 'Then the Lord God said, "now the man has become like one of us and has knowledge of what is good and what is bad. He must not be allowed to take fruit from the tree that gives life, eat it, and live forever." So the Lord God sent him out of the Garden of Eden and made him cultivate the soil from which he had been formed.'[19] In the opinion of Simon Forman, the forbidden fruit had acted like a poison on the bodies of our first ancestors. Adam 'becam monstrous and lost his first form and shape divine and heavenly and becam earthy full of sores and sickness for evermore'.[20] According to the Cambridge apothecary Robert Talbor, writing in 1672, since the Fall both 'Soul and Body' of men 'have deviated from the first perfection . . . the Memory is subject to fail, the Judgement given to erre, and the Will often known to rebel, and become a voluntary slave to passion: so is his Body subject to so many infirmities'.[21] It was from this moment on that sickness entered the human frame: 'Take away the Curse, and the forbidden Fruit,' wrote the German chemist Albert Otto Faber in 1677, 'and all Diseases will vanish, and Life become Free again.'[22]

The Fall, however, could not be undone. With the sins of the father passing on to the son there began the era of long and steady human decline, down to Bacon's age. In seventeenth-century Europe, this was the official history of mankind. It was a brave soul who dared suggest otherwise.[23]

Yet this was not the whole story. Though Adam and Eve had forfeited the gift of immortality, they and their offspring still lived many hundreds of years. According to Genesis, Adam lived 930 years, and Noah 950. Methuselah, Noah's grandfather and the eldest of all the patriarchs, died at the ripe old age of 969. The stoicizing Neoplatonist Flavius Josephus (in his *Jewish Antiquities*) and the classically trained Church Father St Augustine (in his *City of God*)

defended the literal interpretation of these ages.[24] Given such authoritative champions, the figures were not widely questioned in Bacon's day.[25] Indeed, in 1619 William Basse pondered why God had not let Adam and Methuselah live to the round figure of a thousand years. 'This', he wrote, 'is not without some deep mystery.' He thought the answer 'may be partly because a 1000 yeares hath a type of perfection, [and] God never suffered any to fulfill it, to shew that there is no absolute perfection in this world'.[26]

In 1646, the literary physician Sir Thomas Browne questioned the supposed ages of some biblical characters, but insisted that 'of those ten mentioned in Scripture with their severall ages it must be true'. Indeed, he pointed out that other patriarchs, whose lifespans were not given in the sacred text, might actually have lived *longer* than Methuselah. He rejected the suggestion made by some critics that these so-called years had in fact been lunar months – a calculation that would have made Methuselah a more plausible 90-odd when he died. This theory was wrong on a number of counts, Browne explained, not least because it ran into 'an absurdity, for they make Enoch to beget children about six years of age; for whereas it is said he begat Methuselah at 65'.[27]

It was clear, too, from the Bible that these patriarchal lifespans had steadily fallen. In 1670 the London physician Edward Maynwaringe observed that in 'the *Primitive* Age of the *World*, mans life was accounted to be about 1000 *Years*: but after the *Flood*, the Life of Man was *abbreviated* half'. It had continued to fall, such that by the time of Moses it was 'commonly not exceeding 120 Years'. And '[n]ow the *Age* of Man is reduced to half that: 60 or 70 years we count upon'.[28] This was the famous lament in the Book of Psalms: 'The days of our years are threescore years and ten; and if by reason of strength they be fourscore years, yet is their strength labour and sorrow; for it is soon cut off, and we fly away.'[29]

But was that to be it? Was seventy or at most eighty years the best we could now expect? Were we to content ourselves, instead, with only an immortal soul? For some, the answer was yes; to wish otherwise was to mark oneself as impious, afraid of God's final judgement. As the Scots Calvanist preacher Zacharie Boyd declaimed in a sermon of the 1620s: 'Though the house were never so strong, at last it must decay and drop thorow. There is no lodging for eternitie in things below. Methuselah with his nine hundred three score and nine yeeres is followed with, *hee*

died, as well as hee who lived but an houre.'[30] Whatever its length, in the face of heavenly eternity human life was short, and death inevitable. Only the atheist trembled in the face of it.

For Bacon (as it has been for many other philosophers, scientists and physicians since), this was not enough. He did not consider impious the search for the prolongation of life. Rather, it reflected a growing confidence that man could regain his lost control over nature. The physical – surely – could be restored, renewed and *improved*, till once more we lived long and knew all, as had our ancestor Adam in Eden.

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It is a common impression that life in early modern England was, to misappropriate Thomas Hobbes's famous phrase, 'nasty, brutish and short'.[31] This impression is false. Certainly many, many people died in infancy, and this reduced early modern life expectancy at birth to a frighteningly low figure. Illness was widespread at all ages, and accidents common: London's weekly Bills of Mortality listed over 150 diseases and other different ways of dying. Fevers, consumption and smallpox were among the leading endemic causes of death in northern Europe, whilst epidemics such as plague could cut large swathes through populations.[32]

But those who survived could sometimes live long. It has been calculated that, in Stratford-upon-Avon in the period 1570 to 1630, almost a third of the adult men and a fifth of the women lived beyond sixty years.[33] The average age of the nine seventeenth-century Archbishops of Canterbury was sixty at appointment, and their average age at death seventy-three.[34] In New England, half of the men and women who survived beyond twenty could expect to live into their sixties, whilst for the whole population of Old England at the same time a man of twenty-five had a one-in-sixteen chance of reaching eighty.[35] In 1695 Gregory King estimated that one in ten of the population of England was sixty or over, whilst in October 1702 the writer John Evelyn celebrated his eighty-second birthday: he gave thanks to God that he had retained his intellect and senses 'in greate measure above most of my Greate Age'.[36] Some solid few (including Thomas Hobbes, who died in 1679, the Baptist minister Hanserd Knollys, who died in 1691, and the architect Christopher Wren, who

died in 1723) lived on into their nineties.[37] William Badger, Member of Parliament for Winchester in 1597, was supposedly born around 1523 and buried in January 1629. It has been suggested that 'there is a fairly solid case' that Badger 'died a centenarian', but this seems unlikely.[38] Sir John Holland, another MP, was certainly born in Norfolk in October 1603 and died on 19 January 1701; at ninety-seven he appears to have been the longest-lived Englishman of this era whose dates can confidently be verified. The Oxford graduate and defrocked clergyman John Humfrey soon surpassed even this record: he was baptized in January 1621 and died in 1719.[39]

Bacon was not mistaken, therefore, in believing it *was* quite possible to live well over seventy years. Though he rejected what he considered the unreliable examples of longevity recorded in 'heathen authors', he filled many pages of his *History of Life and Death* with names of people, in both ancient and modern times, who had lived beyond eighty. In fact, he reckoned that there was 'scarce a *Village*' in England 'but it affords some Man or Woman of Fourescore yeares of Age', noting that he had himself once met in court 'an *old Man*, above an hundred yeares of Age'.[40] He also recorded that it was 'reported' that an Irish contemporary, the Countess of Desmond, had 'lived to an hundred and forty yeares', whilst the inhabitants of the Barbary mountains in north Africa, 'even at this day, they live, many times, to an Hundred and fifty yeares'.[41] Later in the century Sir William Temple – English Ambassador to The Hague and a scholarly man – wrote that the native Brazilians were said 'to have lived two hundred, some three hundred Years'.[42]

In an era when, as Mary Abbott observes, old age 'was much less clearly defined' and birth certificates nonexistent, contemporary accounts would seem to corroborate Bacon's notion that great longevity remained possible.[43] Numerous examples can be given. The Northampton doctor James Hart wrote in 1633 that to 'attaine to 100 is no wonder, having my selfe knowne some of both sexes'.[44] The compulsive recorder of London obituaries, Richard Smith, noted the deaths of two men in 1667, both aged 'about 100 years', and of an old woman in 1670 'above 100'. In Oxford, the antiquary Anthony Wood noted the passing of two local women, both aged 104, in 1679 and 1680;[45] and in 1681, in the same city, the physician and philosopher John Locke recorded a long conversation with an old woman named Alice George. She told him that she was 108, and that her grandmother

had lived to 111: 'her hearing is very good,' Locke observed, 'and her smelling so quick, that as soon as she came near me, she said I smelt very sweet, I having a pair of new gloves on that were not strong scented.'[46] Sir Thomas Browne recorded a curious case of what he called *boulimia centenaria*: a tiny old woman 'now living in Yarmouth named Elizabeth Mitchell, an hundred and two years old', who 'greedily' drank and ate as much as she could, 'day and night'.[47] The Oxford natural historian Robert Plot remarked in his *History of Staffordshire* (1686) that James Sands had died in that county in 1588, aged 140.[48] And a few years after Plot's account, Sir William Temple wrote of meeting a beggar at a Staffordshire inn who professed to be 124; this old man told Temple that he ate milk, bread and cheese, and meat only rarely, and drank mostly water.[49] Finally (though this is hardly the last example I could cite) the papers of Robert Boyle include a recipe for a 'Medicine for clearing of the eye-sight found out by Dr. Purlow Sometime Bishop of Hull and Suffragan of York who at the age of 125 years was able to read any Print without Spectacles which att the age of 50 he could no'.[50]

