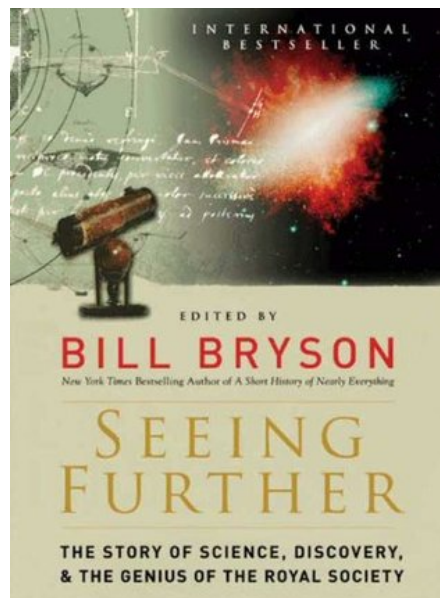




Seeing Further: The Story of Science and the Royal Society

Bill Bryson

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Seeing Further: The Story of Science and the Royal Society Bill Bryson
From the Royal Society, a peerless collection of all-new science writing

Bill Bryson, who explored all - or at least a great deal of - current scientific knowledge in **A Short History of Nearly Everything**, now turns his attention to the history of that knowledge. As editor of **Seeing Further**, he has rounded up an extraordinary roster of scientists who write and writers who know science in order to celebrate 350 years of the Royal Society, Britain's scientific national academy. The result is an encyclopedic survey of the history, philosophy and current state of science, written in an accessible and inspiring style by some of today's most important writers.

The contributors include Margaret Atwood, Steve Jones, Richard Dawkins, James Gleick, Richard Holmes, and Neal Stephenson, among many others, on subjects ranging from metaphysics to nuclear physics, from the threatened endtimes of flu and climate change to our evolving ideas about the nature of time itself, from the hidden mathematics that rule the universe to the cosmological principle that guides *Star Trek*.

The collection begins with a brilliant introduction from Bryson himself, who says: "It is impossible to list all the ways that the Royal Society has influenced the world, but you can get some idea by typing in 'Royal Society' as a word search in the electronic version of the *Dictionary of National Biography*. That produces 218 pages of results — 4,355 entries, nearly as many as for the Church of England (at 4,500) and considerably more than for the House of Commons (3,124) or House of Lords (2,503)."

As this book shows, the Royal Society not only produces the best scientists and science, it also produces and inspires the very best science writing.

From the Hardcover edition.

Seeing Further: The Story of Science and the Royal Society Details

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Betsy says

This is a series of essays tied (in some cases loosely) to the Royal Society. I found several of the essays fascinating. In the first half I was particularly interested in those that discussed the development of scientific thinking and the impact that thinking had on the rest of the world. Unfortunately some were less fascinating (e.g. the rise(npi) of ballooning). There were also quite a few on the theme of current problems of global warming and its impact on the oceans/life etc. While these are important topics they didn't seem to have a lot to do with the Royal Society and much has been written about them elsewhere.

Sarah says

I confess: I only decided to check this book out of the library because I've loved all of the other Bryson books I've read. Imagine my disappointment, then, when this is not a book by Bill Bryson, but one edited by him (and he wrote the introduction).

Writing about science is hard. It's a delicate balance between providing enough information for the reader to follow along and providing too much information and either boring or confusing the reader. Unfortunately, a lot of the essays did not hit that balance.

There's no good way to review this book except chapter by chapter. Some were great, some were OK, some were forgettable, and some were so boring I wanted to claw my eyes out.

Bryson's introduction is blink-and-you'll-miss-it short and lacks the vibrancy of his normal writing.

Chapter 1: At the beginning: more things in heaven and earth

Forgettable. It's not the worst chapter, but without going back and skimming the chapter again, I found it had been utterly displaced in my mind by the good and bad from the rest of the book. Summarizing some of the topics of conversation at Royal Society meetings, you learn that a.) a lot of what they talked about was boring, and b.) science has come a long way since then (although I'm sure they'll say the same thing about us in 500 years...). He does get bonus points for actually talking about the Royal Society, since most of the other chapters are only peripherally related to the group.

