Soap, Science, and Flat-Screen TVs

A History of Liquid Crystals

David Dunmur, University of Southampton (retired), and Tim Sluckin, University of Southampton

The terms ‘liquid crystal’ or ‘liquid crystal display’ (LCD) are well-known in the context of flat-screen televisions, but the properties and history of liquid crystals are little understood. This book tells the story of liquid crystals, from their controversial discovery at the end of the nineteenth century, to their eventual acceptance as another state of matter to rank alongside gases, liquids and solids. As their story unfolds, the scientists involved and their works are put into illuminating broader socio-political contexts. In recent years, liquid crystals have had a major impact on the display industry, culminating in the now widely available flat-screen televisions; this development is described in detail over three chapters, and the basic science behind it is explained in simple terms accessible to a general reader. New applications of liquid crystals in materials, bio-systems, medicine and technology are also explained.

November 2010 | 368 pages | 70 b/w line and halftone illustrations; 4pp colour plates section
978-0-19-959988-2, HARDBACK £35.00/$58.00

Higher Speculations

Grand Theories and Failed Revolutions in Physics and Cosmology

Helge Kragh, University of Aarhus, Denmark

A comprehensive account of highly ambitious attempts to understand nature in its totality, this book covers little known ‘theories of everything’ from the past as well as modern developments such as the theory of superstrings, the anthropic principle and ideas of many universes. These theories are presented in their historical contexts and used to problematize the limits of scientific knowledge. Do claims of theories of everything belong to science at all? Which are the epistemical standards on which an alleged scientific theory of the universe—or the multiverse—is to be judged? Such questions are currently being discussed by physicists and cosmologists, but rarely within a historical perspective.

January 2011 | 466 pages | 19 b/w and halftone illustrations
978-0-19-959938-8, HARDBACK £35.00/$58.00

Big Ben: the Great Clock and the Bells at the Palace of Westminster

Chris McKay, Horologist

‘A very good book ... a work which holds the interest of the reader whilst imparting knowledge of both the history and technology of the clock, the tower, and bells: an impressive feat. It is also a book which tells enough to stimulate interest while not being too heavy. If you have only one book on turret clocks, it should probably be this one.’

Colin Ferguson, Horological Journal

This book covers the history of ‘Big Ben’, the great clock and bells at Westminster, from the origins of Westminster as the seat of government right up to the celebrations of the Great Clock’s 150th anniversary in 2009. The book is richly illustrated, and will appeal not only to clockmakers and horologists, but to bell enthusiasts, and those with an interest in our rich Victorian heritage.

May 2010 | 296 pages | 260 b/w halftones | plus 8pp colour plate section
978-0-19-958759-4, HARDBACK £42.50/$75.00

Tears of the Tree

The Story of Rubber - A Modern Marvel

John Loadman, Tun Abdul Razak Research Centre, Hertford, UK (Retired)

This unique book tells the fascinating story of four thousand years of rubber as seen through the lives of the adventurers and scientists who promoted it, listed after it and eventually tamed it into the ubiquitous, yet crucial material of our lives today.

2006 | 288 pages | numerous line drawings and line drawings
978-0-19-856840-7, HARDBACK £32.50/$50.00

Thus Spoke Galileo

The great scientist’s ideas and their relevance to the present day

Andrea Frova, Università di Roma “La Sapienza”, and Mariapiera Marenzana, Liceo Coreutico at the National Dance Academy

‘The book is remarkable for its clarity, precision and historical accuracy. Numerous drawings, figures and photographs help the reader pick a path through the historical and scientific reconstruction.’

Nature

May 2011 | 512 pages | 62 line drawings and 15 halftones
978-0-19-960668-2, PAPERBACK £19.95/$34.95
978-0-19-856825-0, HARDBACK £26.50/$50.00

Conceptions of Cosmos

From Myths to the Accelerating Universe: A History of Cosmology

Helge S. Kragh, University of Aarhus, Denmark

‘Kragh...writes with engaging clarity and insight. His book is thought-provoking and enlightening, a joy from beginning to end. Essential reading.’

Times Higher Education Supplement

2006 | 288 pages | numerous line drawings | tables halftones and mathematical examples
978-0-19-920918-3, HARDBACK £39.95/$59.00

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Saunders: Many Worlds? on page 47 in Philosophy of Science

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William Evenson, Physics Today
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978-0-19-929220-3, HARDBACK £42.99/$75.00

The Many Worlds of Hugh Everett III
Multiple Universes, Mutual Assured Destruction, and the Meltdown of a Nuclear Family

Peter Byrne

‘Peter Byrne’s meticulously researched biography provides a detailed and intimate look at one of the most seminal figures in 20th century physics and mathematics — it is a remarkable and long-overdue biography.’

Ian T. Durham, The Quantum Times

‘Offers a valuable source of primary information about Everets life and work, with much material not available elsewhere ... this book fleshes out an important part of the quantum physics story.’

Tom Siegfried, Science News

The many worlds theory is still garish after all these years. Nevertheless, it is fascinating to read the story of its creator, himself too obsessed with models to intersect effectively with the real world.

Robert P. Crease, Nature

‘Byrne does an excellent job of explaining the theory, why it is necessary and the difficulties it solves (and doesn’t). Byrne does not patronise his readers with superficial pen portraits of his characters. We get to know the characters by what they say and what they do. And they say and do some truly remarkable things. This is a strangely beautiful story, expertly told with the dignity, candour and attention to detail it deserves.’

New Scientist

Peter Byrne tells the story of Hugh Everett III (1930–1982) who invented a theory of multiple universes that has had a profound impact on physics and philosophy. Everett strove to bring a ‘rational’ order to the interlacing worlds of nuclear war and physics, even as his personal world disintegrated because of his indulgent lifestyle.

Using Everett’s unpublished papers and dozens of interviews, the book paints a detailed portrait of a man who influenced foundational thinking in quantum mechanics by inventing a way of viewing the universe from inside (known as the universal wave function). The papers on which this book is based create a fascinating record of his life, including correspondence with the leading scientific minds of the day, that illuminates the often bitter struggle over the interpretation of the mystery of measurement at the heart of quantum mechanics.

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The Shadow of Enlightenment
Optical and Political Transparency in France 1789–1848

Theresa Levitt, University of Mississippi

‘Like its subject matter, this fascinating book makes a mockery of the ‘two cultures’ debate, and should appeal to anyone with an interest in the history of science and the origins of the way we see our world.’

Physics World

This work examines the intersection of science and politics in the work of François Arago and Jean-Baptiste Biot, the principle architects of the optical revolution of early nineteenth-century France. Their disagreement over the optical accessibility of the world played out across a wide range of French culture.

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Ludwig Boltzmann
The Man Who Trusted Atoms

Carlo Cercignani, Politecnico di Milano

‘Cercignani’s book does sterling service in bringing much of Boltzmann’s extraordinary achievement to life, and in sketching the ways in which it was indeed linked with the predicaments of his time.’

London Review of Books

2006 | 348 pages | 23 line drawings and halftones
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W.J.F. Mörzer Bruyns, National Maritime Museum, Greenwich, and Richard Dunn
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