Nonetheless, centenarians were considered unusual. Richard Steele reckoned that 'an *hundred thousand are dead* and rotten, for [every] one that reach such Longevity'. Steele, who was only fifty-eight when his *Discourse Concerning Old-Age* was published in 1688, already placed himself among 'the Weaker sort of Ancient persons'; in 1648, at seventy-five, the architect Inigo Jones described himself as 'being then very old'.[51] Furthermore, it is doubtful that many (or quite probably *any*) of these abovementioned centenarians were as old as claimed. If Boyle's 'Dr. Purlow' is the Robert Pursglove, suffragen bishop of Hull and prebendry of York, who died in 1580, then he was only in his mid-seventies when he died; it is possible that Alice George, who told Locke she was 108, was actually eighty-five. As Thomas Fuller sagaciously observed in 1647, 'many old men use to set the clock of their age too fast when once past seventie; and growing ten yeares in a twelve-moneth, are presently fourscore, yea, within a yeare or two after, climbe up to an hundred'.[52] Exaggerating their age was one way for the old to draw attention to themselves; for, as Keith Thomas has suggested, they were becoming increasingly marginalized in this period – especially if they were poor.[53]

In terms of modern research into seventeenth-century geriatrics, this is important.[54] But what really matters here is that the recorders of all

these abovementioned examples apparently *believed* their subjects were as old as they claimed. Indeed, it was widely taken as hard fact in the seventeenth century that the natives of certain parts of America lived up to *three hundred* years.[55] And there was further evidence to support the case for extreme contemporary longevity. The most famous example was Thomas Parr. Coincidentally (or perhaps not), it was the Earl of Arundel, in whose damp bed Francis Bacon had died, who in 1635 discovered the supposedly 152-year-old Parr, blind but living a healthy, humble married life in rural Shropshire. Parr had married his much younger second wife, he claimed, at the age of 112. At a time when it was widely assumed that sexual activity ended at around sixty-five, it was reported that Parr 'had had intercourse' with his new spouse 'exactly as other husbands do, and had kept up the practice to within twelve years of his death'.[56]

Modern research has unearthed a document from 1588 confirming that Parr was a married man in that year; assuming that this was his first wife and that he had married when aged about twenty, he would have been at least sixty-seven in 1635.[57] There were sceptics at the time, who pointed out that there was no way of proving Parr's age. As John

Figure 1.2 Thomas Parr: engraving after an unknown artist, published in 1821 by T. and H. Rodd. A plaque still marks the place in Westminster Abbey where Thomas Parr was buried in 1635, supposedly at the age of 152. His achievement entered legend: his image was reproduced in popular prints, and his great longevity was widely accepted for well over two hundred years.

Taylor, in his celebratory poem *The Olde, Old, Very Olde Man*, observed in 1635:

> Some may object, that they will not believe
> His Age to be so much, for none can give
> Account thereof, Time being past so far,
> And at his Birth there was no Register.

But, on the basis of Parr's various historical recollections and anecdotes, Taylor was confident that he was as aged as he claimed. He explained that the old man had prolonged his life by eating good Shropshire butter and garlic, enjoying clean air and hard out-door labour, whilst avoiding wine, tobacco and the pox.[58]

'Old' Parr was conveyed to Westminster to meet King Charles. He was a popular sight along the route to London, with the common people crowding around to see this remarkable example of human longevity. As Taylor recorded, the curious came 'in such multitudes' to see Parr that 'the aged man [was] in danger to have bin stifeled', so keen were people 'to gaze after novelties'.[59] The illiterate may not have been able to read Taylor's valedictory poem, but no doubt many heard it, and for centuries to come Parr's cottage would be a local tourist attraction.

Arundel entertained the very old man in his London home, and displayed him to a fascinated public at the Queen's Head Tavern in the Strand. Parr, however, soon took ill. In November 1635 he died at Arundel's house, at the weathered age of 152 years and nine months.[60] On the King's command, the physician William Harvey, famous throughout Europe for his discovery of the circulation of the blood, carried out an autopsy – at that time a relatively new practice in England.[61] Harvey's examination of Parr's 'organs of generation' confirmed the sensational report that, even at the age of one hundred and twenty, the old man had had intercourse with his wife. Nor did Harvey find any great signs of ageing in the old man's other organs; having examined the stomach and intestines, the great physician deduced that by 'living frugally and roughly, and without cares, in humble circumstances', Parr had thus 'prolonged his life'. Indeed, Harvey found that 'all the internal organs seemed so sound that had he changed nothing of the routine of his former way of living, in all

probability he would have delayed his death a little longer'. Harvey blamed what actually appeared to be Parr's *premature* death on the smoky atmosphere of London compared to the fresh country air of Shropshire, compounded by the old man's sudden change of diet to one more rich and varied than those plain foodstuffs to which he had been long accustomed.[62]

In recognition of his longevity, Parr was buried in Westminster Abbey. His great age was given additional gravitas by Harvey's autopsy report, which appeared in the august pages of the Royal Society of London's *Philosophical Transactions* in 1668. Unwittingly, Harvey gave Parr's longevity an official stamp that, as we shall see in Chapter 4, even sceptically minded Victorians found hard to shift. As we shall also discover, Parr's name recurs repeatedly over the next two and a half centuries, as a proven example of man's potential lifespan and of what could be achieved by living a frugal, simple, outdoor life. Harvey cannot be entirely blamed for this. There appear to have been few sceptics, and in 1661 John Evelyn – another scholarly man who had studied at Oxford and had toured the continent – happily used Parr's seemingly untimely death as clear evidence of the harmfulness of London's polluted, smoky air.[63]

The post mortem of another old Englishman by another prominent anatomist added further credibility to Parr's great age. In April 1706, an elderly, emaciated button-maker named John Bayles died in Northampton – supposedly in his 130th year. Whilst still alive, Bayles had come to the attention of a local doctor, James Keill (1673–1719). Keill was no ordinary country practitioner, however. A graduate of the University of Edinburgh, he had studied medicine at Leiden and had lectured at Oxford and Cambridge Universities before settling in Northampton. When Bayles died, Keill undertook an autopsy, sending his report to the Royal Society of London, which published it in its *Philosophical Transactions*. Keill observed that there was 'no Register so old in the Parish' where Bayles lived by which to date his birth, but the oldest locals – 'of which some are 100, others 90, and others above 80 years' – all agreed that Bayles had 'been old when they were young'. Keill recorded that, although their accounts differed 'much from one another', they concurred 'that he was at least 120 years' old. Bayles's claim that as a twelve-year old he had been at Tilbury Camp, where Queen Elizabeth had addressed her army before the Spanish Armada in

1588, was proof enough for Keill that Bayles 'must have been 130 when he dyed'.

As Keill noted, his autopsy 'agrees with that given of old *Parre* by the famous *Harvey* in most particulars'.[64] Keill attributed both men's longevity to the size and strength of their heart and lungs – though he noted that his conclusions would only be confirmed by more 'Dissections of old persons, and these are not numerous enough to ground any thing certain upon'. Nevertheless, it seemed likely to Keill that, if physicians were to find 'Rules for the preventing the ill consequences of extream old Age', the preservation of the original elasticity and softness of the bodily fibres (what we would call tissues) in their youthful state would be key.[65] The editor of the *Philosophical Transactions* may have been more sceptical than Keill: he noted that Bayles was 'reputed to have been 130 years old'.

Surprisingly, neither Parr nor Bayles were the oldest men living (or dying) in early modern England. In 1670, Henry Jenkins of Ellerton-upon-Swale, North Yorkshire, died at the remarkable age of 169. Like

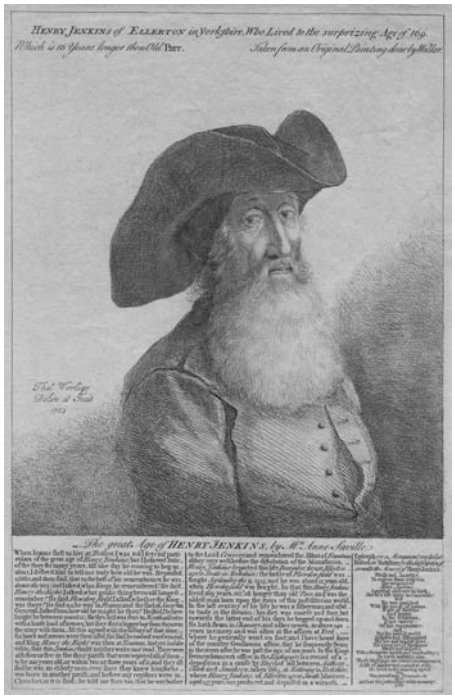

Figure 1.3 Henry Jenkins: etching by Thomas Worlidge, after Walker, 1752. According to the physician Tancred Robinson, at 169 Jenkins was 'the oldest Man born upon the Ruines of the Postdiluvian World'.

