

Chemistry in context

Peter Harman

Ideas in Chemistry: A History of the Science. By David Knight. *Athlone*: 1992. Pp. 213. £38.

Science as Public Culture: Chemistry and Enlightenment in Britain, 1760–1820. By Jan Golinski. *Cambridge University Press*: 1992. Pp. 342. £32.50, \$54.95.

From Caveman to Chemist. By Hugh W. Salzberg. *American Chemical Society/Royal Society of Chemistry*: 1991. Pp. 294. \$24.95, £18 (hbk); \$14.95, £11 (pbk).

In the introductory 'biography of chemistry' in his *Ideas in Chemistry*, David Knight distinguishes the concerns of chemists' histories from the range of problems conceived by modern historians of chemistry. Whereas the former are sure of their subject as a progressive scientific enterprise, the latter — and this is especially true of the most recent historical work in the field — have come to find the definition of chemistry and its history as problematic. Knight himself inverts the traditional assumption of triumphant chemical progress, preferring to regard chemistry as "having a glorious future behind it".

From the questioning perspective of modern historical writing therefore, Hugh Salzberg's *From Caveman to Chemist*, though worthy in execution, has an antique tone. This is the confident tale of chemical progress with the beginnings of true chemistry found in the work of Boyle and van Helmont in the seventeenth century. From this perspective, the phlogiston theory of the existence of a hypothetical substance in all combustible materials is "strange" but nevertheless "useful" to Priestley and others who made "first-class discoveries". This prepares the ground for the chemical revolution of Lavoisier and a brief treatment of nineteenth-century atomism and organic chemistry. The bulk of the book is given over to ancient technology, alchemy and the origins of chemistry, drawing on the standard sources.

It is to avoid the difficulties inherent in such an account of the history of chemistry that Knight seeks to investigate the roles chemistry has played during its history. He sees the characteristics of chemistry as changing over time, and suggests that its history should be investigated by study of the ideas external to the science that have shaped its development and character. His book is structured by a treatment of chemistry under such headings as "Mechanical", "Fundamental", "Experimental" and "Useful"; and his narrative is only loosely chronological. Knight's point of view is very suggestive, but it is unfortunate that his perspective on chemical history remains programmatic. He writes within a brief compass, and his style is

discursive and informal, lacking rigour and systematic development of the material. The general scientific reader, who may be attracted by the book's informal style, will be disappointed to find a book on a subject so replete with intriguing apparatus, handsome laboratories, evocative symbols and suggestive diagrams to be utterly bare of any form of illustration. Knight's essays would have been better served if accompanied by illustrative material chosen to complement and illuminate the argument.

Jan Golinski's substantial monograph on *Science as Public Culture* offers an original approach to the writing of chemical history. Its subject matter is the history of chemistry in Britain during what must be its most exciting period, that embracing the careers of William Cullen, Joseph Black, Joseph Priestley and Humphry Davy. Golinski is not overly concerned with the chemical theories of these men (which never receive detailed exposition here), but instead concentrates on the way these chemists functioned within the public culture of the day. As the title of his book makes clear, Golinski is concerned with the relationship between scientific work and its social and political context. As Knight observes, sociological approaches such as Golinski's "can lead to the history of science with the science left out", and Golinski largely bypasses the traditional concerns of the history of chemistry. But there are compensations: in such an account as Golinski's, phlogiston is not a conceptual oddity and continued adherence to it a mystery, but is seen as embodied in a matrix of scientific practice and rhetoric.

Golinski has written a compelling account of this seminal period of chemical history. This was indeed the heyday of chemistry, both in its public impact and as the period of the 'chemical revolution', in which the innovations of Lavoisier transformed the science of chemistry. The complex relationship between the British chemists and their French colleagues forms one of the main topics addressed here. The acceptance or rejection of Lavoisier's new chemistry is not to be understood in terms of competing theories of combustion and the rationale underlying them, but as elements in a complex debate about how science should be practised and established publicly. Golinski places special emphasis therefore on the value systems with which different systems of science were associated.

In Britain, the 1790s witnessed a strong reaction to the values of the Enlightenment. Priestley's programme of chemistry as the vehicle of social progress was savaged and ridiculed in the chaos surrounding Thomas Beddoes' discovery of the intoxicating effects of



Photo opportunities — cartoon of the working photographer on the cover of the *New York Daily Graphic* (30 December 1875). The editors were enthusiastic about using photographs: "We propose to illustrate daily occurrences in such a way that the life of our times shall become photographic; and the illustration of events will be as accurate and pleasing and elegant as any word painting in the text". This picture is taken from *The Origins of Photojournalism in America* by M. L. Carlebach (Smithsonian Institution Press, \$29.95 (pbk)).