

## A Tale of 7 Elements

There is a plethora of books on the discovery of the chemical elements, such as *Discovery of the Elements* by M. E. Weeks. Most of these focus on the abundant and well-known elements. The book by Eric Scerri, in contrast, describes the history of the discovery of the periodic table's rarest members, some of which have no detectable natural abundance at all.

In his previous book *The Periodic Table*, Scerri describes in detail the history of the periodic table. A revised version of the first two chapters thereof is included in *A Tale of 7 Elements*. One of Mendeleev's biggest achievements was his prediction of several missing chemical elements. He based his arguments for this prediction on the atomic mass and the chemical and physical properties of the elements. This was necessary because the elementary particles had not yet been discovered. Henry Moseley suggested a groundbreaking improvement: he ordered the elements by their nuclear charge (atomic number). It was then obvious that between hydrogen, with its nuclear charge of 1, and uranium (92), exactly seven elements were missing: 43 (technetium), 61 (promethium), 72 (hafnium), 75 (rhenium), 85 (astatine), 87 (francium), and 91 (protactinium).

Scerri describes in an entertaining way the discovery of these seven elements. All of them are rather scarce on earth. Most have only radioactive isotopes. They were discovered in the politically turbulent era of the two world wars. It becomes apparent that, with hindsight, the question of the true discoverers is often impossible to answer unambiguously: when, exactly, is an element discovered? Is it sufficient to have proven its existence or is it necessary, for example, to produce and isolate an amount of substance visible to the naked eye? The latter has not yet happened for some

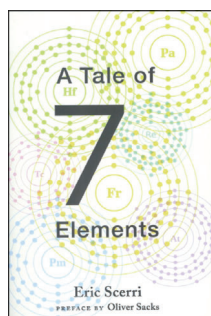
elements, such as astatine. In the first half of the 20th century, the competition between individuals for scientific recognition became augmented by the competition between governments, political parties, and whole nations. Several discoveries were discredited because the key scientists involved belonged to the political enemy. The scarcity of the elements, as well as the strained political situation, often resulted in several persons claiming the discovery. Scerri introduces them into the story, no matter whether they are well known or not, and regardless of their claims being valid or not. It is not in every case that the big and famous ones nowadays remain as the accepted discoverers.

In the introduction, Scerri provides an overview of the topics covered, and muses about the sociology of science and the question of exactly how to define the discovery of an element. That is followed by two chapters about the development of the periodic table. Each of the seven elements is covered in a separate chapter, in the chronological order of their discovery. The book concludes with a chapter about the purely artificial elements 94 to 118.

*A Tale of 7 Elements* is addressed to everyone interested in the history of chemistry. Only a basic knowledge of the constituents of atoms is sufficient to follow the story. Each chapter includes funny anecdotes and interesting comments, although some of them are hidden between the literature references in the end-notes, which disturbs the flow of reading a bit. An aid for the reader not familiar with the build-up of the periodic table may be to have a copy of the same at hand. It is enjoyable to read the book. The first two chapters encourage to also have a go at the author's previous book.

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