Bayles, Jenkins had an historical event – as well as a number of other seemingly verifiable anecdotes – by which the authenticity of his great age could be ascertained: he claimed to have carried arrows to the battle of Flodden Field in 1513, when (he said) he was a boy of twelve. According to an account that Dr Tancred Robinson forwarded to the Royal Society, and which was again published in the *Philosophical Transactions*, four or five old men of Ellerton, 'that were reputed all of them to be an Hundred Years Old' or so, all agreed that Jenkins 'was an elderly Man ever since they knew him; for he was born in another Parish, and before any Register were in Churches'. Jenkins was, therefore, Dr Robinson noted, 'the oldest Man born upon the Ruines of the *Postdiluvian* World'.[66]

Yet, almost unbelievably, even Jenkins had a rival. In an essay published in 1683, Dr Edward Madeira Arrais of Lisbon, a physician to King John IV of Portugal, recounted reports of an Indian man who 'lived above three hundred and thirty five years', his teeth falling out and regrowing, his hair turning grey and then returning to black. Arrais told his readers that several Portuguese travellers and officials had 'at their Return from the East Indies assured me they saw him alive'.[67]

These were impressive, almost wondrous, records. They illustrate how the boundaries of old age in the early modern period were inconclusive, how the hope that life *might* – indeed *could* – be prolonged for decades well beyond seventy or eighty years was not improbable. But these boundaries were still far more limited than the near thousand-year lives of the patriarchs. By comparison, even these contemporary exemplars of longevity had aged and died prematurely.

It is crucial to realize that the quest to return human lifespans to patriarchal lengths included the long retention of *youthfulness*. Parr at 152 was still old and blind. He was remarkable, yes; but he was not even close to outliving Methuselah. It was believed that the patriarchs had grown old more *slowly* than contemporaries: Methuselah at ninety would not have looked like a seventeenth-century man looked at ninety. The patriarchs were fit and strong and healthy and youthful for far, far longer; they even had children when they were centuries old. To prolong life, ageing had to be slowed. This was the key to early modern longevity. Ageing, as Francis Bacon put it, had to be *prorogued*. But this, as he complained, was something 'that no Physitian hath handled . . . according to the Merit of the subject'.[68]

The seemingly precipitate process of modern-day senescence therefore raised two pressing questions. First, what exactly explained the rapid ageing and considerable diminution of early modern human lifespans? And, second, how could that process be slowed or reversed and life prolonged? As we shall see, there was a number of possible answers. Before we can begin to understand the quest for prolonging human flesh, however, we need to ask another basic – though surprisingly awkward – question. What exactly *is* old age, and what were thought to be the causes of senescence? Indeed, what is life itself, and death for that matter? They are difficult questions, and ones that we will return to throughout this book.

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'Thy beauty shall no more be found,' the Yorkshire MP Andrew Marvell wrote around this time in his taunt to his coy mistress, 'Nor, in thy marble vault shall sound / My echoing song: then worms shall try That long preserved virginity, / And your quaint honour turn to dust, / And into ashes all my lust.'[69] But it did not take a poet to recognize that the days of our youth are short. As Edward Maynwaringe wrote rhetorically to his patients in 1670: 'I know every one of you would live *long*, but especially in *health*: you would fain *continue* and *prolong* your *youth*; your *beauty* and *ability* of *parts*; you are *frighted* at the thoughts of a *wrinkled face*, or a *restless bed*; an *unwholsom diseased* body, and a *decrepid loathsom* old *Age*.'[70]

The London physician John Smith, writing in 1666, described old age as 'these evil days, and unpleasant years'. Yet he did not think it possible to 'exactly put the terms of any mans old age, so as to say he is now old at this present moment, but was not so before; for it is that which creeps on by steps and degrees, as the shadow upon a Dial'.[71] No prude or puritan, Smith was only too aware of the beauties of youth and the horrors of growing old. His was the post-puritan era of the Restoration court, of Charles II and his numerous mistresses, and Smith felt free to admire the bodies of attractive young women, to see in sexuality both the signs of youthfulness and the evidence of ageing: 'the stiffness, lively colour, and freshness of the nipples,' he recorded, 'the smoothness, fairness, elevation, and towering of the breasts, as it is called in Scripture, *Her breasts are as towers*'. These physical

characteristics, like the 'appetite, aptness, and ability for Copulation' and the 'Inflation, and Turgescency of the Seminary vessels both *preparatory*, and *ejaculatory*' in men, were the 'excellencies of Nature' in our prime. Sex in these middle years is natural and easy. But 'as Age enfeebleth a man the grindings are weaker, and the several voices of them more submiss; wherefore it doth naturally follow, that in decrepit age, all the before mentioned indicatours of strength and perfect Concoction must be depraved, diminished, or abolished'.[72] As a woman ages, her spirits fail and her organs are 'made unfit for their Functions'. Hair turns white, joints and heart tremble, speech becomes difficult, there is 'failing of the eyes, and astonishment, paleness of the face, horrour, gnashing of the Teeth, involuntary Emission of Excrements', and death soon follows.[73]

If these were the obvious signs of ageing, harder to calculate was the exact moment of death. 'Ye way to know whether a man be dead or not', wrote John Ward, a graduate of Oxford University with a medical interest, was to 'lay a feather upon his lips; if it move hee is alive, if not, dead'.[74] Less subtly, Sir Francis Bacon recalled seeing a traitor disembowelled alive, 'whose heart being cast into the fire, leaped five foote high, and afterward lower for the space of seaven or eight minutes'. And there was another report Bacon had heard, of 'a man executed and embowelled' who, 'after his hart was pluckt out, and in the hang mans hand, was heard to utter three or foure words of his prayers'.[75] The man was Sir Everard Digby, hung, drawn and quartered in 1606 for his part in the Gunpowder Plot. When his body was cut down from the gallows and eviscerated, Digby was still alive. When the executioner held up the bloody internal organs and cried out to the crowd, 'Here is the heart of a traytor!', John Aubrey recorded that it was 'credibly reported' that Digby responded, 'Thou liest!'[76] Bacon did not dismiss this remarkable account, which he found 'more likely' to be true than some other stories he had heard.[77] Clearly, the moment of death was not as immediate as might be supposed. It was not something that happened in an instant; like growing old, it was a process – albeit a swifter one.

In spite of being unable to identify the exact moment of death, Bacon defined it as the 'privation or depriving of the Sense and motion of the Heart, Arteries, Nerves, and Sinewes, inability of standing upright, stiffeness of the Nerves and limbs'. These signs of decease were followed in short course by 'coldnesse, putrefaction, and stinke'.[78]

If these were the clear indicators of the geriatric and terminal processes, what exactly was their *cause*? Even in the seventeenth century, the chief authority on this subject was the ancient Greek philosopher Aristotle. Back in the fourth century BC, he had written two short essays exploring these questions: 'On longevity and shortness of life', and 'On youth and old age, on life and death, and on breathing'. A clear sign of life in most birds and mammals is warmth. But whence does this heat originate? In Aristotle's opinion, it was the soul – which he located in the heart – that gave this warmth to living things. What the soul was exactly, Aristotle did not explain: but from the fiery soul came the very spirit of life.

The soul gives heat to the heart, and it, in turn, warms the blood, which carries that warmth around the body. If the blood ceases to be warm, Aristotle explains, 'death always ensues', for 'the soul is, as it were, set aglow with fire in this part . . . Hence, of necessity, life must be coincident with the maintenance of heat, and what we call death is its destruction.'[79] In turn, this soul–heat of the heart depended upon the fuel of nutrition, which comes from food. Without food, 'the fire fails', and all living things die. Death, Aristotle explained, could also come from *too much* heat, and this was the purpose of breathing. Air is inhaled into the lungs to cool or 'refrigerate' the flame of the soul. Thus, if we stop breathing, the body quickly overheats, and we die.[80] There was, therefore, a circular, symbiotic relationship between heat from the heart and refrigeration from the lungs. The body has to keep a healthy balance between these two states.

There was, however, a problem: gradually the body's life-giving heat consumes the lungs, and slowly dries out the flesh. (Though Aristotle did not use this metaphor himself, later Aristotelian philosophers would liken the heat-giving soul to the flame of a candle or lantern, the body being the fuel that is slowly consumed by that fire.) Aristotle thus explained that '[y]outh is the period of growth of the primary organ of refrigeration, old age of its decay, while the intervening time is the prime of life'. Death in old age 'is the exhaustion due to inability on the part of the organs, owing to old age, to produce refrigeration'. Gradually, like the candle-flame consuming both the wax and the wick, the spirit of life consumes its fuel and fades. For Aristotle, death in old age is thus both 'natural' and 'painless': 'It is just as though the heart contained a tiny feeble flame which the slightest

movement puts out.'[81] Ironically, the source of life – heat – is also the very cause of death.

