BOOKS & ARTS

On the shoulders of giants

A volume of essays celebrating 350 years of Britain's Royal Society highlights the continuing gulf between science and the public, says **John Gribbin**.

Seeing Further: The Story of Science and the Royal Society

Edited by Bill Bryson

HarperPress: 2010. 496 pp. £25

Physically, *Seeing Further* is a fitting celebration of the Royal Society's 350th year. The book is beautifully produced on good-quality paper and well illustrated. Intellectually, however, it is a mixed bag. In 22 short contributions, fellows of the Royal Society, science popularizers and authors of science fiction cover topics from serious science to fanciful speculation. The result is an enjoyable light read — just what you would expect from a volume edited by Bill Bryson. I yearned for more scientific meat.

There is one glaring omission. *Seeing Further* begins with James Gleick's account of the first formal meeting of what became the Royal Society, on 28 November 1660. But it offers no explanation of why those dozen or so gentlemen gathered at Gresham College in London that day to form a "Colledge for the Promoting of Physico-Mathematicall Experimentall Learning". The initial success of the Royal Society, and its longevity, are linked to the special circumstances that existed in England at the time of the Restoration. It was a period when there was a determination to keep religion out of science, when free thinking was tolerated, and when the king, Charles II, himself had a keen interest in natural philosophy.

There are other bizarre omissions. Although there are two chapters on Charles Darwin, there is no mention of two of the Royal Society's most influential fellows, Michael Faraday and James Clerk Maxwell, and the book inexplicably lacks an index.

For me, the meat begins with Simon Schaffer's discussion of 'Promethean science', which he defines as "an experimental enterprise that mixes vaulting ambition to safeguard humanity against a major threat with the troubling hazards of following this science's recipes". He highlights this with a delicious quote from the lord chief justice, ruling on a lawsuit in the 1780s: "In matters of science, the reasoning of men of science can only be answered by men of science." How apposite this comment is in the light of present-day debate about the

THE ROYAL SOCIETY

Fellows of the Royal Society have honed and promoted the scientific method through their discussions.

classification of dangerous drugs or the risks posed by climate change.

There are superb contributions from Richard Fortey, on botanical and fossil collections, and Georgina Ferry, on X-ray crystallography and biology, whom I particularly enjoy because she writes so well on topics that I know nothing about. And that, clearly, is the point of the book — it is for people who know nothing about the Royal Society, and little about science. Such readers will also be well served by Ian Stewart, who brings home the vital underpinning of mathematics to everyday life with an explanation of how the JPEG compression standard can store an "impossible" amount of information on a camera's memory card.

As an example of the lack of understanding of the role of mathematics even among scientists, Stewart cites a member of NASA's Jet Propulsion Laboratory. On commenting that in the Mars Rover programme "we don't really use any abstract algebra, group theory, and that sort", the researcher was confounded when told of the importance of finite, or Galois, fields in the channel coding used to reduce errors in the

flow of information — in messages from Mars, as well as in reproducing sound from a compact disk. Scientists ought to know better. Non-scientists can be excused for not knowing the details, but they should at least understand that it is science that underpins the modern world.

Fellows of the Royal Society have for 350 years played a key part in the development of the scientific method of testing hypotheses by experiment. They weren't the first to do this, but they were the first to make that method stick, nailing their colours to the mast with the society's motto *Nullius in verba* ('take nobody's word for it').

The most remarkable fact about the Royal Society is that "it is still there and it is still important", Bryson notes. "How many enterprises can you name that are still doing today what they were formed to do 350 years ago?" Dare we hope that it will survive for another 350 years, in spite of the gloomy prognostications of its current president and author of *Our Final Century*, astronomer Martin Rees? ■

John Gribbin is a visiting fellow in astronomy at the University of Sussex, Brighton, UK, and author of *The Fellowship*, a history of the foundations of the Royal Society.

e-mail: j.r.gribbin@sussex.ac.uk

"The most remarkable fact about the Royal Society is that it is still there and it is still important."