Chapter 2: Of the madness of mad scientists: Jonathan Swift's Grand Academy

Hands down, my favorite chapter of the book, which is too bad since there's no actual science in it. Instead, Margaret Atwood (she of The Handmaid's Tale, among many others) writes about the Mad Scientist cliché, where it came from. She makes a good case for Gulliver's Travels being the source of the trope, while also throwing in examples from films & literature.

Chapter 3: Lost in space: the spiritual crisis of Newtonian Cosmology

This chapter jumps from subject to subject a little too much to be truly enjoyable, and she covers a lot of material that is covered- and covered better- in other chapters. The debate between religion and science may never be settled, but what's amazing is how previous generations of scientists tried SO HARD to keep their discoveries within the accepted tenets of the church and struggled when it didn't fit.

Chapter 4: Atoms of cognition: metaphysics in the Royal Society

This was my least favorite chapter of the book. In fact, I put the book down and didn't come back for a week because I was so bored and didn't want the torture of reading this chapter. It's about the metaphysical beliefs of someone whose system of thinking that could "hardly be more at odds with... any person who attempts to think in a commonsensical way about how the world might work." That's an actual quote from the chapter!

Chapter 5: What's in a name? Rivalries and the birth of modern science

This chapter covers the debate between mathematical vs. empirical data. Why do smart people argue over something like this?

Chapter 6: Charged Atmospheres: Promethean science and the Royal Society

Lightning strikes a building that's "protected" by lightning rods. In the ensuing investigation, those who believe lightning rods are a load of bunk compete with those who championed the invention. Each tries twisting the scant evidence in their favor, despite the evidence only being a few eyewitness accounts and very little real data.

Chapter 7: A new age of flight: Richard Banks goes ballooning

Although it drags a bit in certain parts, this chapter on the history of hot air ballooning is an interesting read.

Chapter 8: Archives of life: science and collections

In many fields, the need to examine evidence (e.g. fossils) means that large collections are useful. This chapter goes into some of the collections that were built up in the 1800s, as well as the organizational systems used to keep track of them.

Chapter 9: Darwin's five bridges: the way to natural selection

This chapter traces the discoveries that led to Darwin's development of the theory of evolution. The "bridges" refer to various ideas that one must accept in order to truly understand evolution, and surprisingly, Darwin only managed to cross four of them. Several of those whose work inspired him simply failed to make the next leap in logic.

Chapter 10: Images of progress: conferences of engineers

I'm a big fan of Petrowski as he manages to describe engineering principles without falling prey to the "data dump" method of explanation. I know nothing about building bridges, but he walks the reader through the design of multiple different bridges, including some of the design philosophies and cases where the bridges failed. Definitely read this chapter with Wikipedia open so you can look up all of the bridges he names!

Chapter 11: X-ray visions: structural biologists and social action in the twentieth century

This is more of a group biography than anything else. Ferry's first focus is on the scientists, with their discoveries coming in second.

Chapter 12: Ten thousand wedges: biodiversity, natural selection and random change

Another chapter on evolution, with a look at how random chance shapes as much as the inevitable march of natural selection. There doesn't seem to always be a good correlation between the survival of a species and any measurable data (e.g. presence of predators, temperature). The titular wedges came from an analogy Darwin used to illustrate evolution, where multiple wedges are bashed indiscriminately with a hammer: some are driven further in, edging the others out.

Chapter 13: Making stuff: from Bacon to Bakelite

There is always a perception that the application of science is a task for lesser minds (as Sheldon from The Big Bang Theory famously said, pure scientists consider engineers to be the Oompa Loompas of science). There's an entire section of this chapter devoted to metallurgy, as well as sections on plastics and synthetic materials. I say, applied science gave me my iPhone. It totally wins.

Chapter 14: Just typical: our changing place in the universe

Cosmology is a difficult subject to cover, especially in a short essay, but this chapter takes a decent shot. Using the Copernican principle, which states that we as a planet, as a people, are not special, Davies gives a brief tutorial on the universe and talks about our status as the only form of life in the universe. I've found that all discussions on cosmology lead to string theory and to multiverses, where our universe as one that allows life to form, may be special.

