

READING FOR SCIENCE LITERACY

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For many scientists, particularly those in biomedical fields, reading the classic science book *Microbe Hunters* is often cited as a life-defining experience. It certainly was for me when I first read it in my teens. Written by bacteriologist and science writer Paul De Kruif, the book's lively accounts of the discoveries of Pasteur, Koch, Leeuwenhoek, Erlich, and other giants of microbiology were thrilling and made the idea of spending one's time solving life's mysteries enormously appealing. Since its publication in 1926 *Microbe Hunters* has sold millions of copies and while it reflects some of the prejudices and limitations of an earlier era, its influence on several generations of scientists, including numerous Nobel laureates, cannot be denied. And, as this year's *SB&F* list of the Best of 2012 books attests, there are many wonderful new science books to delight, inform, and inspire readers of all ages and interests.

In our work at AAAS's Project 2061, which promotes literacy in science, mathematics, and technology for everyone, science trade books have long been recognized as essential tools for helping to achieve that goal. Several years ago, for example, Project 2061 developed an online database (<http://www.project2061.org/publications/rsl/online/index.htm>) of science trade books that could help teachers deepen their understanding of the subjects they teach and extend

their knowledge into new areas. Each book was highly rated by *SB&F* reviewers and selected for its relevance to what a science literate adult should know based on the recommendations in AAAS's 1989 classic *Science for All Americans*. More recently, we've used *SB&F* ratings to select authoritative and accessible trade books to help teachers address particularly challenging classroom topics such as global climate change (for example, *The Long Summer: How Climate Changed Civilization* by Brian Fagan covers the scope of human history over the past 20,000 years), evolution (*The Beak of the Finch* by Jonathan Weiner won a 1995 Pulitzer Prize), and the nature of science (*The Discoveries* reflects the unique perspective of Alan Lightman, MIT's first professor of humanities, writing, and physics).

Good science trade books not only lay out the science behind the issues but also provide a closer look at the nature of scientific investigation and the people who devote their lives to exploring the world and how it works. Whether they are lavishly illustrated or spare in their design, high-quality science books are able to provide the fascinating details—how evidence was pieced together over time and in different places, for example, or how one theory was able to explain more than its rivals, or how a particular line of research was shaped by the prevailing social and political climate. These are the elements of good storytelling that draw us in as readers but are so often missing in the science textbooks used in schools.

Luckily, there are plenty of outstanding science trade books for young readers, and these books are desperately needed to counteract the boring and fragmented presentation of science found in many of the textbooks being used in today's

classrooms. Nearly 15 years ago AAAS published the results of an analysis of middle school science textbooks conducted by Project 2061 researchers. Our findings were discouraging—not a single textbook was well aligned to the national science education standards or made use of the strategies that research had shown to be most effective in helping students learn. Since then, there has been little improvement in the textbooks, yet the need for more young people to understand and excel in science is greater than ever. High-quality science books can not only inform, entertain and engage young people, they can also motivate and help young people to become better readers, writers, and thinkers. That's one reason why the *National Research Council's Framework for K-12 Science Education* and the most recent draft of the *Next Generation Science Standards* both emphasize the ability to read, write, and communicate about science as an essential scientific practice for all students. What is more, the *Common Core Standards for English Language Arts*, which have been adopted by 45 states and the District of Columbia, call for much more reading and writing of non-fiction content in subject areas such as science in addition to the more traditional emphasis on literature. While this recommendation has been challenged by some, the intent seems clear—reading and knowing science can help develop skills and ways of thinking that will be needed in every school subject, career field, and at every stage and in every aspect of our lives. Science isn't just for scientists. That's really the ultimate message of science literacy for all. And as lifelong learners, great science books can help us wherever we are in our journey.