

Periodic Tales: A Cultural History of the Elements from Arsenic to Zinc, Hugh Aldersey-Williams, Ecco (HarperCollins), New York, 2011, xvii + 428 pp, ISBN 978-0-06-182472-2, \$29.99.

Periodic Tales is an engaging book about the uses and images of many chemical elements in the wider world outside the chemical laboratory. As such, it is relevant to chemists of all specialties interested in how chemistry and its building blocks construct the materials of art, craft, and power, and how the uses of these materials are associated with various elements.

It is *not*, however, a cultural history of the elements—despite its subtitle. It is neither so scholarly nor so systematic as the subtitle suggests. Surely, the *Bulletin* ought to review a cultural history of the elements; however, it might well choose not to review a book entitled *Periodic Tales: The Curious Lives of the Elements*, which is the name of the same work published in the United Kingdom by Penguin's Viking imprint. The author's prologue gives a more accurate picture of the book's content than does its subtitle, namely an impressionistic and idiosyncratic collection of stories about how selected inhabitants of the periodic table are seen outside the world of chemistry.

The book is aimed at an audience of readers who have some interest in chemistry but who need not have technical expertise in it. Most of Aldersey-Williams's tales describe properties of the featured element to give a jumping-off point for musings on the element's reputation or cultural meaning. For example, gold's color, luster, density, softness, and relative inertness are related to its uses as ornament and money (but not tools or weapons) and its associations with royalty and the sun. Arsenic's reputation as a poison, intentional ("inheritance powder") or otherwise, of course, is due to its toxicity. Cadmium, mercury, and lead are also highly toxic, but the author focused on other properties and other resonances for these elements. Cadmium is discussed as a base of pigments widely used by painters; mercury as a liquid mirror that mysteriously combines fluidity with the properties of metals; and lead as heavy, dull, grey, and plodding.

The author begins his prologue by describing a "periodic table" whose boxes contain artists, film stars, and astronomical objects. He notes that the periodic table has become a cultural icon that transcends chemistry. Toward the end of the prologue, he exchanges the chemists' organizational scheme for one he describes as anthropological: he treats individual elements under the five general headings of power, fire, craft, beauty, and

earth. Each category, fairly broadly construed, includes some unsurprising entries and some seemingly arbitrary ones. For example, gold, iron, carbon, and plutonium are categorized under power, and fittingly enough, as they illustrate economic, mechanical, thermodynamic, and military power. Examples of elements that could be included under more than one of these categories include silver (treated under craft, not power (economic) or beauty) and carbon (which could just as easily have been treated under fire, particularly considering that the carbon essay devotes considerable space to charcoal). Hydrogen would also be easy to include under power or fire, but it is not treated at all. Thallium would be difficult to fit under any of the categories, so fire seems no more arbitrary than any other.

The chapter entitled "Nightglow of Dystopia" is an excellent example of how engaging, wide-ranging, and idiosyncratic are the tales collected in this book. The chapter begins with sodium's yellow light, and how several authors describe sodium streetlamps as a detail in urban dystopian settings. It moves on to how sodium was discovered, not because of its characteristic glow but as a result of Humphry Davy's electrochemical experiments. After a few paragraphs on Davy, including a mention of his talent as a poet, Aldersey-Williams moves to some alkali metals that *were* discovered because of their characteristic light emission, namely cesium and rubidium. Many of the elements mentioned so far in the chapter are used in fireworks. After mentioning the elaborate display in London for which Handel wrote music and depictions of fireworks in works of Dickens and Thackeray, the author describes his visit to Britain's last remaining manufacturer of display fireworks. Aldersey-Williams and the managing director lament that Britain's biggest day for fireworks falls in dank November (Guy Fawkes night) and that "control of big displays" as passed to "people who hate fireworks." Still, to the spectator in the proper mood, the sights, sounds, and even smells of fireworks can be magical.

The author writes quite engagingly when describing properties, uses, reputations, and resonances of elements or their compounds. But he is even more engaging when he steps into the story as a participant or an explicit observer. For example, he described his unsuccessful attempt to reproduce the isolation of phosphorus from urine and his successful isolation of iodine from seaweed. In these cases, or when he muses on his own encounters with the element in question, his essays verge on memoir.

Superficially, then, one might see a resemblance between *Periodic Tales* and Primo Levi's *The Periodic*

Table (Il Sistema Periodico), both of which invoke elements and the periodic table as a springboard for idiosyncratic story-telling. But the resemblance ends there: in this book, the aspect of memoir is like frosting, a treat where it appears, but not the main course; the elements come first. A more apt comparison is to Sam Kean's recent book, *The Disappearing Spoon and Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements*. Both are collections of vignettes about the elements intended for a

general readership who have some interest in chemistry. *Periodic Tales* is about images, uses, and reputations of elements—a broad topic, to be sure, but more focused than Kean's book. In addition, the glimpses Aldersey-Williams provides of himself differentiates his book from *The Disappearing Spoon*, which has no hint of memoir.

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