BJHS **36**(4): 471–476, December 2003. © British Society for the History of Science
DOI: 10.1017/S0007087403005168

Essay review

Telling stories

'Revolutions in Science' series, Icon Books

In the beginning, there was Dava Sobel and *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (1998). Others followed, in a veritable flood which D. P. Miller recently dubbed the 'Sobel Effect'.[1] Academic historians of science have been concerned by this flood, partly because people other than them are (presumably) making money out of 'their' subject, but also because of the ways it might affect the public perception of the history of science. Like the scientists they study, historians fear that popularizers will distort in the process of simplifying. But, knowing how difficult it has been for scientists to control the popularization of their subject, historians may not expect a great deal more success.

One intervention has come from the British Society for the History of Science, which decided to award its biennial Dingle Prize for 'the best book in the history of science … accessible to a wide audience of non-specialists'. Winning books present their material 'in an engaging and comprehensible manner that also shows proper regard to historical method'.[2] The most recent winner, Deborah Cadbury's *The Dinosaur Hunters* (2000), was written by a journalist and made into a television programme, and the BSHS award clearly demonstrates that it is possible for such works to be written in a manner sympathetic to both academic and populist concerns. The Society seeks not only to reward such authors, but also to encourage others to do likewise.

Another intervention comes from Icon Books, who have launched a series 'written for a general audience that seeks to present scientific history as it really happened'.[3] Eleven books had appeared in this 'Revolutions in Science' series at time of writing, with another five scheduled for 2003. The series is under the academic editorship of Jon Turney at University College London, and the volumes are all written by academic historians of science. The subject matter ranges in time from the ancient Greeks to the mobile phone, although the series is strongest for the early modern period and the twentieth century. The first four members of the series were small-format paperbacks, barely 150 pages long, though the later issues have been in hardback, and are getting closer to two hundred pages. They are written without the use of scholarly apparatus, and have appendices of recommended reading.

In this case, rather than asking journalists to write better history, the aim is for historians to write more popular books. We can assume that historians as authors ought

1 David Philip Miller, 'The Sobel effect', *Metascience* (2002), **11**, 185–200.
2 'The Dingle Prize', http://www.bshs.org.uk/prizes/dingle.html (February 2003), accessed 15 March 2003.
3 'Revolutions in Science series', http://www.iconbooks.co.uk/revsci.cfm, accessed 16 March 2003.

https://doi.org/10.1017/S0007087403005168 Published online by Cambridge University Press

to write good history, but will they be able to appeal to the non-specialist reader? To assess this adequately will require a different sort of expertise from that usually found in reviewers in this *Journal*. Thus, although both of your reviewers today are academics, only one is a historian of science; the other is an engineer who is a regular reader of popular science and history of science. We had expected that we would find many areas of disagreement, with our historian complaining of simplifications or whiggish language, and our engineer complaining of historiographical fussiness and boring stories. In fact, it was surprising how similar our views were. We agreed that social context generally made the story much more interesting than the tale of a lone genius would have been, and we agreed that some passages were just boring. Our engineer did feel that some authors were trying too hard to make a point against some imaginary 'Sobelian' straw-man, but our biggest area of disagreement was about *The Discovery of the Germ*; we leave you to guess which of us was irritated at all the 'ingenious experiments' and opponents who were 'utterly vanquished', and which of us thought it was a darn good story.

For a history of science book to be successful in the popular market it needs that 'darn good story'. It has become almost compulsory for books in this genre to use a subtitle to excite the reader about 'one man's heroic quest to change the world'. Such books are strongly character-driven, with a clear moral and an engaging plot – they tell the story of the lone genius who prevails against the odds and leads science onwards and upwards. Of course, academic historians will want to argue that the truth is more complicated, which leaves them with a problem about how to present their own stories – they need to engage their readers without resorting to triumphalist historiography. This may be part of the reason that the series has so far avoided Great Names such as Newton, Darwin or Einstein (although we hear that Newton is in the pipeline).

