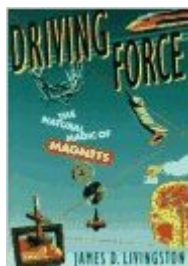


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# Driving Force: The Natural Magic Of Magnets



## Synopsis

Driving Force unfolds the long and colorful history of magnets: how they guided (or misguided) Columbus; mesmerized eighteenth-century Paris but failed to fool Benjamin Franklin; lifted AC power over its rival, DC, despite all the animals, one human among them, executed along the way; led Einstein to the theory of relativity; helped defeat Hitler's U-boats; inspired writers from Plato to Dave Barry. In a way that will delight and instruct even the nonmathematical among us, James Livingston shows us how scientists today are creating magnets and superconductors that can levitate high-speed trains, produce images of our internal organs, steer high-energy particles in giant accelerators, and--last but not least--heat our morning coffee. From the "new" science of materials to everyday technology, Driving Force makes the workings of magnets a matter of practical wonder. The book will inform and entertain technical and nontechnical readers alike and will give them a clearer sense of the force behind so much of the working world.

## Book Information

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## Customer Reviews

The author starts this book by the story of Albert Einstein at the age of four or five, when his father showed him a compass needle. The behavior of the needle gave a deep and lasting impression on young Einstein. Then the author describes ten facts about the magnetic force in earlier chapters. Using these facts, he gives detailed explanations on the workings of various magnetic devices and the modern technologies of magnets in plain words. The topics covered includes superconducting magnets, magnets in motors, speakers, TVs, toys, fiction, magic and weapons, magnetic recording,

magnets in medicine, biomagnetism, and so on, namely everything about magnets. The book is also interspersed with humorous comments. In the last chapter the author goes back again to young Einstein's wondering at a compass needle. The reader notices here that the title of the book has the triple meaning. This is one of the most educational and well written books I have ever read in the genre of science for laypersons.

This is the best book I have ever read on the subject of magnets and magnetism. It is very up to date and includes current technology of magnets and many applications that most people take for granted. Also, the manner in which this book is written makes it suitable for a wide range of age groups. For the most part it is not real technical or mathematical and can be enjoyed by all. If you have an ounce of curiosity about magnets, magnetism or science you will love this book. I am on my third reading and it won't be my last. One of the most interesting chapters in this book explained the connection between magnets and Einstein's theory of relativity. This is explained very simply and easy to understand and even has a one page cartoon to illustrate this. Also explains dozens of applications of magnets in our lives, our homes, our cars, our hospitals, our defense systems etc. I thought I was pretty aware of most applications of magnets and magnetism but this book was a real and amazing eye opener. Read it and enjoy it!

Did you know that Einstein got his start in science from a fascination with the compass? Did you know that Columbus' magnetic compass was his most prized possession on his transatlantic voyages? Did you know that some bacteria contain lined up magnetite chunks in a form of primitive backbone that also provide crude directional guidance? Did you know that the geographic north pole of the earth is actually a magnetic south pole? Did you know that the most celebrated innovation presented at the Paris Exposition of 1900 was a crude magnetic recording device utilizing a steel wire as the recording medium? Did you know that the black ink used in printing US currency is faintly attracted to strong magnets? Did you know that magnetic rocks hold the key to charting continental drift? Did you know that water possesses a property that causes it to repel a strong magnetic field with enough force to levitate a live frog? James Livingston's book is loaded with fascinating bits of information about a technology that pervades virtually all of modern technology. In fact, modern life as we know it would come to a screeching halt if not for the weird properties of magnets. Written in a lively, non-technical style, *Driving Force* covers the history, tremendous range of technical uses, and the fun, entertaining side of magnets. This highly readable book will not enable you to design motors, MRIs, or maglev trains, but it might just make you better

on trivia tests, lead to a great science fair project, or help you educate or entertain the children in your life. For anyone with an interest in technology or the history of science, this book is highly recommended.

As someone who works professionally with magnets, I thought finding this book was too good to be true. However, anyone interested in science and technology will enjoy this book. Very enthusiastically written covering a wide range of subjects. Explains some deep concepts in micro-magnetics in a very understandable style. In that way, both beginners in magnetism and experienced hands can get a lot out of reading it. -Derrick Peterman

Livingston, a lecturer at MIT, is one of those rare and invaluable teachers who can make the arcane not only intelligible, but interesting to the uncommitted reader. Magnets are his field, and his knowledge is encyclopedic, extending beyond the technical to encompass the historical and literary aspects of magnets and magnetism; all presented with infectious enthusiasm and good humor. The math is in small and unthreatening doses, and there are many useful drawings, photos, and charts, as well as source notes, suggestions for further reading, and an index. You will never view your refrigerator magnets the same way again. (The "score" rating is an ineradicable feature of the page. This reviewer does not "score" books.).

This book is pure entertaining, covering a really interesting subject like magnets and electromagnetism. The descriptions are for the layman and although I have a previous knowledge of magnetism and physics, these pages capture your attention with the right mixture of knowledge, history, passion in the writing, good figures and interesting chapters, like the one that deals with "Superconducting Magnets" and "MRI". Highly commendable.

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