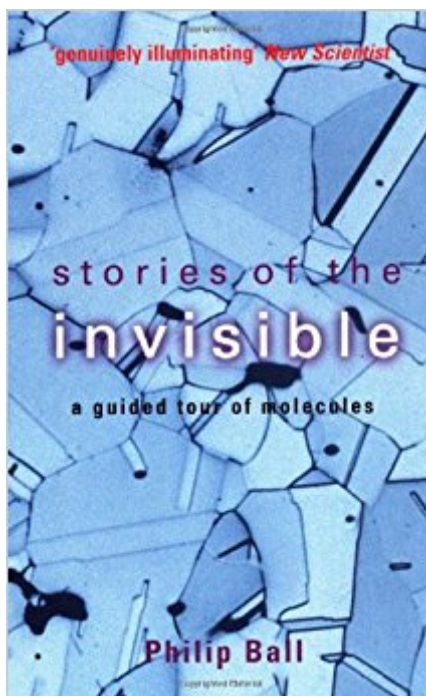


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Stories Of The Invisible: A Guided Tour Of Molecules



Synopsis

If atoms are letters, writes Philip Ball, then molecules are words. And through these words, scientists have uncovered many fascinating stories of the physical world. In *Stories of the Invisible*, Ball has compiled a cornucopia of tales spun by these intriguing, invisible words. The book takes us on a tour of a world few of us knew existed. The author describes the remarkable molecular structure of spider's silk--a material that is pound for pound much stronger than steel--and shows how the Kevlar fibers in bulletproof vests were invented by imitating the alignment of molecules found in the spider's amazing thread. We also learn about the protein molecules that create movement, without which bacteria would be immobile, cells could not divide, there would be no reproduction and therefore no life. Today we can invent molecules that can cure viral infections, store information, or help hold bridges together. But more importantly, Ball provides a fresh perspective on the future of molecular science, revealing how researchers are promising to reinvent chemistry as the central creative science of the 21st century.

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Customer Reviews

"Molecules," Philip Ball writes, "are the smallest units of meaning in chemistry," the words, if you will, made up of atomic letters. In this lively essay, full of such useful metaphors, Ball shares his longstanding fascination with the unseen world once again, explaining some of the issues that guide modern biochemistry. Consider a sheep, Ball offers, a congeries of "millions of little bits of sheepness." That animal is a blend of molecules, tens of thousands of varieties of them, many of

them found in the grass, sky, and water that make up the sheep's environment, many of them shared with other animals and humans. It has been the task of modern chemistry to dissect matter, to tease out underlying structures and commonalities--and, Ball adds, to learn how to make of its constituent elements things that do things, "such as cure viral infections or store information or hold bridges together." How chemistry has done so, making body armor of spider silk and modeling computer networks on "molecular logic," drives Ball's discursive, entertaining, and eminently practical survey. A trustworthy explainer of scientific matters to lay readers, Ball writes with clarity and grace--and the more difficult the concept, the better he gets. --Gregory McNamee --This text refers to an out of print or unavailable edition of this title.

"Kevlar [a DuPont product] is one of the best candidates... for tethering a space platform.... But gram for gram, silk is stronger still," explains Philip Ball (H₂O: A Biography of Water) in *Stories of the Invisible: A Guided Tour of Molecules*. Thus does this *Nature* magazine writer and editor render practical and navigable the abstractions of invisible science. "Our metabolic processes are primarily about making molecules. Cells cannot survive without constantly reinventing themselves: making new amino acids for proteins, new lipids for membranes." But Ball's biological explanation for life, thought and action is no dry, joyless drone: "That a conspiracy of molecules might have created King Lear... makes the world seem an enchanted place." Pop-science enthusiasts will eat it up. Illus. Copyright 2001 Cahners Business Information, Inc. --This text refers to an out of print or unavailable edition of this title.

