Review for *Ambix* of Michael M. Woolfson. "Materials, Matter and Particles: A Brief History."

This is a wide-ranging book for popular audiences. Written by a physicist, it provides a survey history of the chemistry and physics of matter, with excursions into biochemistry and astrophysics. It sketches a story of the progressive refinement of chemistry, followed by a similarly progressive refinement of nuclear physics. Along the way, it detours towards aspects that hint at broader questions. 'What makes us who we are?' for example, deals with the genetic code. Along with this general progression of chronology and knowledge we are taken to ever-smaller scales. Fittingly, perhaps, the final two chapters, 'How matter began' and 'Making heavier elements' divert the reader to the opposite extreme with discussion of the big bang hypothesis, dark matter and evolution on the galactic level. Interspersed are a couple of chapters at the macroscopic scale: materials in ancient, and in modern, times. The book, then, covers a lot of ground.

The account is idiosyncratic, and much in the style of the introductory chapters found in many science textbooks a generation ago. The introduction begins with the phrase 'civilized societies' but the book focuses on scientific fact and some intellectual history, with snippets of biographical detail; Democritus, we learn, laughed in 'maniacal fashion', but 'mad or not, he came up with ideas that for their time were a great advance...' (p. 14). Nagasaki and the slave trade receive brief mentions alongside the material products of intellectual development. The text marshals some of the scientific beliefs of key figures, but reveals little of the context in which these understandings developed, how they were useful or indeed how they were superseded.

The text popularises historical developments in ways that might jar historians. For example, chapter 1 reconstructs an imagined dialogue between an educated Greek slave educating his Roman pupils about Aristotelian science. The style shifts in subsequent chapters to offer a matter-of-fact succession of details that illustrate steady advancement or modern views, juxtaposed in an encyclopaedic but readable style.

The style of presentation and writing seem rather dated, and the coverage is eclectic. On the cover a contemporary computer simulation of a carbon nanotube jostles with 1970s colours and the Concorde. Within, four dozen portraits of scientists – frequent for more distant historical personages but tailing off nearer the present – are combined with well over a hundred diagrams and figures. These are principally of chemical structures (many finely reproduced in multiple colours) but also include a diverse choice of graphs, paintings and photographs of uneven quality and significance, including a Roman aqueduct, an Inuit family, a lump of obsidian and a particle accelerator.

On the whole, this is a clearly presented book, but its intended readership is not easy to define. The broad but selective coverage of topics, normally treated with different thematic emphasis and rigour by either historians, chemists, materials scientists or physicists, may make this book a poor fit to curricula of secondary schools or further education. It is more likely to interest adolescents looking beyond the curriculum and curious laypersons intrigued by the past and current concerns of science.

Sean Johnston
School of Interdisciplinary Studies
College of Social Sciences
University of Glasgow
Dumfries DG1 4ZL