



THE LAST MAN WHO KNEW EVERYTHING:  
THOMAS YOUNG

ANDREW ROBINSON

REVISED EDITION

WITH A FOREWORD BY MARTIN REES



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## 16. A Universal Man

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*He might for example, have been styled without impropriety and almost with equal justice, in the middle of a history of his life, a physician, a classical scholar, a linguist, an antiquarian, a biographer, an optician, or a mathematician [...] Whether the public would have been more benefitted by his confining his exertions within narrower limits, is a question of great doubt.*

Young, 'Autobiographical sketch', 1826/27 [415]

Apart from deciphering the demotic script, and publishing scientific papers in areas comparatively new to him—atmospheric refraction, the density and shape of the earth, and the theory of life insurance—in the 1820s, Young also became a well-paid 'inspector of calculations' and physician to a newly founded society for life insurance. At the same time, he continued to be secretary of the Board of Longitude and superintendent of the *Nautical Almanac*, a physician at St George's Hospital, an active member of the Royal Society and its long-time foreign secretary, and a leading intellectual figure in London society. Bearing in mind the entire spectrum of his earlier work and achievements since 1800, he deserves to be called a Renaissance man or *uomo universale*, like Goethe, Benjamin Franklin or Young's friend Alexander von Humboldt (to whom he dedicated his 1823 book on Egypt)—even, maybe, the most eminent example of such a man in his age.

The advantages of his unique position, and the disadvantages, clearly preoccupied and disturbed Young. For in his autobiographical sketch, which was written during this period, he gives his own ambivalent view of polymathy at considerable length, while remaining modestly silent on several of his major achievements. Part of what he wrote is quoted at the opening of this chapter; Young then continues:

[H]is own idea was, that the faculties are more exercised, and therefore probably more fortified, by going a little beyond the rudiments only,

and overcoming the great elementary difficulties, of a variety of studies, than by spending the same number of hours in any one pursuit: and it was generally more his object to cultivate his own mind than to acquire knowledge for others in departments which were not his immediate concern: while he thought with regard to the modern doctrines, of the division of labour, that they applied much less to mind than to matter, and that while they increased the produce of a workman's physical strength, they tended to reduce his dignity in the scale of existence from a reasoning being, to a mere machine.

Then—still, of course, referring to himself in the third person—he makes a perceptive remark about the way in which science progresses (which, incidentally, by implication suggests why today's government funding of scientific research can never be straightforwardly tied to useful applications):

It is indeed so impossible to foresee the capabilities of improvement in any science, that it is idle to form any general opinion of what would be the comparative advantage of the employment of time in any one investigation rather than another, for almost all the authors of important discoveries and even of inventions, are led as much by accident as by system to their successes. He would probably not have recommended the plan of his own studies as a model for the imitation of others: and he certainly thought that many hours, and even years of his life, had been occupied in pursuits that were comparatively unprofitable. But it is probably best for mankind that the researches of some investigators should be conceived within a narrow compass, while others pass more rapidly through a more extensive sphere of research.[416]

Young's appointment in life insurance came about during a speculative financial boom in 1824–1825 that saw 624 life insurance schemes projected, of which no more than a fifth survived their infancy. The Palladium Life Insurance Company was one of them; it amalgamated in 1856 with the Eagle, and this company later became Eagle Star Assurance. Young was appointed the company's inspector of calculations and its physician in March 1824 at a salary of £500 per annum, making his overall income, including his salary from the Admiralty, his medical practice and his writings, 'adequate to his utmost wishes, without any further dependence on the caprice of public opinion in a medical capacity' (the autobiographical sketch again).[417] Later, this salary was reduced to £400 at Young's own suggestion, after he had ascertained that the

true amount of work was less than he had expected. 'A rare example of conscientiousness in the administration of such institutions, which are not infrequently less designed by their founders for the benefit of the general body of shareholders and insurers, than of the officers who conduct them'—as remarked only too accurately by an acid George Peacock,[418] who was clearly no admirer of the actuarial profession.