To the slow, inexorable and seemingly inevitable process towards old age and death, various external factors could be added which would affect the speed of its progress. These all either hastened ageing by accelerating the drying-out process, or alternatively could slow it down. These factors were important, and we will return to them repeatedly in the course of this book: they included such things as excesses or errors (or potential benefits) in what we eat and drink; the ill or beneficial effects of air and temperature (it was thought that people aged faster in cold climates, but lived longer in hot ones); and physical activities, which were clearly significant: work and exercise were considered to be good, whilst sex was bad – particularly for men. As Aristotle explained, the expulsion of a man's 'seed' hastened the ageing process, because its loss 'produces dryness'. This was why 'females live longer than males if the males are salacious'. But 'as a general rule males live longer than females, and the reason is that the male is an animal with more warmth than the female'.[82]

Classical physicians established several principles for leading a long, healthy life. These focused on the so-called 'six non-naturals' laid out in the Hippocratic corpus between the fourth and the fifth centuries BC, and standardized by Galen in the second century AD. Control these and the body would remain healthy and free from sickness and disease. The non-naturals were: air; diet; exercise; sleep; passions of the mind; and bodily excretions (which included sweat, urine, faeces, vomit, saliva, phlegm, menses and semen). Keeping healthy, according to these rules, meant particular attention should be given to diet. As one seventeenth-century physician memorably put it, through insufficient consideration of what they ate and drank, many people 'dig their Graves with their Teeth', and thereby 'cut off the Thred of their Lives sooner than is required by God, or Nature'.[83]

Another contemporary, Dr James Hart, noted that in antiquity there were some people 'who by meanes of diet' promised 'the perpetuity of mans life, and of a mortall man, to make him immortall'. Hart pointed out the criticism made by the great Greek physician of the Roman world, Galen, in the second century AD, of a philosopher 'who promised immortality to all such, whose education he had from their tender yeeres undertaken.'[84] Hart, like Galen, dismissed such an idea:

Galen broadly considered old age a natural phenomenon, and not an 'illness' that could somehow be 'cured'.[85] He suggested that, since it was 'impossible for the body to escape the natural road to dryness', it was 'inevitable for us to grow old and perish'.[86]

Though untreatable, old age was not thought of as coming any sooner in the classical world than in Bacon's day; nor was it necessarily considered a burden. Various authors in the Hippocratic corpus saw the 'green springtime of decline' as not starting till seventy, with old age only beginning at seventy-five.[87] In his famous essay *De senectute*, written in his sixty-third year and shortly before his murder in 43 BC, the Roman statesman Cicero idealized old age as the pinnacle of life. At least two Roman emperors – Augustus (63 BC–AD 14) and Tiberius (42 BC–AD 37) – lived into their late seventies, as Francis Bacon pointed out in his catalogue of the aged.

Over the centuries, classical and Islamic physicians such as Galen and Avicenna amended and augmented Aristotle's theory of the role of heat and moisture in life and ageing, and debate continued as to whether the latter was to be considered an illness – curable or otherwise. The medieval viewpoint on life and death was based on this long medical debate, embellished by Christian theology and eschatology. In the thirteenth century, the influential (and impressively long-lived) English philosopher Roger Bacon (*c.*1214–1292) wrote a treatise on longevity; an edition was published in 1683 as *The Cure of Old Age, and Preservation of Youth*. There he explained that, as humans grow older, they gradually lose both their 'natural heat' – their inner vitality, and their 'natural moisture' – that is, the softness and suppleness of youth, evidenced in the smooth flesh of a child but so clearly absent in the dry, wrinkled skin of the geriatric body. This 'natural heat', Roger Bacon explained to his medieval readers, began to diminish 'after the time of Manhood, that is, after forty or at most fifty Years'. As a man grows older the cycle of ageing progresses ever faster, so that he would be 'sooner turned from Old Age to decrepit Age, than from Age to Old Age'.[88]

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If these were the causes of old age, how could the detrimental effects be slowed, and life extended? A problem with the Aristotelian theory was

that it did not fully explain how the patriarchs had lived almost a thousand years. Of course, Aristotle was a pagan Greek who quite probably knew nothing about Hebrew myths of origin, so there was no reason at all why he should have provided an answer to this puzzle. To inquisitive early modern Christians, however, the reason why we age so quickly and our lives are so foreshortened was a conundrum requiring an answer.

For the ancient Jewish scholar Josephus, it was the fact of their virtuous behaviour, together with their proper diet, that accounted for the patriarchs' longevity.[89] According to Roger Bacon, however, there were at least three explanations as to why humans aged more quickly than in previous epochs. First, there was the fact that, as 'the World waxeth old, Men grow old with it: not by reason of the Age of the World, but because of the great Increase of living Creatures, which *infect* the very Air'.[90] According to Roger Bacon's medieval interpretation, there was little that could be done to recover the long lives of our ancestors. As the vitality of the earth waned, so too did the things living upon it.[91] As William Russell, chemist-in-ordinary to Charles II, wrote in 1684 echoing Bacon: 'it appears that the World it self waxeth old, the Powers thereof are much altered, [and] all the external Virtues of its superficies are declined'.[92]

The earth, it therefore seemed to some, was drawing inevitably, inexorably, to a close. This weary planet, like an aged mother, could not so easily sustain the creatures living upon it; 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 tuberculosis, smallpox, scurvy and rickets – seemed to suggest as much. As Richard Browne observed in 1683 in his notes to Roger Bacon's book on prolongevity, 'we must conclude the World is in its testy old Age', and the Second Coming of Christ was nigh.[93]

Even if it was not accepted that the world was ageing and would itself die, it could be argued that it was not so fertile as it had been in the earliest times, when men had lived healthy lives of hundreds of years upon it. An obvious explanation for this reduced fecundity was the Flood – an argument put forward by, among others, Sir William Vaughan (*c.*1575–1641) in his remarkably popular *Directions for Health, Naturall and Artificiall*. Vaughan explained that the 'principall

reason' men had lived longer before the Flood was that the world had then been in much better state: 'the earth in those dayes was of greater efficacie to bring forth necessaries for mans use, than it is in this crooked and out-worne age. The soyle was then gay, trim, and fresh: whereas now by reason of the inundation . . . it is barren, saltish and unsavorie.'[94] This was an argument Sir Francis Bacon supported. He blamed the cumulative effect of this Great Deluge, together with other smaller floods, long droughts and earthquakes, for the steady decline in human lifespans since Noah's day. Somehow, he believed, these events had made the land less fertile, or the air less pure.[95] A more physical explanation was suggested by the ingenious Robert Hooke: he proposed to the Royal Society in 1668 that friction had had the effect of slowing the earth's rotation, thereby increasing the length of the days and years: a patriarchal year had thus been much shorter than a modern one.[96]

According to Dr Edward Madeira Arrais, Adam and Eve had lived so long because of some property to be found in the fruits of the trees in Eden. He assessed differing opinions as to whether the Tree of Life had actually conveyed immortality or only a long duration of life, and whether it was necessary to eat only once of the tree to obtain its benefits or one had to eat of it repeatedly.[97] Arrais decided that 'the very long Life' of Adam and the patriarchs should be ascribed to the 'Qualities' of this and 'other wholesome Trees growing in Paradise, which were either in Fruits to be eaten, or transfused to the ambient Air . . . and then they were communicated by Food and Air to the Bodies of our first Parents, and from them again in Seed and Blood to their Children'. It was by this reasoning that some ascribed the longevity of Arrais's ancient Indian to his eating the fruits he found floating in the Ganges. Arrais did not believe these fruits had come from the Tree of Life itself, but he thought they were certainly 'very wholesom Fruits of some other Trees', which kept off diseases.[98]

Roger Bacon suggested two further explanations for man's shortening lifespan: 'our *Negligence* in ordering our Lives, and That great *Ignorance* of the Properties which are in things conducing to Health, which might help a disordered way of Living'. The latter had made little progress by the seventeenth century. The knowledge of medicines was still uncertain and potentially dangerous, but we will look much more closely at this in the next chapter. Negligence in how we lived our

lives was far more pressing, and something about which lots of things could be done – as had long been realized. It was here that the greatest attention would focus.

As we have seen, Thomas Parr was an excellent example of what could be achieved by eating simply and labouring hard in clean, country air. There was also a famous gentlemanly example: in 1558, a ninety-one-year-old Venetian nobleman, Luigi Cornaro, published an influential book on the role diet could play in prolonging life. Cornaro (whose great age is accepted as accurate by modern historians) lived long enough to update his *Discorsi della vita sobria* numerous times before his death, at the age of ninety-nine, in 1566.[99] As a young man, Cornaro had indulged in rich food and luxuries, but at forty he realized that if he continued in such a fashion he would live only little longer. So he abandoned his diet of strong wines, raw fruits and baked meats dressed with rich sauces. Instead, he adopted a frugal daily regime consisting of only twelve ounces of bread, soup, egg yolks and meat, and some fourteen ounces of wine. There were to be no more late nights, over-strenuous exercise, women, or grievous, melancholy thoughts in his life. A man who took such care with his health, Cornaro observed, 'prolongs his Life to above a Hundred Years, spares him[self] the Pain of a violent Death, sends him quietly out of the World'. But, he lamented, 'most Men suffer themselves to be seduced by the Charms of a Voluptuous Life' – and they reaped the consequences with foreshortened lives. He reckoned that gluttony and excess robbed Italy annually 'of more Inhabitants, than Pestilence, War and Famine'.[100]

Cornaro warned, however, that 'it must not be suppos'd' that his rules would 'make a Man immortal'. This was impossible, for all things come to an end. Nonetheless, all men ought to close their days 'by a natural Death, that is, without any Pain; as they will see me dye, when the radical Moisture shall be quite exhausted'.[101] Sir William Vaughan likewise opined that '[t]o live forever, and to become immortall here on earth, is a thing impossible'. But he, too, observed that there were certain things that could be done 'to prolong a mans life free from violent sicknesses'. Like many other commentators, he looked back to the example of the patriarchs, observing that they had been more continent in their diets: 'they knew not our dainty eates, our marchpanes, nor our superfluous slibber sauces; they were no quaffers of Wine or Ale, nor were they troubled with so many cares, nor with

passions of Envy and Malice'.[102] It was these bad habits that had undermined the human frame.

