Book Reviews

A History of Modern Chemistry. By Noboru Hirota. Pp. 788, illus., index. Kyoto University Press: Kyoto, Trans Pacific Press: Melbourne. 2016. £100.00. ISBN: 978-1-920901-14-1.

Like many of his Japanese contemporaries, Noboru Hirota (born in 1937) was of the generation who started their careers in the United States during the 1960s. Later on, he became a professor at Kyoto University in the mid-1970s. A physical chemist for 40 years, Hirota was a specialist in the application of ESR and laser spectroscopy in chemistry before he retired in 2000, when he discovered “the full breadth of chemistry from a distance” (p. 4). Though drawing his inspiration in some works written by historians of chemistry (Joseph Fruton, Robert Forbes, Aaron Ihde, William Brock, Fred Aftalion, Trevor Levere, Bernadette Bensaude-Vincent, Mary Jo Nye, and Carsten Reinhardt), his main sources in the book under review are papers published in current chemistry journals. Aware of the nature of chemistry as a “support science” (p. 2) for physics and biology in the twentieth century, Hirota regards the core of chemistry as “the science of atoms and molecules” (p. 5). His personal narrative on the history of chemistry is organised around these concepts.

This voluminous book is divided into three parts and seven chapters in a rather whiggish chronological order. It is organised around subfields of chemistry (NMR, photochemistry, kinetics, biochemistry, etc.), and assumes an unquestioned idea of progress as reflected in the chapter titles: towards modern chemistry (from origins to the eighteenth century), modern chemistry (from the nineteenth century to World War II), and contemporary chemistry (after 1945). The number of pages devoted to each part (23%, 35%, and 42%, respectively) is in keeping with the author’s aim of dealing with the history of chemistry during the second half of the twentieth century, which is the most original part of the book.

The segmentation into subfields and the numerous cross-references make the reading somewhat difficult, particularly for readers without previous chemical and biochemical training. Another problem is the large number of anachronisms and the extended use of historiographically questionable expressions such as “precursors” or “errors.” The author also repeats outdated mythologies such as Friedrich Wöhler’s synthesis of urea (p. 58). In general terms, Hirota offers an “internal” history of chemistry; with the exception of the last chapter, just a few pages are devoted to the social history of chemistry, or to particular local contexts such as chemistry in Japan (pp. 151 and 381). The chapters labelled “chemistry and society” deal in fact with disparate aspects of the modern chemical industry. The environmental hazards of chemicals are discussed only in a short chapter (pp. 564–569). The cases of ozone layer destruction and DDT are employed as examples of the positive management of toxic disasters by means of new chemical research. In a similar vein, the author claims that global warming and the accumulation of CO₂ are problems still waiting for solution, in which “environment is a challenge that demands much from the science of chemistry” (p. 569). Chemical toxicity and green chemistry are mentioned only on occasion, without a detailed analysis of these issues.

The author employs a large number of short biographies as “anecdotic tales” (p. 5). For this purpose, he largely draws on the nobelprize.org website. The focus is on the most “eminent chemists” (p. 5) but other less well-known chemists are also presented. The last part of the book is more a history of Nobel laureates, with a particular emphasis on biochemistry. The
author acknowledges the narrow scope of this approach, which offers a genealogy of only the great luminaries performing basic research. The copious boxes give more consistent examples of scientific endeavour on topics such as Svante Arrhenius’s pioneering studies on global warming (p. 118), Agnes Pockels’s research on physical phenomena at surfaces (p. 121), the work of Masataka Ogawa on nipponium (p. 304), or that of Gen’itsu Kita and the formation of the Kyoto School (p. 386).

The book under review is representative of narratives written by chemists and mainly addressed to chemists, with its roots in the works of nineteenth-century chemist-historians such as Thomas Thomson or Hermann Kopp. The main aim of these works was to legitimate the progress of chemistry and its ability to improve living conditions. However, Hirota is aware of the dramatic political, economic, and environmental changes of the second half of the twentieth century. He admits that the relationship between science and society is more complex today, and he regrets with some nostalgia “the tendency to emphasize research with short-term objectives” (p. 675). He employs lessons from the past to reveal that the “history of chemistry provides ample evidence that groundbreaking discoveries often resulted from serendipitous findings during the course of ordinary research” (p. 689). To face challenges of the new global society and the “intensely competitive of American society and its philosophy of neoliberalism” (p. 693), the author advocates a radical change in the apprenticeship model. The author’s historical “distance” (p. 4) as a retired scientist allows him to recognise the limits of the linear model of science diffusion and its limitations for producing a positive image of chemistry. In this sense, Hirota’s book is certainly an excellent up-to-date work.

La Porta Magica di Roma, simbolo dell’alchimia occidentale. By Mino Gabriele. Pp. viii + 220, illus., index. Leo S. Olschki: Firenze. 2015. €24. ISBN: 978-88-222-6428-2.

Scholarship on seventeenth-century Italian alchemy is still limited in nature, and often confined to Italian-language contributions. As such, Mino Gabriele’s work on alchemy in late seventeenth-century Italy is not very well known outside the Italian-speaking world. Nevertheless, he has written several important books and articles on the subject, particularly Il Giardino di Hermes (Ianua, 1986), which helped draw scholarly attention to the Italian alchemical circle of Queen Christina of Sweden (1626–1689). The book under review seems derived from Il Giardino, being similarly focussed on the Marquis Massimiliano Savelli Palombara (1618–1680) and his hermetical garden in Rome.

Palombara was one of the most prominent members of Christina of Sweden’s entourage in Rome. As such, Gabriele deems it fit to spend an entire chapter discussing the alchemists surrounding Christina; however, this part is tangential to the subject of the book, and distracts the reader by discussing figures vaguely associated with Palombara, like Athanasius Kircher, Giuseppe Borri, and Francesco Maria Santinelli. Even more confusingly, Gabriele spends an inordinate amount of time making the argument that Santinelli’s famous poem Lux in tenebris is actually authored by the mysterious “Rosicrucian” Federico Gualdi. This part, no matter how interesting, is unrelated to the subject of the book, the Porta Magica of Palombara. By comparison, we are told very little about Palombara himself. Palombara was an intensely private character, particularly in his later life; even so, the reader feels the