Chapter 15: Behind the scenes: the hidden mathematics that rules our world

I was expecting this chapter to be really boring, but it was actually fascinating! So much of the role of math in our current technology is hidden. However, any time you use a computer, you're steeped in mathematical principles and theories. Even something as seemingly simple as a CD player (old technology at this point!) in your car needs lines and lines of code to handle, for example, keeping the music playing even when you drive over a bump in the road. Taking a picture with your digital camera requires the mathematics that govern the compression of that data into something that can be stored on an SD card.

Chapter 16: Simple, really: from simplicity to complexity – and back again

The big research field right now for physicists is the grand Theory of Everything, which seeks to link Einstein's theory of relativity with quantum theory. Right now, those two fields are incompatible although they work well for their individual applications (for Einstein, the very very big; for quantum theory, the very very small). String theory is beyond the abilities of comprehension (I get lost right around when someone brings up ten dimensions, which is 6 dimensions too many).

Chapter 17: Globe and sphere, cycles and flows: how to see the world

Morton writes about our narcissistic way of viewing the world. When we talk about "Save Planet Earth," we ignore the fact that the Earth has been around far longer than the human race, and will probably be around long after we've blown ourselves up. In reality, we are the ones at risk and when we say, "Save Planet Earth," we really mean, "Maintain the Ecosystems that give us life!"

Chapter 18: Beyond ending: looking into the void

Another one of my favorite chapters, again by a non-scientist. Gee is the author of apocalyptic fiction (no wonder I liked this essay!), and she summarizes some of the best doomsday scenarios from the past few decades. From Isaac Newton's belief that the world would end in 2060 to the fear of AIDS to Y2K. Although she sometimes refers to her own books (that kind of hubris rubs me the wrong way), she makes some good points about our inability (refusal?) to implement policy changes in the face of global warming.

Chapter 19: Confidence, consensus and the uncertainty cops: tackling risk management in climate change

I was surprised that there was no chapter really dedicated to global warming in this book, as this is a huge field of scientific research. This chapter let me down a little bit, because instead of going into the mechanisms of global warming, it talks mostly about the statistics of it. Schneider highlights the difficulties of making predictions based on models, as well as trying to make distinctions between varying levels of probabilities (e.g. at what percentage do you go from "confident" to "highly confident?"). I would have LOVED to see this information woven in with some of the conclusions of climate change research, but alas, it was not to be.

Chapter 20: Time: the winged chariot

This is a tough book, and I was feeling mighty burned out by the time I reached the end. I'm glad I made it all the way through (and that I put in the effort to finish the book before the library e-book expired), because this chapter was a gem. Benford totally blew my mind with his essay on time. There's linear time, or time as we experience it. There's also relative time, described by Einstein, where objects moving at greater speeds experience time more slowly (e.g. a clock at the top of a mountain runs faster than a clock in the valley). And in the vast eternal scale of our universe, our understanding of time is impossibly tiny.

Chapter 21: Conclusion: looking fifty years ahead

Rees wimps out and refuses to make specific predictions of where science will head next, although he does say that artificial intelligence will play a large part. He talks quite a bit about string theory and the TOE. However, he e makes a good point that our unsolved problems are the result of our inability to understand the patterns and interconnectivity of elementary particles, not because we don't understand the particles themselves well enough.

This book is nearly 500 pages, and although it's not perfect, it does give a good groundwork for the reader, should he or she wish to look into a topic in greater detail. As for me, if I get the urge to read another book on all of science, I'll just read [A Short History of Nearly Everything](#) again.

Kirk says

Ostensibly a Bill Bryson guided book about "the history of science in the 350 years since the formation of the Royal Society". This sounds like a perfect book for me! I'd love to read that book if it ever gets written. Sadly this book isn't it.

This book is more like a sinkhole into which authors repurposed unpublished longread essays about any topic they chose, while throwing in a line or two about the Royal Society for good measure. Platonism in science? Sure why not. Science says we need to protect the environment? Sure it fits. A history of mad scientists in literature? I guess...