Alcohol was often blamed for shortening human lifespans. The Bible makes it clear that, following the Flood, Noah was the first person ever to cultivate grapes and make wine. It did not take a genius to note that it was also since the age of Noah that lifespans had begun their sudden decline. So, if it wasn't the fault of the Flood, maybe it was the fault of alcohol – or both?

Not everyone held this view. Roger Bacon had recommended drinking red wine for its health-bringing properties, whilst in 1638 the London physician Tobias Whitaker devoted a whole book to the subject. In his *The Tree of Humane Life, or, The Bloud of the Grape*, he set out to prove 'the possibilitie of maintaining Life from infancy to extreame old age without any sicknesse by the use of Wine'. According to Whitaker, both Parr and the Countess of Desmond were 'extraordinary examples' of what could be achieved by following 'that puritie of Principles' which had helped the patriarchs to 'have exceeded the age of nine hundred yeares'.[103] Though he did consider death inevitable, 'because the heart cannot bee made moister', Whitaker did not think it 'wise . . . in a negligent way to betray our lives to death before the time', and he accepted 'the possibility of extending [life] to extreame old age'.[104] Not surprisingly, Whitaker's argument was well received in some quarters: his book was republished several times and translated into Latin, with editions appearing in Frankfurt and The Hague. In 1660 he would be appointed a physician-in-ordinary to the Restoration household of Charles II. Only four years later, however, Whitaker was dead. His method for longevity had not paid off: he was probably only in his mid-sixties.[105]

If attitudes to wine were ambivalent, meat was a prime culprit, singled out in the bid to understand why modern humans aged fast and died young. Again, the Bible made it clear it was only *after* the Flood that we became omnivores. God had told Adam in Eden: 'Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree . . . to you it shall be for meat.'[106] It was only after the water subsided from earth's face that God told Noah: 'Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things.'[107] The pious polymath Tomas Tryon (1634–1703) was an early advocate of vegetarianism, advising his

readers to 'avoid all excesses in foods and drinks, either in quality or quantity, to eschew things derived from violence, and therefore be considerate in eating Flesh and Fish, or any thing not procured but by the death of some of our fellow creatures'[108]. In his *A Way to Health, Long Life and Happiness* (1691) he pointed out that the patriarchs had lived long lives, free from sickness, partly on this account. His followers included John Evelyn, who, in a discourse on salads published in 1699 and written when he was nearly eighty, pointed out that the patriarchs had lived prodigiously long lives on the 'wholesomeness of the Herby-Diet'.[109]

The various faults in diet and behaviour were seen as hereditary errors, passing from parent to child. Again, it did not take too close a reading of the Bible to notice that, although God had told Adam and Eve *before* the Fall '[b]e fruitfull and multiply, and replenish the earth, and subdue it', it was not till *afterwards* that 'Adam knew Eve his wife: and she conceived, and bare Cain'.[110] Sir John Pettus thus observed in 1674 that Adam first become aware of sex only by eating the fruit of the Tree of Knowledge of Good and Evil. (This was the reason why writers such as Simon Foreman suggested Adam and Eve had not had genitals before the Fall.) Pettus wrote that it was only with the discovery of sex that 'Man hath the reward of his Libidinous disobedience, his body being so full of Disease and Infirmities, that the means of propagation seems to beget more Diseases than Children'.[111]

Not everyone agreed. Tobias Whitaker suggested that, if 'rightly used', sex (like wine) was a good thing: it could 'exhilerate the minde, cheare the spirits, refrigerate the body, and cause sleepe'.[112] But to those of a more puritanical disposition, little good could come of venery: it exhausted the store of radical moisture, with sexually transmitted diseases an added, ever present (and potentially fatal) danger. That sex is bad and shortens life is an argument that resounds down the centuries.

As we have seen, prior to the Fall Adam and Eve were teetotal, celibate vegetarians. The subsequent, post-lapsarian ill effects of all that meat eating, wine drinking and fornication were passed on in a degenerative cycle which, five and a half thousand years later, had left us pale imitations of our first parents. In these circumstances, to prolong our lives would involve some considerable reversals in the ways we lived.

The unknown author of *The Way to Bliss*, whose manuscript was published in 1658 by the antiquary Elias Ashmole, proposed a novel experiment that distils many of these ideas. He considered it unreasonable that the human being, the most perfect of God's creations, should live a shorter life than other animals, such as the elephant (which, Aristotle claimed, lived for three hundred years). He therefore suggested that 'if a company of pickt and lusty *Men* and *Women* would agree to live together in some wilde, open, clear and sweet *Air*, scatteredly like a Country Village, and not like a close and smothered City, (which one thing prevents a thousand Diseases and Deaths alone)'; if they agreed to have sex only in order to procreate, 'and not for Pleasures sake'; if they agreed 'to bring up their Children in Labour and Hardship, mingled with much Mirth and Sleep together'; and if they would take no medicines other than when in the greatest danger, and would never drink wine or eat cooked foods:

> If these things, I say, were duly kept and performed, I am fully perswaded within three or four Generations and Off-springs, it would come to pass, that we should see this People prove a Nation of Giants, not onely passing the age of Beasts, and the bounds of *Long Life* afore-said, but wholly recovering and restoring all the Blessings of the first estate of *Body*.[113]

It was a novel idea – though unfortunately there is no evidence that this utopian experiment was ever attempted.

§

Having explored the wider context of ageing in the early modern period, we can look more closely at the schema devised and advanced by Sir Francis Bacon in his *History of Life and Death*. The ideas on ageing and death proposed by classical physicians and philosophers had changed little by his day.[114] Although Bacon claimed to reject the theory of radical heat and moisture, it in fact formed the basis of his own theory. The chief difference was that it was now more widely held that the human soul – the source of the body's heat – resided in the brain, and not the heart. So, although Bacon held that there were 'many *Paths,* which lead to *Death*',[115] the principal route to 'natural'

death was the drying out of matter caused by the heating force of those same 'vital *Spirits*' that give the power of life and movement. These spirits, located in the brain and akin to 'the substance of *Flame*', were 'the Master-workmen of all Effects in the *Bodie*': as well as giving life, they instigated all mental and physical operations. But, along with these vital spirits that existed in living things, there were also lifeless spirits that were present in all matter, animate and inanimate. They, too, contributed to decay; and it was important to Bacon to note that 'to procure long Life, the Body of Man must be considered; First, as *Inanimate,* and not *Repaired* by *Nourishment:* Secondly, as *Animate,* and *Repaired* by *Nourishment*'.[116]

Thus, although Bacon dismissed Aristotelian and scholastic theories of the soul, he still identified it as an airy, fire-like spirit.[117] (For the seventeenth-century physician and controversial vicar John Pordage, these spirits had a theological interpretation: they were 'the fiery deity of Christ', who 'did mingle and mixe it selfe with our flesh, and was in the center of our Soules, burning and consuming'.)[118] But Bacon placed greater emphasis than his predecessors on the role of these 'spirits', as well as on the effects of digestion.[119] If the wasting heat of the spirits could be checked, life would be prolonged; he also believed, importantly, that damage could be *repaired* – that new 'fuel' (or 'nourishment') could be added to the fire of life.

In this respect, Bacon's principal matter of disagreement with Aristotle's theory was the suggestion that ageing and death were *irreversible*. Instead, and most importantly, he claimed: 'That which may bee repaired by Degrees, without a Totall waste of the first Stocke, is potentially eternall.' This, he pointed out, was the case with the flame that had burnt in the Vestal temple in Rome: through constant replenishment, it was never allowed to go out.[120] Perhaps the same was possible by tempering and refuelling the flame of the human spirit?

