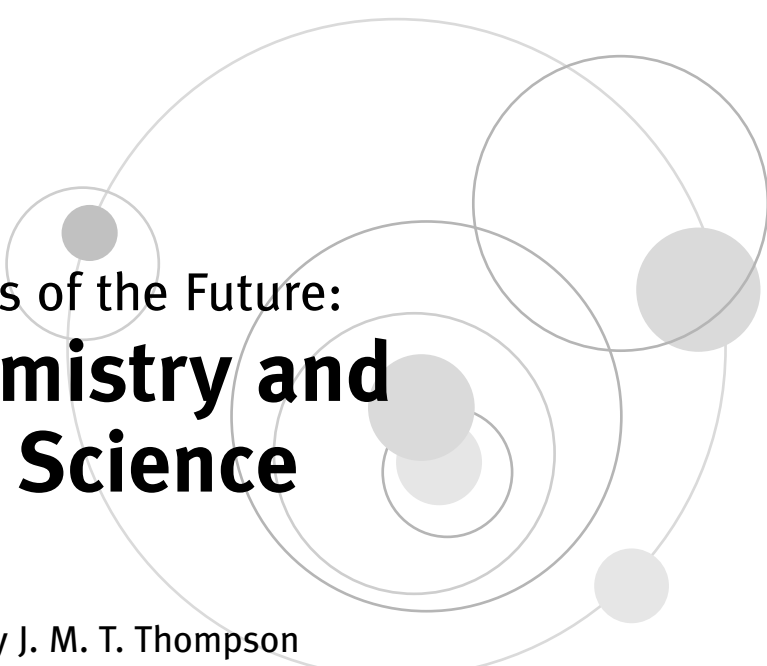


Visions of the Future: **Chemistry and Life Science**

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 studies of atoms and molecules in motion; new processes and materials; nature's secrets of biological growth and form; progress in understanding the human body and mind. The book conveys the excitement and enthusiasm of the young authors for their work in chemistry and life science. Two companion books cover astronomy and earth science, and physics and electronics. All are definitive reviews for anyone with a general interest in the future directions of science.

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Preface

Writing here in a popular and well illustrated style, leading young scientists 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. Founded in 1665, it 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 '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 snapshot 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 creation of the universe according to the big bang theory, human exploration of the solar system, Earth's deep interior, global warming and climate change), physics and electronics (covering quantum and gravitational physics, electronics, advanced computing and telecommunications), and chemistry and life science (covering the topics described below).

Topics in the present book on chemistry and life science include studies of atoms and molecules in motion, the development of new processes and materials, nature's secrets of biological growth and form, physical techniques in biology, progress in understanding the human body and mind, and the computer modelling of the human heart.

J. M. T. Thompson