Phillip Ball writes well, capably cuts through the complex stuff to get to the heart of the matter, and tells good stories. If you read one science book a year, or you want to give a gift to your Aunt Minnie who always wanted to find out why chemicals aren't all bad, this is the book for you. I downrated this book because it doesn't really do what it says it is going to do. It purports to be about chemistry, and it has blurbs written by four Nobel Prize winners in Chemistry. The book claims it wants to restore chemistry to its rightful position among the natural sciences, having been relegated to a lowly position by New Age environmentalist non-think. However, the book spends most of its time on biochemistry, cell biology, and other biological topics! Phillip Ball does not really address his challenge, because so little of the book is about the chemistry of chemists (molecular engineers?) as opposed to biologists. I wish Ball would write another book--this one really about chemistry. There's a great story to tell.

this book got even someone like me, a total amateur in biology and physics interested in molecules. the material is very broad and covers a wide range of particles. I first read it as a library loan, but found it worthy of having it in my permanent collection for reference and more. It is written in an easy to follow format even though there is nothing easy to decipher much of molecular science. thanks to the author.

Most readers with an interest in science will be familiar with the ground covered here. Unfortunately the style tends to be too often dry and flat - almost like a textbook.

Most readers with an interest in science will be familiar with the ground covered here. Unfortunately the style tends to be too often dry and flat - almost like a textbook.

Almost all of this is about biochemistry where the molecules are large, complex and of overriding importance and interest to human beings. In particular Philip Ball, who is a science journalist and formerly an editor of Nature, one of the most prestigious science journals in the world, wants to show "the molecular processes that govern our own bodies are not so different from those that chemists--I would prefer to say molecular scientists--are seeking to create." His further intent in this modest little book is to counter the "negative connotations of" and "in the public mind and to help us "appreciate what chemistry has to offer." Ball observes that "molecules" do not yet have negative connotations, and he wants to keep it that way. (pp. vi-vii) Ball demonstrates just how really complex the molecular world is, and how the technology is becoming further removed from our everyday world, while the effect on our world grows enormously. The text does not consist of "stories" as such, but rather a broad survey of molecular science, including what's happening in exciting new fields such as molecular electronics, and how new uses for molecular knowledge is transforming older fields such as paleontology, computer science, information theory, forensics, etc. Ball provides some material on cellular construction and metabolism, augmented with drawings from his own hand. He gives us a feel for the invisible, tactile reality of molecular interactions, in which surface structure is paramount. He ends the book with a brief look at the prospects for molecular and DNA computers. There is unfortunately a kind of veil-like quality thrown between the molecular world and the reader's perception of that world by the very fact of its invisibility that I don't think Ball's text overcomes. It is curious, but it is not a question of readability so much as a question of how to present these very complex structures and ideas in a way that the reader can absorb in some concrete fashion. Ball begins with some dialogue from a fiction set in a Dublin pub about

"mollycules"; however this does not help. Indeed I could not see the point of the exchange. At any rate Ball abandons it after the first few pages. The exposition following that, about what molecules are and how they differ technically from atoms, was one of the strengths of the book. However much of the rest of the book is like a first year survey course of various topics in molecular science, a very diverse subject, but without any insistence on the mastery of fundamentals. This is good, I suppose, and Ball's intent, but since I know little about chemistry, I was left not really appreciating a lot of the text. I express this as more a failing on my part than a criticism of Ball's efforts, and to warn the reader that some serious interactive and imaginative work will be required! Ball does indeed go to great lengths to make the visible real, not only with his drawings, but with "photos" from the "scanning tunnelling microscope" while using other "representations" to make the technically invisible, "visible." One thing that I felt very strongly in reading this book was the sense of frustration that molecular engineers and others in the world of nano technology must feel when dealing with objects so very, very small. I had the sense that somebody was crying out, "My world for a pair of molecular tweezers!" I suspect when they get those tweezers, our world is going to change enormously.

I read the 2002 paperback of the 2001 book. It contains just 185 regular text pages, including 40 illustrations. It touches upon subjects such as biosynergetic engineering, supramolecular chemistry, molecular computing or, more down to earth, such topics as the workings of hormones, drugs and painkillers. In other words it's more about biochemistry than anything else. It may function as a conspectus of the subject of molecules. Yet, I find the concept or message of the book difficult to detect. At times, the choice of topics seemed logical, at other times the entire book felt arbitrary. Don't get me wrong, I don't regret having read the book. However, it gave me little more than an idea of topics I may want to read about elsewhere in-depth.

This book is worth the read. It furthered my understanding as well as raised new questions, exactly what I'm looking for in a book, especially when it comes to the sciences.

I had a hard time keeping the book down till I finished it. It is written on the same lines as Scientific American, New Scientist, and Nature (from which it draws heavily). Recommended for anyone who wants to find out what protein folding/nano tech, is all about. The next book to follow up would be Nature's Robots.- Mosh [...]

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