Bacon's second crucial point was that the ageing process is *unequal*: certain parts of the body, such as the spirits, blood, flesh and fat, 'are, even after the Decline of yeares, easily repaired'. It is the 'drier' parts, such as the sinews, veins, arteries, bones, cartilages and bowels, which are 'hardly Reparable'. As these latter parts decay, and in the end 'utterly fail', they ultimately take the whole fabric of the body with them. Solve these problems, Bacon reckoned, and you conquered death.[121]

His rules for prolonging life were thus simple and two-fold:

1 Inhibit the ageing process by reducing the heating effects of the spirits.
2 Repair local damage before it spreads and 'a generall ruine follows'.[122]

Laid out in its first few pages, this was the principal thesis of Bacon's *History of Life and Death*. However, though his basic rules might seem simple, he explained that 'so great a Worke as the Stopping, and Turning back, the powerfull Course of Nature' was not to be achieved without great effort. Certainly, simply taking some morning medicine or 'precious Drug' could not alone do it. He assured his readers

> that it must needs be, that this is a work of labour; And consisteth of many Remedies, and a fit Connexion of them amongst themselves; For no Man can bee so stupid, as to imagine, that what was never yet done, can bee done, but by such wayes, as were never yet attempted.[123]

As the stomach was 'the *Master* of the *House*', and as it was from food that the juices of the body were formed, diet was crucially important to Bacon's method for prolonging life.[124] He considered Luigi Cornaro's meagre intake too frugal to be worth pursuing, and he wasn't going to starve himself in the attempt to live long. He encouraged consumption of sweet things (such as fruits and honey), fatty, roasted meats, and salads with marigold leaves and betony flowers; wines and ale supplemented with various beneficial additives were also to be drunk, varying according to time of year.[125]

Diet was efficacious only as a part of Bacon's broader regimen, however. Meals were to be followed by rest, with sound sleep encouraged. Regular, gentle exercise was important: 'leaping', riding, shooting and bowls he recommended, though tennis, running and dancing were 'too Nimble' and overexcited the spirits.[126] Control of the '*Passions* of the *Minde*' was equally important, though he felt that amongst physicians there was 'a deepe silence' on this subject: joy, hope, contemplation and reflection all encouraged long life, whilst fear, anger, sadness and envy debilitated the spirits.[127] Good, clean air and

morning walks in country gardens, smelling the scent of flowers, were particularly helpful 'for the Comforting of the *Heart*'.[128]

But these were just the basics. His first aim, to temper the damaging 'eager Flames' of the spirits that aged the body, would be achieved by the 'cooling' effects of drugs such as opium and tobacco. The 'knot' or paradox here, Bacon noted, was that the spirits, by escaping the body, age it; but by being kept *in* the body, they heat it, and cause decay. The aim of his method was to keep the spirits in, whilst at the same time keeping them cool and diffuse.[129] To this end, Bacon recommended, from youth onwards, an annual 'Opiate Diet'. By opiates Bacon meant both opium itself, and other 'hot' drugs such as henbane, mandrake, hemlock, tobacco and nightshade. A light concoction 'of a superior kind' was to be drunk every other morning for a fortnight in spring. 'Opiates' of a weaker nature, such as saffron, ambergris (a secretion from the intestines of sperm whales), nutmeg and rose water, could all be taken more regularly, '[a]nd they will be very effectuall to prolongation of life'.[130] The animal spirits could also be 'refrigerated' with 'nitre' (saltpeter, or potassium nitrate, a naturally occurring mineral used in medicine as a diuretic, as a preservative of food, as a fertilizer and in the manufacture of gunpowder). This could be mixed into food or beer, and 'is of prime Force, to long Life'.[131]

The best way to exclude the 'predatory' effect of air was by living in dry caves and on mountains. This inhibited the escape of the spirits, and the inhabitants of Barbary, Bacon noted, lived up to 150 years on this account.[132] But Bacon, a man of business, was hardly going to move to north Africa and live in a cave. As an alternative, one might dress the skin with olive or almond oil, thus more conveniently (and aromatically) closing the pores through which the spirits escaped. This, he supposed, would work in much the same way paint and varnish protect wood from decay, and was analogous to the way that insects caught in amber 'doe never after corrupt, or rot, although they be soft and tender Bodies'. Though he admitted that this 'anointing' with oils had its 'inconveniencies', he considered it 'one of the most potent Operations to long Life'.[133]

Astringent washes could also be used to make the skin harder; hot baths, however, were to be avoided, as they opened the pores.[134] To cool the blood, he recommended enemas and lukewarm baths of fresh water and oils; and the blood itself could be firmed up against the

actions of the spirits by occasionally taking powdered gold, pearl, coral or precious stones in white wine, or alternatively decoctions of oak, vine or rosemary.[135] He added that, if it did not 'seeme to us Sluttish and Odious', bathing in human or animal blood would help keep the flesh supple. Those opposed to bathing in blood could try milk, egg yolks, wine, saffron or myrrh instead. Ideally, such a bath would be preceded by a massage and followed by the application of a thick oil of mastic, myrrh and saffron, to help the bath's 'Moistning Heat' penetrate the flesh. This oil should be left on for twenty-four hours, the process being repeated every fifth day for a month. Bacon noted that he had not actually tried this 'Experiment' himself, but offered it as a light for others to follow.[136]

§

These methods, some tried and tested, others merely hypothetical, were Bacon's principal means of preventing ageing and encouraging restoration. But did he practise any of them himself?

In his essay 'Of Death', Bacon wrote: 'It is as natural to die as to be born', and he did not expect to live prodigiously long.[137] In the second part of his *Novum Organum* (1620), he acknowledged that 'we entertain no hope of our life being prolonged to the completion of the sixth part of the Instauration'.[138] But he took great care of his health. His letters from his estate at Gorhambury reveal that 'by means of the sweet air of the country' he obtained 'some degree of health' in his last years.[139]

William Rawley, Bacon's chaplain and secretary from 1618 to 1626, recorded that Bacon observed many of his own rules for prolonging life: these included 'rather a plentifull, and liberall, Diet, as his Stomack would bear it, than a Restrained [one], Which he also commended, in his Book, of the History, of Life, and Death'. In his youth, Rawley noted, Bacon had favoured lighter meats, such as fowl; 'But afterward, when he grew more Judicious; He preferred the stronger Meats', which 'bred the more firm, and substantiall Juyces, of the Body'. Rawley also records that Bacon 'took each morning in his broth about three grains of Nitre, for thirty years together, next before his Death. And for Physick, he did, indeed, live Physically, but not miserably.' About once a week he drank 'a Macreation of Rhubarb' – a purgative – infused in

wine or beer, before dinner or supper, 'that it might dry the Body, lesse: which, (as he said,) did carry away frequently, the Grosser Humours, of the Body; And not diminish, or carry away, any of the Spirits; As Sweating doth. . . . As for other Physick, in an ordinary way, (whatsoever hath been vulgarly spoken;) he took not.'[140] Bacon's interest in medicines was such that in 1679 a number of his supposed recipes were posthumously published among his collected works, under the title 'Baconiana medica'. They included 'A Medical Paper of the Lord *Bacon's*, to which he gave the Title of *Grains of Youth*'. This in turn included a medicine made from nitre, ambergris and poppy seeds, a 'preserving oyntment' made from 'Deers-suet', saffron and myrrh, and even a 'Methusalem Water' made from crayfish boiled in claret that acted 'against the Driness of Age'.[141]

Despite these remedies and preservatives, Bacon's life was not especially long, though his death, when it came, was unexpected. It certainly seems possible that in stuffing the chicken with snow Bacon was testing the twenty-eighth of his thirty-two provisional 'Moveable Canons, of the Duration of Life, and Forme of Death' – that is, '*Refrigeration,* or *Cooling* of the *Body,* which passeth some other wayes, then by the *Stomach,* is usefull for Long Life'.[142] Excepting, of course, when it kills you. His domestic attendant, William Atkins, was stunned, likening his master's 'unexpected' demise to a besieged army caught off guard: Death thus 'smites this man much skilled in warding off a blow'.[143]

§

Why exactly did Bacon consider the prolongation of human life to be so important? Although he called his times 'this autumn of the world', and though he, too, appears to have held millenarian beliefs, he rejected pessimistic views of natural history. If this *was* the earth's dotage, for Bacon it was to be a mature old age of profound wisdom and great learning, in which European scholars would pluck the final fruits of God's benevolent creation.[144] Natural philosophers would take full advantage of all that had gone before them, restoring mankind to the greatness that had once been Adam's. Only then, when this last great age of progress had been fulfilled, would the world be fit for Doomsday.

Hence Bacon confidently cited Daniel's Old Testament prophecy touching the end of days: 'Many shall go to and fro, and knowledge shall be increased.'[145] This was the 'special prophecy' Bacon believed God had directed to his own age. Such apparently unprecedented events as the discovery of the New World and the circulation of the blood, along with recent inventions such as the printing press, the telescope and the microscope, suggested to the optimist that this prophecy was now being fulfilled: all that was required to round things off was the perfecting of science. And this would include the vast prolongation of life. For perhaps Bacon also had in mind the Old Testament lines in which God promises the Babylonian exiles that, in the new Jerusalem, 'Never again will there be in it an infant who lives but a few days, or an old man who does not live out his years; he who dies at a hundred will be thought a mere youth; he who fails to reach a hundred will be accursed.'[146]

As these lines suggest, the desire to prolong life was not irreligious. And, as Bacon pointed out, St John (the '*Beloved Disciple* of our *Lord*') had outlived all the others, whilst many hermits, monks and Church Fathers had also died aged. This surely proved that longevity enjoyed God's favour. Furthermore, he explained, longer life would give us more time to do good, Christian works.[147]

For Sir Francis Bacon, therefore, the quest for physical longevity was both a pious ambition *and* an inherent feature of the 'Great Instauration' – Bacon's grand plan to overthrow traditional learning based on Aristotle and the ancients and to re-establish scholarship on new, experimental, empirical and essentially modern foundations. Not only would prolonging life be a *part* of this programme, the programme would itself be facilitated *by* the prolongation of life: the two things were synonymous.