One presumes that Young was approached by the Palladium in the first place because in 1816 he had published an anonymous paper entitled 'An algebraical expression for the value of lives'. This probably grew out of his interest as a physician in the effect of climate on mortality. In his book on consumptive diseases, he included a table of the annual mortality in the different counties of Great Britain, based on the census returns of 1811. The county of Middlesex, which contains London, came off worst, with an annual mortality of one in thirty-six, that of Northamptonshire came about half way down the table at one in fifty-two, while the rural counties of Wales were the healthiest, at one in seventy-three—that is, half the mortality rate of London. 'It is obvious that those counties, which contain large manufacturing towns, exhibit a mortality wholly independent of their climate,' observed Young, 'while the natural salubrity of others, for instance, Cornwall [one in sixty-two], is probably rendered more conspicuous by their exemption from sedentary employments.' [419] Obviously, Young was already aware of the complexity of mortality statistics. When he became professionally involved with life insurance in the 1820s, he wrote five more articles under his own name directed at three basic ends: to obtain formulas that could be applied by actuaries in any part of the country, to fit these formulas to certain existing tables of mortality, and to criticise certain actuaries and societies.

Life insurance is a rebarbative subject for most people. Although Young's papers on it do not merit the 'pioneering' label that adheres naturally to his work in physics, physiology and Egyptology, it is worth looking briefly at his dispute, in 1826 and after, with one particular life insurance expert. William Morgan, the chief actuary from as far back as 1775 of the well-established Equitable Society and a fellow of the Royal Society, was known for defending the Equitable's use for the whole country of the Northampton table of mortality, drawn up by Morgan's uncle, Richard Price, a founder of both the theory and practice of life

insurance, from observations of mortality in Northamptonshire in the years 1735–1780. On this basis, Morgan had managed the Equitable ‘with greater prudence than equity’ (Peacock again[420]) and ensured a flow of profits to its members for more than half a century. But Young was far from convinced that the Equitable was being equitable in applying the Northampton table everywhere—to London, say, and other major cities—especially as the society was still employing Price’s original assumption that the population of the country was static, which it most definitely was not by the 1820s. (All formulas for calculating life insurance must take account of both mortality rates and birth rates.)

Young therefore attacked Morgan in a paper for the Royal Society, entitled ‘A formula for expressing the decrement of human life’, which concluded:

I sincerely hope that these considerations may help to undeceive the too credulous public, who have of late not only received some hints that tend to insinuate the probability of an occasional recurrence of a patriarchal longevity, but who have been required to believe, upon the authority of a most respectable mathematician, that the true and unerring value of life is not to be obtained by taking an average of various decrements, but by adopting the extreme of all conceivable estimates, founded only on a hasty assertion of Mr Morgan, and unsupported by any detailed report; an estimate which makes the great climacteric of mankind [i.e., the years in which the greatest number of adults die] in this country, not a paltry 54, or the too much dreaded 63, but no less than EIGHTY-TWO! An age to which nearly one sixth of the survivors at ten are supposed to attain![421]

An irritated Morgan not surprisingly responded in stout defence of himself, the late Dr Price, his Northampton table and the Equitable Society:

The public have lately been overwhelmed with tables of the decrements of human life, formed either by amalgamating all the old tables into one heterogeneous mass, and thus giving the true probabilities of life in no place whatever, or by interpolating some of the decrements in one table into those of another; for which purpose a vast variety has been given of complicated and useless formulas. But little or no advance has been made in determining more correctly the probabilities and duration of human life. The tables published in the Report of the Committee of the House of Commons are in general so incorrect, and some of them are even so absurd, as to be unfit for use; and serve only to encourage the

popular delusion of the improved healthiness and greater longevity of the people of this kingdom.[422]

Young was correct to question Morgan's outdated and self-interested methods of calculation, but his own empirical formula, with some twenty constants, was so complicated that it was altogether impracticable for the calculation of annuities. Although Young's principles of life insurance merit a footnote in the history of the subject, in practice they exerted no perceptible influence on the development of the life insurance industry.