This is a shame, because the History of the Royal Society is incredible and anyone actually interested in the history of science should check out the spectacular Objectivity channel on YouTube. This book does not have nearly enough Bryson, history of science nor Royal Society. I don't mean to decry the entire book, some of these essays are ones I'd actively enjoy reading during my normal article perusals. But there were more misses than hits, and overall this is more about a book of squandered potential.

John Gribbin says

Physically, this is a magnificent book, beautifully produced on high-quality paper, well illustrated, and a fitting celebration of the Royal Society's 350th year of existence. Intellectually, though, it is hard to know quite what to make of it. In 22 short contributions, science popularisers rub shoulders with authors of science fiction and Fellows of the Royal Society, covering topics that range from fanciful speculation to serious science, with more than a smattering of history. All of the contributors write well, and the result is an enjoyable light read. The only equations appear in the contribution from John Barrow. The book is, in short, just what you would expect from a volume edited by Bill Bryson. But I yearned for more scientific meat, as would surely have been appropriate to the occasion.

Even on its own terms, there is one glaring omission in the book. Seeing Further begins with the first formal meeting of what became the Royal Society, on 28 November 1660. But it offers no explanation of how or why the particular group of gentleman gathered at Gresham College in London that day, after a time of profound turmoil in British Society, decided to form a "Colledge for the Promoting of Physico-Mathematicall Experimentall Learning". The initial success of the Royal Society, and the fact that it still exists today, are both profoundly linked to the very special circumstances existing in England at the time of the Restoration. There are other bizarre omissions. As far as I could tell, in spite of the subtitle of the book

there is no mention of either of two of the Royal's most eminent and influential Fellows – Michael Faraday and James Clerk Maxwell. I say “as far as I could tell” since, inexcusably, the book has no index at all, and only an extremely inadequate bibliography. If space problems were offered as an excuse, my response would be to ask if we really need two chapters on Charles Darwin!

But enough of the negatives. For me, the meat begins with Simon Schaffer's discussion of what he calls “Promethean Science,” highlighted by his delicious quote from the Lord Chief Justice, ruling on a lawsuit brought in the 1780s: “In matters of science, the reasoning of men of science can only be answered by men of science.” How apposite in the light of present-day debate about the classification of dangerous drugs or the risks posed by climatic change. There are superb contributions from Richard Fortey and Georgina Ferry, who is my favourite science writer since she writes so well on topics which 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 very little about science. Such readers will also be well served by Ian Stewart, who brings home for the uninitiated 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.

Stewart's contribution is particularly telling, both in the context of the whole book, and in terms of the relationship between science and society today. He cites, as an example of the lack of understanding of the role of mathematics even among scientists, the member of NASA's Jet Propulsion Laboratory who commented that in the Mars Rover programme “we don't really use any abstract algebra, group theory, and that sort,” only to be confounded when told about the importance of Galois fields in the channel coding used to reduce errors in the flow of information – not just in messages from Mars, but in reproducing sound from a CD. Scientists ought to be aware of the role of mathematics in such situations, although the average non-scientist can surely be excused for not knowing the extent to which digital communications rely on such sophisticated coding techniques. But surely there is a need for more non-scientists to at least understand that it is science that underpins the modern world, even if they do not know exactly what science.

Coincidentally, the day I began writing this review a friend in the USA told me (using a digital network relying on Galois fields) how on a network news broadcast, in discussing the lack of a good ovarian cancer test, a reporter said “Science always moves too slowly.” My friend's wife, a physics professor, who doesn't usually talk back to the TV, burst out: “Well that's who you have. Want to ask an English major?”

What the Royal Society gave us, nearly 350 years ago, was a way to go beyond the wishful thinking involved in that TV reporter's remark, to study the evidence and above all to test hypotheses by experiment. They weren't quite the first to do this, but they were the first to make it stick, nailing their colours to the mast with their motto “Nullius in verba.” The sad thing is that it is still necessary to spell this out, and still necessary to explain why you should not take an English major's word for it when it comes to problems such as global warming.

If this book reaches the readership for which it seems to be intended, it will do a lot of good. My concern, though, is that the people who would benefit from the message in the book won't read it, and the people who will read it are already familiar with the message it contains. But as Bryson says, the remarkable fact about the Royal Society is that “it's still there. More than that, it is still there and it is still important. 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 recent gloomy prognostications of its present President?

Ioannis Savvas says

Αγ?ρασα το βιβλ?ο στο Cambridge, μια π?λη με μακρ? παρ?δοση στην επιστ?μη. Το Seeing Further ε?ναι μια συλλογ? κειμ?νων, απ? επιστ?μονες και συγγραφε?ς. Ομολογ? πως αλλι?ς περ?μενα το βιβλ?ο: κ?τι σαν μια ιστορ?α των επιστημ?ν απ? τη σκοπι? της Βασιλικ?ς Εταιρε?ας (Royal

Society). Αντ' αυτό? βρήκα μπροστ? σε μια μ?λλον ασ?νδετη σειρ? κειμ?νων, με μικρ? φυσικ?/χρονικ? συν?χεια και πολ? διαφορετικ? στυλ γραφ?ς. Ιστορικ? στοιχε?α, λογοτεχν?α, ψυχολογ?α των επιστημ?νων, μηχανικ?, ?λα περιλαμβ?νονται σε αυτ? το βιβλ?ο. Και οι αναφορ?ς στο Νε?τωνα π?ρα πολλ?ς -?ταν πρ?εδρος της Εταιρε?ας ?λλωστε. Κ?ποια κεφ?λαια ?ταν σαφ?ς καλ?τερα απ? ?λλα. Κ?ποια ?λλα ?δειχναν εμβ?λιμα, χωρ?ς ενδιαφ?ρον. Το κεφ?λαιο 19 για την Παγκ?σμια Θ?ρμανση (Global Warming) ε?ναι απ? τα καλ?τερα που ?χω διαβ?σει σχετικ? με αυτ? το θ?μα. Η Βασιλικ? Εταιρε?α ?χει δημοσιε?σει πολλ? τ?τοια κε?μενα. Ε?ναι ?να κε?μενο απλ?, επεξηγηματικ?, κατατοπιστικ?, χωρ?ς κορ?νες και υπερβολ?ς. ?σως το μ?νο που αξ?ζει απ? ?λο το βιβλ?ο.

?να μ?τριο βιβλ?ο.

Mohamed Tashkandi says

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Tony says

SEEING FURTHER. (2010). Bill Bryson (ed.) ***1/2.

This is a collection of essays on various aspects of science. The sub-title of the book is: "The Story of Science, Discovery & The Genius of the Royal Society." In all, there are twenty-one articles plus the introduction by Bryson that address specific inquiries made at one time or another by the Royal Society during its long history. The articles were written by the cream of the crop of writers, including James Gleick, Margaret Atwood, Richard Dawkins and others. It's a diverse collection that will pique your interest in a variety of ways.

Yelena says

My enthusiasm for this book flagged significantly as I actually started reading it.

It is neither particularly informative nor particularly entertaining.

The first essay (or intro) by Bill Bryson was good. Margaret Atwood's essay was good (albeit it felt somehow misplaced).

The rest are mediocre.

I especially resent the fascination with the spirituality of Royal Society members. Many authors in this collection believe that understanding their spiritual beliefs is important. I disagree. I think it is the least important topic, though probably most easily grasped by the uninformed masses. Please give your readers more credit!

AdiTurbo says

I loved the opening by Bill Bryson, which as usual is at his best when he gets you excited about science and the people who brave it. Like many other readers, I never realized though that this book is not actually by Bryson, and that he has only a small part in it. The rest are essays of different levels of interest and quality. I would have loved to learn more about the Royal Society and its achievements through the last few centuries, but this is not what this book is about. Feel a little cheated, actually. I didn't like Margaret Atwood's essay and its message very much. It may be intellectually bright, but it is an alarmist take on the dangers of science, with literature being drafted to strengthen the point. I'm not sure that the authors of the books mentioned in it would agree with this point, or others that Atwood makes. As always, she takes it to the extremes. It is true that science should be closely monitored by society to decide how best to use it, but to attack science in general is what makes people like Trump possible. Anyway, I'm giving up on this book now, it's not what I was hoping for.

Jennifer (JC-S) says

‘In 350 years, the Royal Society has had a mere 8,200 members, but what a roll call of names.’

In 2010, the Royal Society celebrated its 350th birthday. Its official foundation date is 28 November 1660, when a group of twelve men met at Gresham College after a lecture by Christopher Wren, then the Gresham Professor of Astronomy. This group of men, who included Robert Boyle, John Wilkins, Sir Robert Moray, and William, Viscount Brouncker, decided to found ‘a Colledge for the Promoting of Physico-Mathematicall Experimentall Learning’.

The Society was to meet weekly to witness experiments and discuss scientific topics. The first Curator of Experiments was Robert Hooke. Sir Robert Moray told Charles II of this venture, and the Society obtained its first Royal Charter in 1662. In the second Royal Charter of 1663 the Society is referred to as 'The Royal Society of London for Improving Natural Knowledge'.

‘Science is an unending quest: as its frontiers advance, new mysteries come into focus just beyond those frontiers.’

This collection of essays celebrates the existence and achievements of the Royal Society. More than 80 Nobel Laureates have been members of the Royal Society, and its members have included Isaac Newton, Benjamin Franklin, Charles Darwin, Ernest Rutherford and Francis Crick. Current fellows include Richard Dawkins and Stephen Hawking.

The essays have been written by an eclectic group of authors – including novelists (Margaret Atwood, Maggie Gee, and Neal Stephenson), historians (Georgina Ferry, Richard Holmes and James Gleick) and scientists (Richard Dawkins, Steve Jones and Sir Martin Rees). Other writers include Gregory Benford, Henry Petroski and Margaret Wertheim.

‘Royal Society of London describes a location, not an allegiance.’

My favourite essays in this collection were those by: Richard Holmes (‘A new age of flight: Joseph Banks goes ballooning’); Henry Petroski (‘Images of Progress: Conferences of Engineers’); Ian Stewart (‘Behind

the Scenes: the hidden mathematics that rules the world’); and Gregory Benford (‘Time: The Winged Chariot’).

‘Mathematics is simply the catalogue of all possible patterns.’

I enjoyed reading this book and I’d recommend reading it slowly, enjoying each essay before moving on to the next. It isn’t necessary to understand all of the science (I certainly don’t) in order to appreciate the achievements: the history is fascinating in its own right.

‘Sometimes complexity can be simple too.’

Jennifer Cameron-Smith

Bryan says

Rating: 6/10

This collection of essays on science and the Royal Society is a gorgeously designed book. The use of pictures and colors throughout is appealing and tasteful.

The best essays are those which focus on the history of the Royal Society itself, and how the elements of science we take for granted today came to be through the genius and work of extraordinary people. I was not familiar with much of this history, and I found it fascinating. For example, the scientific method of gaining knowledge of the world through repeatable tests and measurements seems like common sense in hindsight, but it was in fact worked out over centuries.

Unfortunately, the second half of this book was a disappointment as it lost its focus and direction. The essays turned away from history to more modern issues facing scientists today. Some of these were simply too plain - e.g., a one chapter overview of an issue such as alien life or global warming, when the issue is already well known and the chapter brings nothing to the discussion. Other essays were odd and didn't seem to suit the book.

The final chapter is a rambling conclusion which makes the brain achingly obvious point that science has accomplished much, but that we will need scientists even more as face more complex problems in the 21st century. Who doesn't understand that? This chapter features a picture of an iPhone to illustrate how marvelous science can be, which triggered a rapid rolling of my eyes.

Despite a weak conclusion, I can heartily recommend the opening chapters. The reader can simply read any essays which seem appealing, and at the end have an attractive addition to the old bookshelf.

Aaron Arnold says

This is a collection of essays written to celebrate the 350th anniversary of the Royal Society of London, edited and curated by the omnipresent Bill Bryson. The main attraction for me was that the essays, each focusing on a member of the Society, or a discovery, or on some aspect of its innumerable contributions to human knowledge, were written by a large cast: authors like James Gleick, Margret Atwood, and Neal

Stephenson rub shoulders with actual scientists and mathematicians like Richard Dawkins, Ian Stewart, and Gregory Benford. This means there's a variety of perspectives, which is both good and bad. My favorite was Stephenson's explanation of how superstar philosopher/mathematician/inventor/general scientific badass Gottfried Leibniz's bizarre monad philosophy compared not only with archrival Isaac Newton's discoveries, but also with contemporary work into the nature of reality. It's a perfect example of a talented author tackling a difficult subject (I'm not sure anyone knows exactly what Leibniz was thinking, but he's been ridiculed by everyone from Voltaire on down) with style and thoughtfulness. My other favorite was Dawkins' essay on Darwin, which is a similarly good example of how to clearly explain exactly why a complicated idea not only makes sense, but explains the world better than its alternatives. While there were several that either fell short of the mark or were otherwise lacking of interesting content (Margaret Wertheim's piece in particular had an almost unbearably high ratio of words to ideas, and was full of freshman undergrad-type vagaries), overall it was an excellent collection. If you're looking for a quick sampler of perspectives on scientific issues, you could certainly do worse, and it made me aware of the Society's vast influence on the modern world.

Elliott Bignell says

If Bill Bryson has written about seeing further, it is by standing next to the keyboards of giants, so have a care - this is not another Bill Bryson book. It is, in fact, much more, but take care, gentle reader, because Bryson is the editor and the authors number 22.

The Royal Society probably has the best claim of all to be the father of science, in an Arnold Schwarzenegger, milk-shake sense that the "father" had the genes of many talented men. Its members have been at the forefront of every field since Newton stood atop the diminutive Hooke and issued his disparaging barb. The vital concept of peer review itself came from its ranks, so it is perhaps especially fitting that this 350-year review comes from a panel of Society peers.

The essays as such vary wildly, thankfully not so much in quality as in subject matter. In a couple of cases it is not easy to discern the connection to the Royal Society, the quibble which led me to not issue that last star. I especially savoured the contributions by Dawkins and Stewart, and there are powerful sections on climate change, scientific confidence and communicating with the public, notably by Stephen Schneider. The age of scientific literacy is a precarious thing and evolutionists and climatologists are experiencing every day the force exerted by unreason. For this reason, this is a valuable collection.

Science is at the heart of all that we moderns have become, for good and ill, and the Royal Society stands at the heart of science. We stand on its shoulders, and by doing so we see a little further.

Gary says

This is a wonderful book and in my opinion we would all benefit from reading it. Ostensibly it is the history of science and the Royal Society, an organisation started by scientists in 1660 (becoming royal in 1662 after the granting of the royal charter) to promote learning and understanding of the world and how that learning can benefit Mankind.

The wonderful thing about the Royal Society is that it is about just that – learning, understanding and, thankfully, advising those in power what might be the consequences of following certain paths; this is particularly important now, with climate change very much on the agenda (though much lower down the list

of priorities than it should be). The Royal Society does not care what racial background you enjoy, where you live or what religion or politics you favour, it is all about intelligence, learning, growing, developing, understanding and applying knowledge for the public good. This means that it is more independent than many organisations and tries hard not to represent any special interest groups – unless you count ordinary human beings, so is an excellent example of the benign face of science practised for good, as opposed to our often-held view nowadays of science as the reason we have nuclear weapons and are ruining our planet (and, therefore, hastening the demise of our own species).

An example of the Society's independence is that during World War Two they refused to expel German members even though the government wanted them to do so.

Some of the chapters in the book are quite 'heavy' to a layman like myself, though many more are much easier to digest. They are all fascinating, interesting, illuminating and thought-provoking. I said in my opening description that the book is ostensibly about science; that is because the history of science includes the history of carbon-dating, evolution and the changing knowledge of the vastness of the cosmos, which in turn feeds into religious beliefs, philosophy and all of the human social bases for living. In short, science has changed our perceptions of everything and technology is only a part of that.

Technology, of course, is now probably the most pervasive issue not only in science but in society as a whole. It has almost engulfed us (it seems to my old-fashioned mind) and seems likely to continue. Technology is wonderful, of course, and has given us so many amazing benefits that we could not even have dreamed of only forty years ago.

My personal view, however, is that it has also robbed us, that we are even now a little less brave, a little less involved and a little less caring about the real world, as we become ever more detached from it. My old-fashioned mind cannot understand why young people feel the need to tell the world where they are going for lunch (especially if it's only for a pizza!) or why they want to be in 24/7 contact with everyone they've ever met. Both parents and children alike worry if a child is away from home without a phone and it seems this continuous 'intouchness' is breeding insecurity and unnecessary worry, whilst also delaying emotional maturity. Sorry to bang on – there's no going back now.

The book ends with a description of climate change, how it has been reported and is, or is not, being addressed. One of the interesting aspects is that scientists prefer to have a weight of evidence through experimentation and observation before they make strong recommendations or give advice to the decision makers. In the case of climate change, unfortunately, this is not currently possible, so they have to go with computer modelling (which keeps getting better, fortunately), best guesswork and risk management techniques. This has meant that they have always tempered their messages with cautions, caveats and if's, but's and maybe's, because predicting it is a bit like trying to predict the weather in a hundred years' time.

This in turn has enabled those with a vested interest in the status quo to wheel out their own 'experts' (who checks their qualifications?) to refute the majority of scientists who are warning us about climate change and muddy the waters, which only leads to inaction. We saw this with tobacco – for decades the tobacco lobby vehemently denied that smoking kills because there was not enough evidence to 'prove it'. Vested interests doing the same on climate change may end up with millions more deaths on their hands than Big Tobacco did but all the lawsuits in the world won't 'compensate' humanity for that. Humans can be astonishingly stupid sometimes, especially when there is a profit to be made.

One major attraction of the book is that it brings science and mathematics into focus in terms of our daily lives: mobile phones, TVs, modern aircraft and the internet simply could not exist without a firm understanding of complicated maths (way above my head!) and the book is good at putting these things in context. It almost wants to make you rush off and pick up a maths book – almost.

The book offers much more than I have outlined here and I recommend you read it – 5 stars.

Justin says

Right from the start, the dishonesty of the book's title was an extreme aggravation to me. It takes a mildly amusing collection of essays and contorts them into a cheap marketing gimmick - selling them as something more grandiose and more thorough than they really are. I had at least hoped the essays themselves would have had some bearing on the title of the book, though this was frequently not the case.

In broad terms there are really two books here: one, a collection of essays on science and its history (in a simple, popularized format for those of us with slim forebrains) and the other, an assortment of rambling platitudes from the departments of arts&humanities. These belong more to the domain of literary criticism than science - they dwell heavily on personal feelings and attitudes towards science, and make a great deal of irrelevant connections that never seem to come to any point.

For example, though a lot of readers seemed to like the Margaret Atwood essay, I can hardly see why. While tracing out the literary history of the mad scientist, she ultimately reinforces rather than repudiates the cliché, and does little to contrast the stereotype with science actually applied. It is a literary essay wrapped between a host of personal anecdotes and specious ethical dilemmas.

One essay concerns itself almost entirely with theology; another attempts to vindicate some obscure philosophical views of leibnitz with tortured reinterpretations of modern science. it reminded me of religious scholars who pretend to discover modern laws of physics in their antiquated books. One essay harps endlessly on seeing a picture of the earth from outside... and how stultifying it is, for some inexplicable reason. There follows a brief essay on eschatology...

What does science mean to _us_, where is _our_ place in the universe, how can we _cope_ with this knowledge, where does science leave heaven? These sorts of meaningless open-ended questions are better suited to an introductory philosophy course than either a science or a history book, but it characterizes the tenor of many of these essays. Now you may enjoy that sort of thing personally, but it has no bearing on the purported subject of the book, and it doesn't justify its placement on the science shelf of the bookstore.

All that being said, there are a lot of genuinely good essays here, both scientific and historical, that are worth reading. They just deserved a better book.