To clarify this point, we can look at a letter written in 1651 by the English philosopher Anne Conway to her father-in-law, Lord Conway. Anne explained that human learning before the Flood had been 'very great' because Adam 'certainly was an excilent naturall philosopher as appears by his giving names to every beast and bird according to their natures'. Furthermore – and here we get a sense of what Bacon no doubt hoped to achieve – Conway added that Adam 'was contemporary' with his descendants 'for above 900 yeeres', and hence had been able to share his great wisdom. These antediluvians were further

advantaged in the advancement of their learning, Conway explained, because 'the extraordinary length of their lives gave them leave to make infinit experiments, and experience is the mother of all knowledge'. As 'experiments', Conway gave the example of astronomy: whilst the antediluvian philosophers had been able to 'observe the revolution of a sphære whose circuit will not be finished in 300 yeer . . . our Life will permit us to observe very few circuits of the celestiall bodies'.

Anne Conway had no doubt as to the authenticity of these long lives. In an off-hand remark, she noted that Noah was 600 when the Flood came – 'time enough to gaine a vast knowledge'.[148] Over the subsequent centuries, as lifespans had fallen, and particularly after the destruction of the Tower of Babel, when different languages had divided men, knowledge had declined and became corrupted. It was this decay of learning that Bacon hoped to overcome, returning us once more to an adamic level of complete understanding, in anticipation of Judgement Day.

For Bacon, long life was not simply a projected *end* in the restitution of all wisdom – it would also prove to be one of its *means*. A century after Bacon died, the French writer the Marquis D'Argenson would define youth as that time 'when a man thinks himself immortal' and 'imagines projects of long duration'. D'Argenson believed that this age of optimism ended at around thirty-five.[149] But why should men age at all? If youthfulness could be maintained, would not that same confidence in pursuing 'projects of long duration' be retained, and even greater ends in philosophy and science achieved?

What Bacon appears to have been arguing for in the prolongation of life, therefore, is this. Given what a single gifted human being can achieve in one seemingly foreshortened and increasingly debilitated lifespan of seventy or eighty years, imagine what they could achieve in an almost perpetually youthful life of a *thousand* years? Thus in explaining his interest in longevity in the *History of Life and Death*, Bacon naturally cited Hippocrates' ancient dictum '*Life* is short, and *Art* long'. He then explained: 'Therefore our labours intending to perfect Arts, should by the assistance of the Author of Truth and Life, consider by what meanes the Life of Man may be prolonged.' Put simply, longer life 'affords longer opportunity of doing good Workes'.[150] He had emphasized as much in the preface to *The Advancement of Learning*: 'this Our Instauration is a matter infinite,' he

had declared, 'and beyond the power and compasse of Mortality'. Moreover, the world itself was so vast that a modern human lifetime was not long enough to comprehend it all. As Robert Boyle reflected in 1663 (with an air both of awe and disappointment), 'the Laws and Works of Nature' are 'so various and numberlesse' that even 'if a Man had the Age of *Methusalah*' to spend in research, he would still run out of time before he ran out of fit subjects for study.[151]

In spite of his desire to prolong his own life, Bacon acknowledged that he was 'not unmindfull of Mortality', admitting that his '*Designe*' was not to be 'accomplisht within the Revolution of an Age only'. Rather, he delivered it 'to Posterity to Perfect'.[152] Although Bacon practised many of his own precepts for prolonging life, substantial longevity was not something he expected to be achieved quickly, or through the resources of a single individual (or in a single, 'normal' lifespan). As he explained to a correspondent, since 'these things' required 'ages for their accomplishment', they were 'plainly a work for a King or Pope, or some college or order: and cannot be done as it should be by a private man's industry'.[153] The *History of Life and Death* was not intended as a definitive work. Like the lawyer he was, Bacon was laying out the evidence for the case, heading up certain 'experiments' to be undertaken, and others to be followed up. Final judgement on the case he left pending. Bacon was well aware that he was sowing seeds for future study, rather than establishing the firm root of a new science.

One of Bacon's major (though at first unfulfilled) ambitions for perfecting his project was the establishment of societies, with sufficient funds to build permanent headquarters. These societies would perpetuate and improve knowledge and learning down the ages via the collaborative input of their members. Hence, in his posthumously published utopian tract, *The New Atlantis*, Bacon wrote of Salomon's House, an institution devoted to the collective, long-term advancement of learning. The great enterprises pursued at Salomon's House included 'the prolongation of life, the restitution of youth in some degree, [and] the retardation of age'.[154] The book was very popular, going through eight editions between 1626 and 1658 alone.

The notion implicit in Salomon's House is that, if the death of the *individual* cannot be staved off in the short term, then 'immortality' could be assured through the collective identity of the many pursuing

the same philosophical and scientific goal. Bacon defined this objective in *The Advancement of Learning*, where he laid down his critical programme for a 'Seate of the Muses'. There he had advised King James that it was those who were 'fruitfull' in their offspring who had 'a fore-sight of their own immortality in their Descendants'. In this sense, he explained, the childless Queen Elizabeth had merely been 'a sojourner in the world, in respect of her unmarried life, rather than an inhabitant'. She had enriched her own times, but it was through children that one's life's work was extended, 'which succeeding Ages may cherish, and Eternity it selfe behold: Amongst which, if my affection to Learning doe not transport me, there is none more worthy, or more noble, than the endowment of the world with sound and fruitfull Advancements of Learning'.[155]

Though married, Bacon was a homosexual; he never had children and did not expect to achieve 'immortality' though physical descendents.[156] Rather, personal immortality would come to him through his work. In the decades after Bacon's death, Salomon's House became the model for numerous scientific societies: the Invisible College, the Oxford Philosophical Club and, in 1660, the Royal Society of London were all at heart Baconian institutions. In many ways, such societies encapsulated Bacon's dream of immortality.

So, even though the man might die, his work would be continued by younger successors, and his learning would survive. Books and libraries served as the bridge linking past research with future discovery.[157] Whilst Bacon may not have had children, his life was not without offspring: books, as he explained in *The Advancement of Learning*, are effectively immortal, for it is here that 'the images of mens wits, remain unmaimed . . . for ever, exempt from the injuries of time, because capable of perpetuall renovation'. Books, furthermore, are eternally fertile: they 'generate still and cast their seeds in the mindes of men; raising and procreating infinite Actions and Opinions in succeeding ages'.[158] Books are 'as ships, passing through the vast sea of time', linking 'the remotest ages of Wits and Inventions in mutuall Trafique and Correspondency'.[159]

Through books, wisdom is transported down the ages; it is books that give young men the insight and knowledge only won by long life. As the great bibliophile John Selden observed in 1618, by reading, '[t]he many ages of Former Experience and Observation . . . may so

accumulat yeers to us as if we had livd even from the beginning of Time'.[160] And, as Thomas Fuller declared in 1639, studying history 'maketh a young man to be old, without either wrinkles or grey hairs; priviledging him with the experience of age, without either the infirmities or inconveniencies thereof'.[161] Elias Ashmole, writing in 1652, averred that, in gathering together and publishing his collection of alchemical works, he had acted 'as if having the *Elixir* [of Life] it selfe', and had 'made *Old Age* become *Young* and *Lively*, by restoring each of the *Ancient Writers*, not only to the *Spring* of their severall *Beauties*, but the *Summer* of their *Strength* and *Perfection*'.[162]

But institutional and literary longevity were only two facets of the Baconian project. As we have seen, physical longevity remained a clear and very real goal.