The authors of the current books in this series are clearly aware of the need to motivate their readers' interest. This is particularly difficult to do for characters such as Harvey or Bacon, who are not as well known to lay readers but cannot be presented in typically Lone Genius terms. Often, the introductions stress the importance of the person's discovery in its wider context: *Latitude & the Magnetic Earth* is motivated by fridge magnets, while computers in *Turing and the Universal Machine* are compared to Swiss army knives. There is, however, considerable variety in the style of the introductions, and some of the other books strike a far more academic tone in their introduction, merely giving a summary of the book that the reader is about to tackle. This is one area where some academic authors need to work harder at adjusting to their new audience.

It is possible to tell a heroic and stirring story without becoming caught up in assumptions about the 'right' answer ultimately winning out. *Watt's Perfect Engine* can, at one level, be seen as the story of one man succeeding against the odds, but also tells a far more complicated story, acknowledging that while Watt was successful, this was not simply because he was the one man with the right answer. Watt's reluctance to become involved with high-pressure steam illustrates one way in which his engine was not as 'perfect' as it might have been, while his partnership with Matthew Boulton is clear evidence that the eventual success was not due to one man's struggle. The story is still one of success and failure, and the complexity adds to rather than detracts from the overall interest of the book.

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While a good heroic tale, with exciting twists and turns, can be told about many of the more modern figures in the history of science, it proves rather more difficult with some of the early modern figures. Although at face value there are books in this series about Bacon, Copernicus, Harvey and Gilbert, these are really books about books; the real heroes are *Novum Organon*, *De Revolutionibus*, *De Motu Cordis* and *De Magnete*. This is partly because several of these people are known primarily for their one great book, but also because in some cases there is no copious biographical information available. Using the book as the main character does have some advantages; the story of a world-changing book is easy to motivate, and can be placed in context (if somewhat formulaically) by dividing the story into Before the Book, the Book, and After the Book, providing a natural narrative structure. The problems come in the middle section, which tends to end up describing the contents of the Great Book, and rather loses its momentum. Fundamentally, the story of a book lacks human interest.

If early modern figures (and their books) make poor heroes, it is also possible to have too many heroes. *Eureka!* ranges widely over all of the usual Greek philosophers, but without any strong central character the book tries to motivate the procession of names and ideas which pass over its pages through an insistence that this is exciting because it is the 'birth of science'. Unfortunately, it becomes a bit like a textbook summary of the ancient Greeks. Of course, once Big Science arrives on the scene, large numbers of actors become a fact of life. *The Manhattan Project* does an excellent job of getting the reader interested in the development of large-scale scientific projects, yet its central chapters drift into lists of names and projects, all of which were no doubt essential to the making of the atomic bomb, but do not make for riveting reading. Moving back in time, *The Discovery of the Germ* has the benefit of having two competing heroes (Pasteur and Koch), but even they have squadrons of assistants, too many of whom are named. This will be a problem for authors who wish to stress that science is not an individual activity, yet who nevertheless need to keep the narrative momentum moving.

This problem is tackled most successfully in *An Entertainment for Angels*. This book on electricity has a clear structure, arranged thematically rather than chronologically, a relatively unusual arrangement which is well justified in the introduction as an approach taken by 'many modern historians'. Although there are quite a few characters involved overall, the thematic arrangement means there is usually only one main figure per chapter. Narrative flow and excitement is maintained by simple devices such as clearly motivating each chapter, and signposting each chapter in the previous. *An Entertainment for Angels* is also notable for making good use of pictures in the storytelling. Most of the books in the series have pictures, and the authors clearly believe that pictures are necessary in a popular history of science book. However, all too often the photographs and diagrams are poorly reproduced, or too small, as though they do not really matter, and are commonly used only as decoration rather than becoming integral to the story. Illustrations do greatly aid the telling of a story, but they need to be referred to in the text, and ideally used as motivation for the story and for explanation of the apparatus or concepts described in the text. *Harvey's Heart* is another book that does this well.