More fruitful, if rather less lucrative, was his simultaneous scientific work in geology and geodesy. Young had long been interested in this subject; indeed he was among the very first to understand an important aspect of earthquakes: the similarity of the vibrations caused by earthquakes to the longitudinal vibration of sound waves. In his *Natural Philosophy*, Young states that 'where the agitation produced by an earthquake extends further than there is any reason to suspect a subterraneous commotion, it is probably propagated through the earth nearly in the same manner as a noise is conveyed through the air.' [423] Now, in the 1820s, he turned his attention to the long-debated density and 'figure' of the earth, that is, 'the shape assumed by a self-gravitating, rotating mass of fluid' (in the words of a recent mathematician who studied the debate, Alex Craik). [424] Newton had maintained that the spinning earth was not a sphere, but a spheroid slightly flattened at the poles and slightly bulging at the equator, and after some decades of controversy about whether the flattening and bulging were in fact the other way around, two gruelling scientific expeditions set out from France in the mid-eighteenth century to conduct trigonometrical surveys in Lapland (near the pole) and Peru (at the equator), and eventually proved that Newton was correct. By Young's time, however, it had become clear that the earth was not an exact spheroid and that further theoretical refinements to its figure were necessary to take account of the fact that the planet was not of uniform density.

Pierre-Simon Laplace was interested in the problem, too. Despite his disagreement with Young on his wave theory of light and other scientific matters, Laplace was impressed by one of Young's arguments and adopted it in his own work. 'Until now,' he wrote, 'mathematicians have not included in this research the effect resulting from the compression of the strata. Dr Young has called their attention to this object, by the

ingenious remark, that we may thus explain the increase of density of the strata of the terrestrial spheroid.’[425] Nevertheless, Young disagreed with an assumption of Laplace, that the elasticity of a solid must be proportional *not* simply to its density, as was known to be true of elastic fluids, but to the square of its density. ‘M. Laplace’s hypothesis is not correctly applicable to the internal structure of the earth; since it either makes the mean density too small in comparison with that of the surface, or the compressibility at the surface too great [...] In this respect the simple analogy of elastic fluids will afford us a result more conformable to observation.’[426] Young proceeded to show that with the assumption of simple proportionality and with a modulus of elasticity for rock of ten million feet, the figure of the earth that emerged was one close to that actually observed.

A new method of calculating the figure of the earth ‘from a single tangent’[427] was among Young’s last scientific calculations, found among his papers after his death. As he told Hudson Gurney at the time: ‘it is my pride and pleasure as far as I am able to supersede the necessity of experiments and especially of expensive ones. I have just been inventing a mode of determining the figure of the earth from two points in sight of each other, without going either to Lapland or to Peru’.[428]

Egyptian writing also continued to absorb him to the very end, as we know. Young may have let slip the hieroglyphic crown to Champollion, but the prize for deciphering demotic—what he called ‘enchorial’—was still available. And this time, he felt that luck was with him.

In 1821, when Young was in Italy, he had tried desperately hard to acquire a copy of Drovetti’s bilingual inscription, mainly so as to aid and confirm his own interpretation of the demotic portion of the Rosetta Stone. Then, by a stroke of great good fortune, one day in November 1822 he was lent a box of papyri by George Francis Grey, a friend of an old Cambridge University friend, who had bought them from an Arab at Thebes. That very evening, Young discovered to his absolute astonishment that two of Grey’s papyri contained a Greek translation of a demotic papyrus from a totally different source that Young had been trying to decipher without much success. Miraculously, he now had a real bilingual in his hand, and could forget all about how to inveigle a copy of Drovetti’s inscription out of its jealously proprietorial owner.



The candles in No. 48 Welbeck Street must have burnt until dawn on the night of 22–23 November 1822. A few months later, Young memorably described his almost feverish excitement at the find in his *Account of Some Recent Discoveries in Hieroglyphical Literature and Egyptian Antiquities*:

I could not, therefore, but conclude, that a most extraordinary chance had brought into my possession a document which was not very likely, in the first place, ever to have existed, still less to have been preserved uninjured, for my information, through a period of near two thousand years: but that this very extraordinary translation should have been brought safely to Europe, to England, and to me, at the very moment when it was most of all desirable to me to possess it, as the illustration of an original which I was then studying, but without any other reasonable hope of being able fully to comprehend it; this combination would, in other times, have been considered as affording ample evidence of my having become an Egyptian sorcerer.[429]

