

## Preface

The fascination of magnets dates back some three thousand years, or possibly even more. The earliest accounts attribute to the ancient Greeks the first observations of magnetic phenomena. Studies of the Middle Ages and of the 16th and 17th centuries, inspired by the image of a magnet attracting pieces of iron, have stimulated many insights into the workings of nature, including the model for the forces that hold planets in their orbits.

The quest for the understanding of the magnetic forces is a remarkable story in itself. This comes about in the first place through the discovery of the connection between electricity and magnetism in the 19th century, a breakthrough that also paves the way for the invention of every known piece of electrical machinery. A second decisive step is the development of Quantum Mechanics, which allows the understanding of the structure of matter, and of magnetic order. This basic understanding, combined with advances in the knowledge of materials, led to the production of better magnets, making them ubiquitous in modern life.

This story unfolds against a background of evolving ideas on nature and on the possibility, and the best strategy, for acquiring knowledge about it. It spans a period that has witnessed the birth of science, the scientific revolution of the 16th and 17th centuries, and the turning points in world view that have shaken the Newtonian system, and ultimately challenged long-established ideas such as causality and determinism.

The process of accumulation of scientific knowledge during the last 3000 years is presented here as an integral part of the fascinating progression embodied in the history of science.

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For further material to supplement this book see [www.cbpf/lodestone](http://www.cbpf/lodestone).

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