§

Did many people follow the advice laid down in the *History of Life and Death*? Though the book had sufficient readership to prompt two English translations in 1638, this is a difficult question to answer. One possible follower of some of Bacon's directives was Thomas Hobbes, one of the longest-lived seventeenth-century Englishmen whose dates have been verified: born prematurely in 1588, Hobbes lived on to an impressive ninety-one years.[163] Notably, in the 1620s he was for a time one of Francis Bacon's favoured secretaries and translators, and it is known that he held Bacon's writings in high regard.[164] He was also concerned with conserving his own health. In 1649, whilst in exile in France, he told Pierre Gassendi: 'I am in fairly good health for my age, and I am certainly looking after myself, preserving myself for my return to England, should it happen by any chance.'[165]

According to Hobbes's young friend John Aubrey, the famous philosopher followed a number of practices that he believed would prolong his life. In his youth, as Aubrey records, Hobbes was temperate 'both as to wine and women', but for the last three decades of his life he suffered increasingly from a disease contemporaries called 'shaking palsy' – which may have been what we know today as Parkinson's disease.[166] Aubrey noted that for Hobbes's last thirty years or so 'his dyet, etc., was very moderate and regular' and that in his final years he 'wase scarce able to write his name'. Furthermore, '[b]esides his dayly

walking, he did twice or thrice a year play at tennis (at about 75 he did it); then went to bed there was well rubbed. This he did believe would make him live two or three yeares the longer.'[167] (Even at seventy-eight, another friend noted, Hobbes walked all morning 'for his Health', and played 'so long at Tennis once a Week till he [was] quite tired'.)[168] Every night, as Aubrey wrote, when the doors were shut and he was alone, Hobbes 'sang aloud (not that he had a very good voice) but for his health's sake: he did beleeve it did his lungs good, and conduced much to prolong his life'.[169]

It was in these last decades of his long life that Hobbes became notorious for his supposed atheism. He certainly denied that the soul was immortal, but did believe that God would revive everyone from their death sleep at Judgement Day: 'God, that could give life to a piece of clay,' he stated, 'hath the same power to give life again to a dead man, and renew his inanimate, and rotten, carcass into a glorious, spiritual, and immortal body.' His mother, Hobbes once explained, had given birth to twins, 'to myself and to fear'. As Jacques Choron has written, 'it is quite probable that the fear of death must have been not the least among his anxieties. If authentic, his last words, "I take a fearful leap into the dark", seem to confirm this view.'[170]

Hobbes's apparent attempts to escape death and elude his final reckoning with God were mocked by contemporaries. An 'Elegie' published shortly after the philosopher's eventual demise in 1679 asked:

> Is he then dead at last, whom vain report
> So often had feign'd Mortal in meer sport?
> Whom we on Earth so long alive might see,
> We thought he here had immortalitie.

An 'Epitaph' published alongside this 'Elegie' similarly declared:

> Is Atheist-Hobbes then dead! forbear to Cry;
> For, whilst he liv'd, he thought he could not dy,
> Or was at least most filthy loath to try.[171]

Hobbes had spent the years of the Civil War in France, where he studied medicine and befriended the philosopher René Descartes. Whether the latter's scheme came from Hobbes, from Bacon, from

other influences, or from his own imagination, Descartes too believed that he could prolong his life for a long time – in fact, for a *very long time*. At the age of forty-one, Descartes had been disturbed to find that his hair was going grey. It brought a new focus into his life. As he told his friend Constantyn Huygens in 1637, from now on his principal subject of study would not be philosophy; it would be the search for a method of retarding the process of ageing.[172] He set his hopes high: the following year he told his friend that he hoped he might yet live 'more than a century' longer.[173] But he was soon scaling back his ambitions, telling another friend, Mersenne, in 1639, that he was expectant of at least another thirty years of life.[174] It was his good fortune, he explained, that in the last thirty years he had not 'experienced any illness worthy to be called an illness'. In fact, having acquired some knowledge of medicine and of how to take care of himself as if he were 'a wealthy gouty person, it seems as if I am now farther from death than I was in my youth'.[175] By 1645, he was informing Hobbes's patron, William Cavendish: 'The preservation of health has always been the principal end of my studies.'[176]

According to Descartes's seventeenth-century biographer, the philosopher followed a frugal diet (eating little, but often), drank sparingly, took moderate exercise, and kept a careful control of his emotions, having a love 'for peace and tranquility'. He never allowed his blood to be taken, and was careful in his choice of medicines.[177] All these things, Descartes believed, would help him prolong his life considerably. For if the body of man was a mere machine, a piece of divine clockwork, why should not the careful soul, through prudent diet, frequent exercise and careful repair, be capable of extending its operation and effecting its repair – indefinitely?

Like Bacon, Descartes believed that future ages would make immense progress in medicine. In his most famous philosophical tract, the *Discourse of a Method* (1649), he wrote that, 'if it be possible to finde any way of making men in the generall wiser, and more able than formerly they were,' it 'ought to be sought' through medicine. This science, he admitted, was still rudimentary, but 'whatsoever is known therein, is almost nothing in comparison of what remains to be known'.[178] One day, he suggested, 'we might be freed from very many diseases, as well of the body as of the mind, and even also perhaps from the weaknesses of old age, had we but knowledge enough of their

Causes, and of all the Remedies wherewith Nature hath furnished us'.[179]

Descartes concluded his celebrated work by formulating his resolution to 'employ the remainder' of his life 'in no other thing but the study to acquire some such knowledge of Nature as may furnish us with more certain rules in Physick than we hitherto have had'. Indeed, he explained that his 'inclination' for the importance of this project drove him 'strongly from all other kind of designes'.[180] Descartes believed that the only things that could inhibit this 'enquiry of so necessary a Science' were either 'the shortness of life' or 'the defect of experiment'.[181]

When the English philosopher and alchemist Sir Kenelm Digby met Descartes in Paris in the 1640s, they discussed '*la vie éternelle*'. Digby told him that, since 'life was almost too short to attain to the right knowledge' of things, he, Descartes, who so well understood the

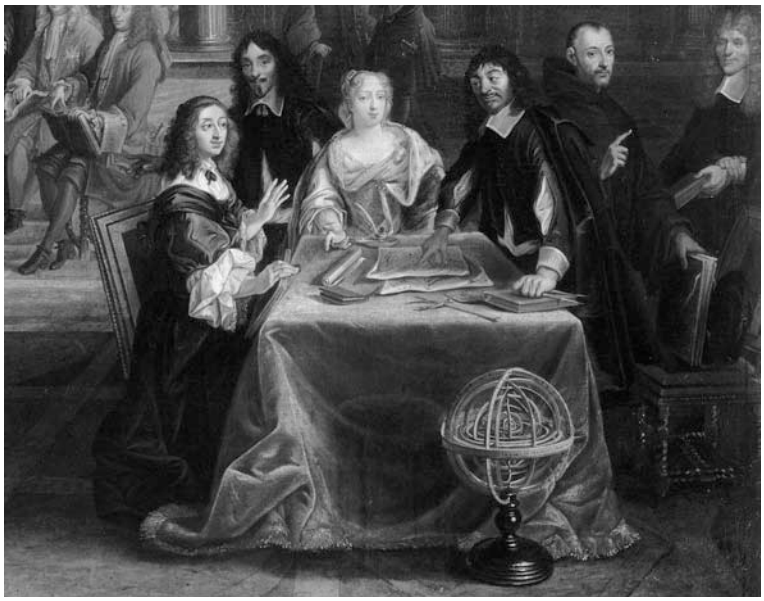

Figure 1.4 René Descartes: detail from *La Reine Christine de Suède, entourée de sa cour*, by Louis Michel Dumesnil (Châteaux de Versailles et de Trianon). René Descartes's decision to go to Stockholm and teach philosophy to Queen Christina was the worst he ever made. On 10 April 1650 an Antwerp newspaper reported 'that in Sweden a fool has died who had claimed to be able to live as long as he liked'.

working of the human 'machine', ought to be searching out means to prolong its conservation. Descartes replied that he *had* considered this matter, and told Digby 'that to render a man immortal, was what he would not venture to promise, but that he was very sure it was possible to lengthen out his [i.e. man's] life to the period of the Patriarchs'.[182]

Such was Descartes's apparent confidence in his method of life extension that his last patron, Queen Christina of Sweden, had the impression he was seeking to live forever. But things did not work out so well. Christina had invited the famous Frenchman to Stockholm to teach her philosophy. He was reluctant to make a trip he judged to be dangerous to his health. Besides, he was busy working on a book devoted to medical physiology and anatomy.[183] But the Queen massaged his ego, and he agreed to go for three months. He arrived in winter, and unwisely acceded to the Queen's desire to take her lessons when her mind was properly 'disengaged from the incumbrance of affairs'. This, unfortunately for Descartes (who liked to work for long hours in the comfort of his bed), was five o'clock in the morning.

The cold quickly took its toll. Descartes ailed, was bled against his better judgement, and, in February 1650, died in Stockholm of pneumonia. He was only fifty-three. On hearing the news in London a few weeks later, the reformer Samuel Hartlib 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.' Hartlib – who had his own ideas of how human life could be prolonged – added that Descartes had chosen 'to live in the Low Countries as a free Commonwealth where hee might live as hee list and to follow his studies, fancying that hee might live a thousand years to perfect his Philosophy'.[184]

Descartes's friends were stunned by the philosopher's sudden death. The Abbé Picot declared that, if it had not been for that 'foreign and violent cause' which had 'deranged his "machine" in Sweden', Descartes 'would have lived for five hundred years'. An Antwerp newspaper was less impressed, reporting on 10 April 1650 'that in Sweden a fool has died who had claimed to be able to live as long as he liked'.[185]

With both Bacon and Descartes prematurely dead, this was not a promising start for the new science of prolonging life. But it was not the end of the seventeenth-century project. Whilst neither cold nor diet had worked, there was still another way.