It was an inspiring moment, and Young made solid progress with demotic over the next few years, as Champollion raced ahead with the hieroglyphs (while also himself studying demotic). But being Young, he got diverted—by annuities, the figure of the earth, the *Nautical Almanac* and many other appealing byways of knowledge. Then, in June 1827, he received a letter in Latin that seems to have galvanised him again. It was written by Amedeo Peyron, an Italian specialist in Coptic at Turin (the place where, by chance, Drovetti's elusive stone now rested), and it mixed high praise of Young with some tactful criticism:

You write that from time to time you will publish new material which will increase our knowledge of Egyptian matters. I am very glad to hear this and I urge you to keep your word. For, as Champollion will witness, and other friends to whom I have mentioned your name, I have always felt and so do many others, that you are a man of rare and superhuman genius with a quick and penetrating vision, and you have the power to surpass not only myself but all the philologists of Europe, so that there is universal regret that your versatility is so widely engaged in the sciences—medicine, astronomy, analysis, etc. etc. that you are unable to press on with your discoveries and bring them to that pitch of perfection which we have the right to expect from a man of your conspicuous talents; for you are constantly being drawn from one science to another, you have to turn your attention from mathematics to Greek philosophy and from that to medicine etc. The result is that there are some mistakes in your books which you yourself might well have corrected.[430]

From now until his death two years later, Young worked assiduously at his *Rudiments of an Egyptian Dictionary in the Ancient Enchorial Character; Containing All the Words of Which the Sense Has Been Ascertained*. And it is pleasant to record that Champollion, who was now the curator of the Egyptian collection at the Louvre Museum in Paris, assisted him. In the summer of 1828, Young visited Paris to accept his recent honour of being elected as one of the eight foreign associates of the National Institute, just before Champollion set off for Egypt. Young told Gurney that Champollion ‘has shown me far more attention than I ever showed or could show, to any living being: he devoted *seven* whole hours at once to looking over with me his papers and the magnificent collection which is committed to his care [...] he is to let me have the use [...] of all his collections and his notes relating to the enchorial character that I may make what use I please of them.’[431] We can only guess at Champollion’s motives: no doubt they included some new respect for Young as a foreign associate of the National Institute, but more important must have been Champollion’s pride in his invulnerable achievement and in his curatorship; plus—it would surely be reasonable to assume—some feeling of guilt at his unacknowledged debt to Young. Anyway, Young was careful to acknowledge Champollion’s help in generous terms in his dictionary. Although the difficulties of deciphering enchorial/demotic remained formidable—many manuscripts contain puzzling passages even today—Young could justifiably claim that ‘thirty years ago, not a single article of the list [of words in the dictionary] existed even in the imagination of the wildest enthusiast: and that within these ten years, a single date only was tolerably ascertained, out of about fifty which are here interpreted, and in many instances ascertained with astronomical precision.’[432] The Egyptologist John Ray sums up: ‘Young was the first person since the end of the Roman Empire to be able to read a demotic text, and, in spite of a proportion of incorrect guesses, he surely deserves to be known as the decipherer of demotic. It is no disservice to Champollion to allow him this distinction.’[433]

‘*Far more attention than I ever showed or could show, to any living being*’—it is a faintly shocking remark from Young to his oldest friend, especially since it refers to his intellectual sparring partner Champollion. The remark appears in Alex Wood’s biography, but not in the otherwise identical quotation from Young’s letter in Peacock’s book, where these

few words are simply missing. This may have been due to a copying error by Peacock; however, it seems at least possible, and even probable, that Peacock deliberately omitted the unguarded remark out of delicacy for the feelings of Young's wife Eliza. No doubt, after a quarter of a century's marriage, she was profoundly aware of her husband's absorption in the pursuit of knowledge, but this remark seems to imply an emotional detachment from other human beings verging on the inhuman.

Perhaps such detachment in a leading scientist is hardly news. The popular caricature of scientific genius today is generally somewhat misanthropic. And in reality, Newton, notoriously, and his polymathic contemporary Hooke, and also Einstein, all sacrificed intimate personal relationships for scientific insights. However, Einstein could write, aged seventy, in a memorial message for a Jewish friend: 'Knowledge exists in two forms—lifeless, stored in books, and alive in the consciousness of men. The second form of existence is after all the essential one; the first, indispensable as it may be, occupies only an inferior position.' [434] Young would not have agreed to relegate books in this way, and his emphasis, one feels, would have been on the cultivation and perfection of the consciousness of one man, oneself, rather than the sharing of one's knowledge with others. (Hence his lack of success as a lecturer and, possibly, as a physician.) Young was a man who probably felt most alive at times of solitary reflection in his study. Another letter to Gurney, written in 1820, catches this mood well: 'I have derived more pleasure within these few days from a contemptuous hint of a great mathematician, which I can at once show to be unjust, and from an elaborate attempt to substitute a new theory for one of mine, which I can easily prove to be far less accurate, than I should probably have received from the most fulsome compliments' [435]

Yet—and this is what makes Young an intriguing person in addition to being a fascinating thinker—he was genuinely sensitive to the arts and could often be distinctly fond of human company. Writing to his favourite sister-in-law Emily from Worthing, he says: 'I have been dashing through vocal and instrumental music without any reserve or modesty, being determined to keep myself in practice for the pleasure of accompanying you.' [436] In another letter to her, he writes of a small dinner party—'one of the very few dinners that reconcile one to living in London'—at Lord Elgin's, with only the American-born historical

painter Benjamin West, president of the Royal Academy, and a couple of others present. Young describes West for her:

[He] is really a most interesting personage in everything that relates to his profession; in other respects he is very much like any other man of seventy-four: but he was only seven months painting his great picture [*The Death of General Wolfe*], which he sold for 3000 guineas, and which produced 13,000 to the British Institution by its exhibition. His present picture is visited daily by 472 people on an average of a fortnight. He paints fifteen hours a day, not requiring any other exercise, and sleeping but seven: he paints without any model, in order to avoid introducing portraits, and to preserve an ideal character of perfection in his figures; but when he has once drawn them, he corrects the attitudes and the lights by comparison with a real figure: for this reason, he said, he never repeated himself. To me it appeared that he did very often repeat the same kind of countenance, and his mode of painting seemed to explain the reason of it, and I ventured to hint something of the kind in an indirect manner. In consequence of his wishing to see me at his house, I called on him last Sunday, and sat a long while with him. He perfectly remembered my once having seen him twenty-one years ago, when, as he observed, I was dressed in a different costume [as a Quaker]. He told me the history of the little Cupid and Psyche which I have [one of the paintings bequeathed to Young by his great-uncle Richard Brocklesby]: he painted it in the year 1760, when he was in his twenty-first year, before he had ever been in England.

After a lot more description of his Sunday spent with West, Young signs off insouciantly: 'And now I have told you enough of Mr West, a man who has covered 7000 square feet of canvas, and too much, except that I think all these particulars worth remembering, and therefore worth writing; and if you do not think them worth reading, you are at liberty to pass them over and burn the letter.' [437]

Boswell on Doctor Johnson this account may not be, but it is scarcely the writing of an uncongenial scientific recluse. Nor does Young's own portrait—painted from life sometime after 1822 at the request of Hudson Gurney by Sir Thomas Lawrence, the leading portrait painter of his time, celebrated for capturing a true likeness of his subjects—suggest unworldliness or misanthropy. Even after making allowance for an artist's desire to please, the dominant impression from the portrait is one of intelligence and determination, but also sensitivity and openness to the world.

All of these qualities were more than evident in Young's relations with the Royal Society over a period of more than thirty years. In fact, Young epitomises the Royal Society ethos at its finest. Yet he never once made a speech at a council meeting, and when, in 1827—following his election as a foreign associate of the National Institute of France—he was mentioned as a possible president of the Royal Society, after Sir Humphry Davy had to retire through ill health, he demurred. 'I find there has been pretty general conversation about making *ME* president of the Royal Society,' he wrote to Emily, 'and I really think if I were foolish enough to wish for the office, I am at this *moment* popular enough to obtain it; but you know that nothing is farther from my wishes.' [438] Instead, Davies Gilbert, politician and promoter of science but no scientist himself, was elected. Young liked Gilbert, but doubted his capacity to control unruly council meetings. 'I told him that he had not quite enough of the devil in him; that Sir Joseph Banks should have left his *eyebrows* to go with his cocked hat, if he left the society nothing else.' [439]

By now, Young was certainly an established figure—both in science and in life. At the end of 1825, he left Welbeck Street after twenty-five years there, and moved a mere half a mile to a grand new house at 9 Park Square in Regent's Park, just north of John Nash's imposing, stuccoed development of Regent Street. Probably his income from the Palladium Life Insurance Company went into building this residence. At Park Square, to quote Gurney's memoir, 'he led the life of a philosopher, surrounded by every domestic comfort, and enjoying the pleasures of an extensive and cultivated society, who knew how to appreciate him.' [440] That meant, to use Young's own words, 'the pursuit of such fame as he valued, or of such acquirements as he might think to deserve it.' [441]

The note of complacency, though readily understandable, is unmistakable, and it is bound to provoke a reaction from a more egalitarian age. According to Geoffrey Cantor, writing in the *Dictionary of National Biography*, 'Living in a period when the social elite was under attack both at home and abroad, Young never wavered in his defence of the status quo and he remained mindful of his position as an English gentleman.' [442] True enough: but did this make Young an Establishment figure, as implied by Cantor's comment? I think not. He started his career with a considerable inheritance, but the rest of his money was

self-made, from his own untiring work as a scientist, mathematician, physician and writer. Intellectually and socially, he was seldom easily or totally accepted—unlike, say, his equally middle-class but ambitious and fashionable contemporary Davy. When Young died, he was still plain Dr Young: signally lacking in the national honours normally awarded to eminent scientists and public servants. If he yearned to be Sir Thomas, like Sir Humphry Davy, he practiced few of the usual flatteries of the rich and powerful required to secure a knighthood. Most probably, had a title been offered to him on his own terms, Young would have been pleased to accept it; but he was not willing to compromise his principles to obtain such a symbol of popularity—whether in his Royal Institution lectures, his practice of medicine or his superintendence of the *Nautical Almanac*. Establishment figures are comfortable with compromise and become fixed in their principles only with prosperity and age. With Young, ‘As far as the qualities of the mind and feelings are concerned, he may be said to have been born old, and to have died young’[443]—to repeat an earlier comment he made on himself in his autobiographical sketch.

Death came relatively swiftly to him. After a lifetime in which he had not been confined to bed for a single day, even during his adolescent brush with incipient consumption, he experienced unusual fatigue while visiting Geneva in the summer of 1828. Then, in February 1829, he suffered what he apparently considered to be repeated attacks of asthma, and at the beginning of April he had great difficulty in breathing—with some discharge of blood from the lungs and great weakness. But he continued to work, eventually from his bed; and to arrange his affairs through Gurney. The attacks on him by astronomers intent on gaining control of the *Nautical Almanac*, after the abolition of the Board of Longitude in 1828, were at their peak. Young had earlier replied in forceful detail, but now he declined to respond further and asked Gurney ‘that nothing should go forth on his part to increase irritation’.[444] Instead he worked steadily, if feebly, on the last stages of correcting the proofs of his *Rudiments of an Egyptian Dictionary*. There are a few proof pages in Young’s manuscripts at the British Library, and it is moving to see his precise handwritten corrections in red ink; at the very end, unable to hold a pen, he was reduced to working in pencil. He told Gurney: ‘that it was a work which if he should live it would

be a satisfaction to him to have finished, but that if it were otherwise, which seemed most probable, as he had never witnessed a complaint which appeared to make more rapid progress, it would still be a great satisfaction to him never to have spent an idle day in his life.'[445] In the event, he reached page ninety-six of the proofs, almost to the end of the book, before expiring on the morning of 10 May, just short of fifty-six years old.

The post-mortem examination carried out by Young's St George's Hospital colleague Benjamin Brodie on the following day revealed no tubercular damage to the lungs. However:

The parietes of the heart but especially those of the left ventricle were of unusual thickness (the latter, might be of double the usual thickness). The sigmoid valves of the aorta were very slightly ossified in spots. The aorta from its origin to its bifurcation was ossified to a very great extent, so as to form throughout the greater part of its extent a hard and unyielding tube. It had also lost its cylindrical form: bulging out in some parts, contracted and indented in other parts, and altogether considerably diminished in diameter.[446]

No doubt Young himself, who had made detailed hydraulic calculations on the circulation of blood in the heart in his Royal Society lecture of 1808, would have been fascinated. He was a relatively frugal eater, who neither smoked nor drank alcohol, and a regular taker of exercise. Neither of his parents had died young. What could be the cause of such extensive ossification of his aorta in his mid-fifties? His friend Gurney put it down to Young's 'unwearied and incessant labour of the mind from the earliest days of infancy.'[447] But a current consultant cardiologist, David Springs, thinks this explanation unlikely to be true:

'Ossification of the aorta' is what would be recognized today as advanced atherosclerosis with calcification. Atherosclerosis of the aorta may involve the origins of the arteries to the kidneys, which arise from the aorta in the upper part of the abdomen. Severe narrowing of these arteries can result in kidney failure, high blood pressure and congestion of the lungs. Progressive and ultimately fatal kidney failure, complicated by episodes of severe pulmonary congestion, would explain the decline in Young's health over the last months of his life, and the attacks of acute breathlessness (misdiagnosed as asthma).

It is unclear why Young should have such severe atherosclerosis in middle age. The major risk-factors for this condition are diabetes (there

is no evidence that Young had this disorder), high blood pressure (not known—the sphygmomanometer was not invented until later in the nineteenth century), tobacco smoking (he did not smoke) and high blood cholesterol. It is possible that Young had a metabolic disorder resulting in high blood cholesterol, although we have no evidence that this was familial; Young’s parents lived to good ages for their time. The disorder would have developed over several decades. While mental stress may be a factor in the clinical manifestations of coronary artery atherosclerosis (for example, triggering a heart attack), its contribution to the progression of atherosclerosis in the aorta and other arteries remains speculative.[448]

The public reaction to Young’s death was small. A genuinely shocked Arago later told the National Institute in his eulogy for their late lamented foreign associate: ‘The death of Young in his own country attracted but little regard.’[449]

The medical journal, *The Lancet*, carried a brief news item about the death of the ‘distinguished physician’:

Dr Young, while eminent in his profession was, at the same time, one of the first philosophers in Europe. His readings and researches in natural philosophy were extraordinarily great; the second volume of his works on that subject, displays the extent of his inquiries and acquaintance with the work of other men. Dr Young’s name had, of late, been very frequently before the public, through a long controversy between himself and the first astronomers in this country, which was carried on with a degree of acrimony not very befitting philosophers.[450]

The Royal Society, not surprisingly, did better than this. Davies Gilbert, the president, who had known Young fairly well, stated in a valedictory address:

The multiplied objects which he pursued were carried to such an extent, that each might have been supposed to have exclusively occupied the full powers of his mind; knowledge in the abstract, the most enlarged generalizations, and the most minute and intricate details, were equally affected by him; but he had most pleasure in that which appeared to be most difficult of investigation. [...] The example is only to be followed by those of equal capacity and equal perseverance; and rather recommends the concentration of research within the limits of some defined portion of science, than the endeavour to embrace the whole.[451]



There was no other official response. But eventually, at the urging of Mrs Young and the ever-loyal Gurney, space was found in Westminster Abbey for a memorial plaque written by Gurney with a medallion of Young (Figure 16.1) by the sculptor Sir Francis Chantrey. There, in the chapel of St Michael, Young rubs shoulders with Sir James Young Simpson (the discoverer of chloroform), the physician Matthew Baillie (who had taught Young), Sir Humphry Davy (Young's fellow lecturer at the Royal Institution), the 3rd Baron Rayleigh (who greatly admired Young's physics), the engineer Thomas Telford (whose iron bridge proposal Young had supported) and the actress Sarah Siddons (whose performances Young had watched as a student in Edinburgh). It is suitably diverse and distinguished company for him.



