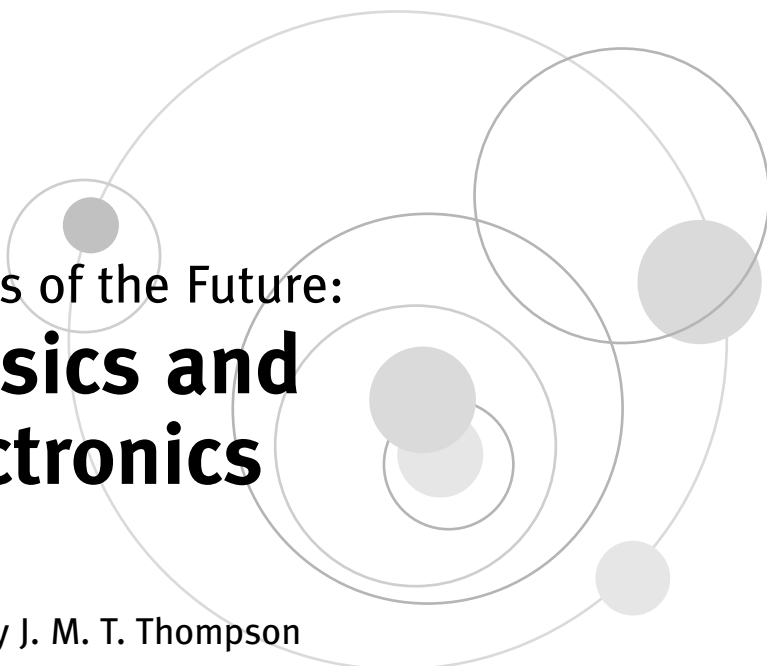


Visions of the Future: Physics and Electronics

Leading young scientists, many holding prestigious Royal Society Research Fellowships, describe their research and give their visions of the future. The articles, which have been re-written in a popular and well-illustrated style, are derived from scholarly and authoritative papers published in a special Millennium Issue of the Royal Society's *Philosophical Transactions* (used by Newton; this is the world's longest-running scientific journal). The topics, which were carefully selected by the journal's editor, Professor J. M. T. Thompson FRS, include quantum physics and its relation to relativity theory and human consciousness, electronics for the future, exotic quantum computing and data storage, telecommunications and the Internet. This book conveys the excitement and enthusiasm of the young authors for their work in physics and electronics. Two companion books cover astronomy and earth science, and chemistry and life science. All are definitive reviews for anyone with a general interest in the future directions of science.

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Visions of the Future:
**Physics and
Electronics**

Edited by J. M. T. Thompson



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Preface

Leading young scientists, writing here in a popular and well-illustrated style, describe their research and give their visions of future developments. The book conveys the excitement and enthusiasm of the young authors. It offers definitive reviews for people with a general interest in the future directions of science, ranging from researchers to scientifically minded school children.

All the contributions are popular presentations based on scholarly and authoritative papers that the authors published in three special Millennium Issues of the Royal Society's *Philosophical Transactions*. This has the prestige of being the world's longest-running scientific journal. It was founded in 1665 and has been publishing cutting-edge science for one third of a millennium. It was used by Isaac Newton to launch his scientific career in 1672 with his first paper 'A new theory about light and colours'. Under Newton's presidency, from 1703 to his death in 1727, the reputation of the Royal Society was firmly established among the scholars of Europe and today it is the UK's academy of science. Many of the authors are supported financially by the society under its prestigious research-fellowships scheme.

Series A of the *Philosophical Transactions* is devoted to the whole of physical science and, as its editor, I made a careful selection of material to cover subjects that are growing rapidly and likely to be of long-term interest and significance. Each contribution describes some recent cutting-edge research, as well as putting it in its wider context and looking forward to future developments. The collection gives a unique snap-shot of the state of physical science at the turn of the millennium, while CVs and photographs of the authors give a personal perspective.

The three Millennium Issues of the journal have been distilled into three corresponding books by Cambridge University Press. These cover

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Astronomy and Earth Science (covering the creation of the universe according to the big-bang theory, man's exploration of the solar system, the Earth's deep interior, global warming and climate change), *Physics and Electronics* (this volume) and *Chemistry and Life Science* (covering reaction dynamics, new processes and materials, physical techniques in biology and the modelling of the human heart).

Topics in the present book on physics and electronics include quantum physics and its relation to relativity theory and human consciousness; electronics for the future; exotic quantum computing and data storage; and developments in telecommunications and the Internet.

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