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BOOK REVIEW

Eric R. