

# The Story of Science, Told in Sparkling Prose

**A Short History of Nearly Everything.** By Bill Bryson, *Broadway Books, New York, 2003, 560 pages, \$17.50 (hardback), \$15.95 (paperback).*

What makes a popular book on science worth reading? Timely subject matter, factual accuracy, depth appropriate for general readers, and reputation of the author are among the traits. But one quality, often overlooked, stands out above all others: Good writing.

By that criterion alone, Bill Bryson's latest book, *A Short History of Nearly Everything*, belongs on everyone's scientific bookshelf. In a genre thick with clunky sentences and plodding paragraphs, Bryson's fluid prose sparkles like snowmelt on a sunny day.

To put it boldly, Bill Bryson is one of the best writers around. If you haven't yet read any of his earlier books—*The Lost Continent*, *Made In America*, *A Walk in the Woods*, and *In a Sunburned Country*, to name a few—then you're in for a treat. And even if you limit your nonprofessional reading to science books, you're still in luck: *A Short History of Nearly Everything* is a richly readable account of what we know about life, the universe, and (nearly) everything—and how we've come to know it.

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## BOOK REVIEW

By Barry A. Cipra

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*A Short History* covers the gamut of science, from subatomic particles to supernovae to fossils and geology to molecular biology to evolution and the tree (or trees) of life. Bryson details the demise of the dinosaurs and the discovery of tube worms that thrive in the toxic environs of deep-sea vents. He recounts the rise of chemistry as a scientific subject and its codification into the periodic table. He describes the slow, then sudden, acceptance of plate tectonics, and he paints a fascinating—and frightening—picture of Yellowstone National Park as the site of an active supervolcano.

Remarkably, Bryson himself is not a scientist. Far from it. His previous books—all worth reading—are mainly about travel (e.g., *The Lost Continent*, *Neither Here Nor There*) and language (*The Mother Tongue*, *Made In America*). The decision to write a book about science, he says in the introduction, was spurred by his realization that “I didn't know what a proton was, or a protein, didn't know a quark from a quasar, didn't understand how geologists could look at a layer of rock on a canyon wall and tell you how old it was, didn't know anything really.” He became “gripped by a quiet, unwonted urge to know a little about these matters and to understand how people figured them out.”

We can all be grateful that he made the effort. Bryson has an amazing ability to amass facts and march them past the reader in a lively, informative procession. He demonstrated this earlier in *A Walk in the Woods*, an entertaining account of his experiences hiking on the Appalachian Trail. In researching the trail, he discovered various estimates of its length:

“The U.S. National Park Service, which constantly distinguishes itself in a variety of ways, manages in a single leaflet to give the length of the trail as 2,155 miles and 2,200 miles. The official *Appalachian Trail Guides*, a set of eleven books each dealing with a particular state or section, variously give the length as 2,144 miles, 2,147 miles, 2,159 miles, and ‘more than 2,150 miles.’ The Appalachian Trail Conference, the governing body, in 1993 put the trail length at exactly 2,146.7 miles, then changed for a couple of years to a hesitantly vague ‘more than 2,150 miles,’ but has recently returned to confident precision with a length of 2,160.2 miles. In 1993, three people rolled a measuring wheel along its entire length and came up with a distance of 2,164.0 miles. At about the same time, a careful measure based on a full set of U.S. Geological Survey maps put the distance at 2,118.3 miles.”

He does much the same in *A Short History*. Here, for example, is a paragraph summarizing the scientific shortcomings of the pioneering geologist Charles Lyell:

“Lyell's oversights were not inconsiderable. He failed to explain convincingly how mountain ranges were formed and overlooked glaciers as an agent of change. He refused to accept Louis Agassiz's idea of ice ages—‘the refrigeration of the globe,’ as he dismissively termed it—and was confident that mammals ‘would be found in the oldest fossiliferous beds.’ He rejected the notion that animals and plants suffered sudden annihilations, and believed that all the principal animal groups—mammals, reptiles, fish, and so on—had coexisted since the dawn of time. On all of these he would ultimately be proved wrong.”

Nowhere in this litany of verbs and predicate adjectives—“failed,” “overlooked,” “refused,” “was confident,” “rejected,” “believed”—does a reader sense an author straining for variety. The paragraph is its own geologic formation, each sentence a distinct stratum, with mountains on top, fossiliferous beds beneath, and the dawn of time at the very bottom. And the final word re-emphasizes how it all ended.

As the Lyell excerpt shows, Bryson delights in the foibles of science—how even the great ones get things wrong, how important discoveries are sometimes ignored, and how history often rewards one scientist for the discoveries of another. This, for Bryson, is part of the amazing story of “how scientists work things out.” It makes for an engaging story of science. And Bryson tells the story with an eye for the salient detail—and with great humor.

Humor, in fact, is Bryson's hallmark. His writing is consistently funny and at times hilarious. (A true story: A few years ago I

was sitting in a public place, reading *In a Sunburned Country*, Bryson's book about Australia, and burst out laughing. A woman sitting several benches away looked over and said, "You're reading the new Bryson book, aren't you?" His early books are punctuated with laugh-out-loud passages. The humor in *Short History* is gentler, but still comes through, as in this analogy for Earth-crossing asteroids:

"Think of the Earth's orbit as a kind of freeway on which we are the only vehicle, but which is crossed regularly by pedestrians who don't know enough to look before stepping off the curb."

And in this passage from a page-long paean to life's unassuming tenacity, using lichens as an exemplar:

"If I were told that I had to spend decades being a furry growth on a rock in the woods, I believe I would lose the will to go on. Lichens don't."

Bryson also enjoys telling us about things scientists do not yet know or have learned only recently. The age of the Earth was not nailed down until 1953. ("As late as 1910, one of the most respected estimates, by the American George Becker, put the Earth's age at perhaps as little as 55 million years.") Astronomers are just beginning to catalog those potentially devastating asteroids. The extent of the Yellowstone supervolcano was unsuspected until the 1960s. Our knowledge of life's diversity is still woefully incomplete: "Go out into a woods—any woods at all—bend down and scoop up a handful of soil, and you will be holding up to 10 billion bacteria, most of them unknown to science."

Even what's "known" sometimes isn't, especially in biology:

"In principle you ought to be able to go to experts in each area of specialization, ask how many species there are in their fields, then add the totals. Many people have in fact done so. The problem is that seldom do any two come up with matching figures. Some sources put the number of known types of fungi at 70,000, others at 100,000—nearly half as many again. You can find confident assertions that the number of described earthworm species is 4,000 and equally confident assertions that the figure is 12,000. For insects, the numbers run from 750,000 to 950,000 species. These are, you understand, supposedly the *known* number of species."

The book is not without flaws. The index is inadequate. Bryson occasionally says "billions" when he means "millions." The one displayed equation in the book, Newton's inverse-square law for gravity,  $F = Gmm'/r^2$ , is badly typeset. It wouldn't surprise me if some of the anecdotes are apocryphal, or if some of the issues are more (or less) complex than he makes them out to be. Much of this is offset, however, by the detailed (and unobtrusive) footnotes, which identify factual sources. A quick check of a few indicates that Bryson not only has gotten his facts right, he's also avoided the all-too-common crime of plagiarism. (When Bryson does borrow another writer's words, he puts quotes around them and says where they came from. This is both a courtesy to the original author and a favor to the reader, whose interest in additional reading may be piqued.)

All in all, *A Short History* belongs on the short list of popular science books that everyone should read. It succeeds at being both informative and entertaining. I can point to only one serious omission: Bryson makes little mention of mathematics and the role it plays in science. But he could easily fix that, to everyone's satisfaction. He could write a book about it.

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