The authors have clearly tried to adapt themselves to writing history of science for a wider audience, as evidenced by the absence of scholarly apparatus, the presence of

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illustrations, and the general absence of specialist language.[4] Yet it is also clear from many of the books that the authors are consciously reacting against the perceived wrongs of popular history of science. For example, the books stress again and again that there was no conflict between science and religion, and that progress is not the work of one great man, and all are agreed the story is more complicated than it first appears. The authors appear petrified of being accused of 'Sobelian' tendencies and the books are very careful, when trying to get the reader engaged, to avoid being whiggish. However, the reasons for these concerns are not usually communicated to the reader, who, when presented with various possible stories and strange theories, may be left wondering which one is 'true' and why they are not being told. There is a risk of alienating lay readers when the reasons for this historiographical sensitivity are not explained to them. Some of the books, such as *An Entertainment for Angels*, do explain their approach well, but this is something that could be done more. However, the books in this series do in general achieve their aims successfully, and their more honest storytelling, their explanation of the wider context and of the shades of black and white, are a welcome change from the triumphalist tone adopted by many books in this genre.

'Revolutions in Science' does not have a pedagogical requirement to cover certain basic subjects or time periods – it is not, for example, like the Cambridge History of Science Series from the late 1970s. Instead, it can choose its own collection, perhaps of topics more likely to appeal to its audience, or those which will tell a different overall story from the usual canon. Presumably editor Jon Turney has really been choosing authors, and asking them what they would like to write on, rather than choosing subjects in and of themselves. In which case, it must be a sad truth that few nineteenth-century specialists have volunteered their services, despite that century's many claims to have seen the birth of the modern organization of the sciences and their relationships with society. The early modern period has been far better served.

One of the oddest things about this series is that it is not being extensively marketed as a series. The books do not appear together on the shelves of bookshops, and with no standardized cover design (or internal design) it is not readily apparent that they are related to each other. Some of the books carry advertisements for some of the other members of the series, but none of them carries a standard 'if you enjoyed this, try the other books in the series' listing. This defeats the usual reason for issuing books in a series: so that satisfied readers will know where to turn for more, and may even wish to collect the full set. Equally, the books make little mileage out of their authors' academic credentials, beyond acknowledging them on the cover blurbs. We can see why the publisher might not wish to label the series as being 'by academic historians of science', fearing that this might scare off the intended audience. Then again, it might reassure some readers, who might like to know which of the myriad available works are trustworthy (again, an indication of the other volumes in the series would be helpful).

4 One of the curious facts about the series is that it has now been issued in China, with an additional apparatus for student readers.

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We had heard rumours that the bestseller of the series so far is *Dawkins vs Gould*, and this is confirmed by a glance at the amazon.co.uk sales ranks. *Dawkins vs Gould* is the only one of the series to make the top five thousand. Most of the other books hover around the sixty to eighty thousand mark, which is also where Shapin's *Scientific Revolution* (1996) and Henry's *Scientific Revolution and Origins of Modern Science* (1997) can be found (although both of those have been out for longer). There can be no doubt that *Dawkins vs Gould* has found a market, and the fact that the forthcoming titles for 2003 include another book of the A vs B style suggests that its success has been noted by the publishers. Your reviewers were surprised by this, because we felt *Dawkins vs Gould* was the odd one out of the series. It was undoubtedly one of the better-written books, using clear language to explain relatively difficult issues in modern evolutionary theory, but it really belongs in a series called 'Controversies in Science', not 'Revolutions in Science'. We have trouble imagining who would read it apart from those who had already read at least some of Dawkins's and Gould's works, which, we thought, must surely limit its audience. Alternatively, it may be that this is a book that defines its audience – it does have a clear niche in the market, which is not as obviously true for the rest of the series. There ought to be a successful series format in that idea – but it is not clear that it would have historians of science as the main contributors. This might be where philosophers of science could step in.

Where does that leave the rest of the series? The answer, we fear, is 'uncertain of its intended audience', and consequently running the risk of missing an audience. The series is clearly aimed at the 'general' reader, yet there are so many ways that a 'general' reader could be conceived, from the man on the Clapham omnibus to the hospital consultant or the non-historian academic. It looks as though the intended readership has changed over the period of issue of the volumes. The early volumes used simple language and were very short. The average chapter length in *Turing and the Universal Machine* was a mere seven pages, which assists readers with short attention spans, but leaves others feeling they have only skimmed the surface. The later books are longer, introduce more complex themes, and are not scared to use long words. *Latitude & the Magnetic Earth* was your historian's personal favourite, but she recognizes that it would be difficult to interest non-academic readers in it. It is about twice the length of the first volumes, and uses significantly more complex language than the other volumes (it is also the only one to dispense with a glossary).

For these reviewers, *Watt's Perfect Engine* and *An Entertainment for Angels* were the successes of the series, and if future issues use them as models the series will be a most impressive collection. They are well written, and manage to bring out the historical complexity of their themes without losing their narrative drive. These are books you would be happy to recommend to your friends and relatives, without fear of either boring them or giving them the simplified story. But the fact that we, academics both, preferred these to the earlier and shorter *Moving Heaven and Earth* or *Eureka!* tells us more about the tastes of the intelligentsia than about the mass audience. The later books of the series will be appreciated by a certain sector of society. But if the series' aim is to get beyond that, to try to bring 'real' history of science to a much wider audience, the later books probably miss their mark. That the format of the earlier books has been

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discontinued suggests that that style was not successful either – it was too simplistic for the usual buyers of popular non-fiction books, and did not catch the interest of the millions who watch historical documentaries on television.

This, of course, leaves us with a problem. It is clearly possible to get historians of science to write accessible and enjoyable books, and this should be encouraged and applauded. But whether, by their very subject matter, such books will ever appeal to the mass market is dubious. Perhaps we have to accept the limitations of the print medium, and those historians of science who really are keen to reach the widest possible audiences should offer their services not to publishers, but to television production companies.

Aileen Fyfe
Department of History, National University of Ireland, Galway
Paul Smith
Robinson College, University of Cambridge

The 'Revolutions in Science' series as reviewed

Andrew Gregory, *Harvey's Heart: The Discovery of Blood Circulation* (May 2001)
Kim Sterelny, *Dawkins vs Gould: Survival of the Fittest* (May 2001)
John Henry, *Moving Heaven and Earth: Copernicus and the Solar System* (May 2001)
John Agar, *Turing and the Universal Machine: The Making of the Modern Computer* (May 2001)
Andrew Gregory, *Eureka! The Birth of Science* (November 2001)
Patricia Fara, *An Entertainment for Angels: Electricity in the Enlightenment* (February 2002)
John Henry, *Knowledge is Power: How Magic, the Government and an Apocalyptic Vision inspired Francis Bacon to Create Modern Science* (April 2002)
Stephen Pumfrey, *Latitude & the Magnetic Earth: The True Story of Queen Elizabeth's Most Distinguished Man of Science* (May 2002)
John Waller, *The Discovery of the Germ* (October 2002)
Jeff Hughes, *The Manhattan Project: Big Science and the Atom Bomb* (November 2002)
Ben Marsden, *Watt's Perfect Engine: Steam and the Age of Invention* (November 2002)

Additional titles issued in 2003

Jon Agar, *Constant Touch: A Brief History of the Mobile Phone* (February 2003)
Jon Turney, *Lovelock and Gaia* (April 2003)
Steve Fuller, *Kuhn vs Popper: Prophets of the God of Science* (June 2003)
Patricia Fara, *Sex, Botany and Empire* (September 2003)
Eileen Magnello, *Lies, Damned Lies and Statistics: A Mathematical History* (October 2003)

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