Periodic Tales

The periodic table of the elements has been an icon in chemistry since 1869. The chemical elements are as important to a chemist as the alphabet for writers. Much has already been written about it by great intellects, but the elements have a much greater importance than being the driving force of chemists. Chemistry was and is a cultural achievement that is comparable with architecture and is worthy not only of being placed in a wider context but also to be observed from different perspectives. The significance of several elements is synonymous with accomplishments of humanity such as the iron age and the silicon age. These historical aspects have also been summarized on numerous occasions. Is there something else of importance apart from classification and facts? Of course—relevant occurrences such as the discovery of the elements and technological revolutions lead to spectacular stories.

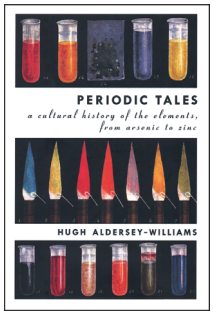
The significance of the elements to society is not a static but a dynamic cultural process that can be both a blessing and a curse. Apart from a few perennial champions, namely elements such as gold, silver, and platinum, elements can fall from grace, as did for example arsenic, uranium, and radium. Conversely, the significance of chemical elements in different epochs can also be interpreted as reflecting society from a cultural–historical or anthropological viewpoint. This topic is particularly interesting, because it contains an enormous number of fascinating, anthropological tales that are an inspirational source for literary interpretations on the fortunate and unfortunate involvement of chemistry, involving power, fame, and vanity.

Anyone who is looking for striking tales and interpretations of the cultural significance of the elements would be enthusiastic about *Periodic Tales* by Hugh Aldersey-Williams and would find it hard to put down. "*The elements do not belong in a laboratory; they are the property of us all. Periodic Tales is a record of the journey with the elements that I never encouraged to take when I was a chemist*," writes Aldersey-Williams in the introduction. With this start, the author presents an unorthodox and invigorating look at the elements in our cultural history and in many areas of everyday life. Aldersey-Williams takes the reader on a personal and emotional journey through the world of several elements along with their discoverers and discovery location.

A highly readable and entertaining conglomeration results, with scenes, anecdotes, and associations regarding the entanglement of the elements in the cultural history of materials, which could also be an inspiration beyond the contemporary. For lovers of chemical experiments ("do it yourself!"), it should also be mentioned that the book also contains amusing descriptions of secret recipes, such as the legendary production of phosphorus from urine by Hennig Brand (1669). The experiments were tested by the author himself, who incidentally has an MSc in chemistry, to prove to himself that he was well-advised to change his profession. The tales, which the author has deftly spiced with current references, are sorted into five main chapters: Power, Fire, Craft, Beauty, and Earth. The original anthropomorphic concept of the author, to present to us the elements according to their fates in various cultural epochs, is behind this: certain elements are still today synonymous for empires, superpowers, hierarchies, sources of light, weapons, poisons, elixirs, and geographical locations. The book is not only recommended reading for generalists and chemical laypersons, but also for readers looking for a diversion, for whom the appetite for more usually increases with the quality of the sample, because the stories can be read in an unsystematic fashion without any loss of enjoyment.

The first chapter, "Power", consists of short, informative episodes regarding the eminent roles of metals such as gold, platinum, palladium, iron, uranium, plutonium, and mercury, which for example stand for the manifestation of empires (for example the Spanish colonial empire in the 15th century through gold and platinum), the development of technological advantage such as in the case of the complex story of iron, and the race to develop the atomic bomb with the "Manhattan Project". The reader is presented many intriguing relationships, such as how the gold, silver, and bronze medals for the Olympic Games came to be and why the Nobel Prize medals of Max von Laue and James Franck were dissolved with aqua regia by the famous atomic physicist Niels Bohr in Copenhagen, or why the Russian poet Alexander Blok demolished the writing desk of his father-in-law Dmitri Mendeleev.

In the second chapter, "Fire", sulfur and phosphorus are portrayed as archetypical flammable elements. Of course the stirring story of the discovery of oxygen, the fire-accelerant par excellence, cannot be absent. That the discovery of soda water and its successful commercialization by the Swiss Jakob Schwebbe is closely tied is probably not known by most. Regarding fireballs and destruction by elements as in the case of phosphorus (napalm in the Vietnam War), the chapter also highlights the infamous role of chlorine in the First World War, the use of which is closely tied to the complex fate of the physical chemist and Nobel laureate Fritz Haber. The other halides were



Periodic Tales
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treated more mercilessly by history, and in particular fluorine and iodine, which are often found in drinking water, toothpaste, and table salt. The "illuminating" tales of sodium lamp, the discovery of radium, and of the elements that are to be found in fireworks, or in the case of helium that belong to the light of the sun, are also highly recommended.

The third chapter, "Craft", make clear that, for example, we would not have bells without tin and that silver led to photography. We are confronted by the properties of metals such as zinc, aluminum, copper, titanium, tantalum, and niobium not only in architecture, art, and power lines, but also in medicine. The last chapters, "Beauty" and "Earth", form a seamless series of subtle and ingenious episodes that in some cases arise from the author's journeys to the places of discovery of elements in Sweden, where he was inspired by the magic of discovery at the source.

This book is a joy to read because it encourages the curiosity, marvel, and communication of many discoveries, inventions, and lessons from the world of materials. The book can thus be wholeheartedly recommended to every scientist, cultural studies, interested laypersons, and in particular students of all disciplines.

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