Fig. 16.1 Engraving of the medallion of Young by Sir Francis Chantrey in Westminster Abbey in London, as shown in the biography of Young by George Peacock.

A year after Young's death, Gurney—while writing his memoir of Young—asked Sir John Herschel for his assessment. Herschel responded

at length and then concluded: 'how inadequate and limited a view these observations can afford of the extensive scientific labours, and truly original genius of Dr Young. To do anything approaching to justice to his reputation in that respect, would call for the exercise of powers more nearly allied to his own than I can pretend to boast.'[452] If this was true then—and with reference only to Young's scientific achievements, not his entire oeuvre—how much truer is it today, almost two centuries later. For those of us lesser mortals who feel instinctively drawn to versatility of genius, Young is guaranteed to be an inspiration; while others whose taste is for genius with a narrow focus (like Fresnel's and Champollion's) will feel bound to regard him with scepticism. What is undeniable, though, is that Thomas Young really did approximate to 'the last man who knew everything'—however much he himself would have denied this—and we can safely say, with the endless expansion and bifurcation of knowledge, that no one will be able to stake this awesome claim ever again.

## Notes and References

Note that the precise wording of the quotations from Young's letters, the originals of which were available to George Peacock and Alex Wood but have since disappeared, sometimes differs in their two biographies; in each case, I have chosen what appears to me to be the most reliable version.

[415] Quoted in Hilts: 253.

[416] Ibid: 253–54.

[417] Ibid: 253.

[418] Peacock: 404.

[419] Young, *Consumptive Diseases*: 105–06.

[420] Peacock: 413.

[421] Young, *Miscellaneous Works*, vol. 2: 377–78.

[422] Quoted in Young, *Miscellaneous Works*, vol. 2: 380.

[423] Young, *Natural Philosophy*, vol. 2: 717.

[424] Craik: 232.

[425] Quoted in Young, *Miscellaneous Works*, vol. 2: 79.

[426] Young, *Miscellaneous Works*, vol. 2: 81.

- [427] Young's paper, 'Determination of the figure of the earth from a single tangent' appears in Peacock: 511–14.
- [428] Letter to Gurney (17 Dec. 1828) in Wood: 328.
- [429] Young, *Some Recent Discoveries in Hieroglyphical Literature*: 58.
- [430] Letter to Young (28 May 1827) in Young, *Miscellaneous Works*, vol. 3: 423–24.
- [431] Letter to Gurney (no date given) in Wood: 247. See also Peacock: 341.
- [432] 'Advertisement' in Young, *Rudiments of an Egyptian Dictionary*: vii.
- [433] Ray, 'The name of the first: Thomas Young and the decipherment of Egyptian writing' (unpublished lecture).
- [434] 'Message in honour of Morris Raphael Cohen' in Einstein, *Ideas and Opinions*: 80.
- [435] Letter to Gurney (28 Dec. 1820) in Wood: 320.
- [436] Letter to Emily Earle (no date given) in Peacock: 215–16.
- [437] Letter to Emily Earle (22 Nov. 1814) in Peacock: 247–49.
- [438] Letter to Emily Earle (no date given) in Wood: 326.
- [439] Quoted in Peacock: 474.
- [440] Gurney: 37–38.
- [441] Quoted in Gurney: 38.
- [442] Cantor, 'Thomas Young': 949.
- [443] Quoted in Hilts: 254.
- [444] Gurney: 42.
- [445] *Ibid*: 42.
- [446] 'Examination of the body of the late Thomas Young M.D. For. Sec. R.S. May 11 1829', St George's Hospital Library, London. The MS is a short, two-page note in the handwriting of Brodie (courtesy of the librarian Nallini Thevakarrunai).
- [447] Gurney: 44.
- [448] Personal communication from David Sprigings, Sept. 2005.
- [449] Arago: 236.
- [450] *Lancet*, vol. 2 (23 May 1829): 255.
- [451] Quoted in Peacock: 482–83.
- [452] Letter to Gurney (25 June 1830), published as a pamphlet in London in 1830, presumably by Gurney. A copy is in the British Library (shelf mark 8705.a.15).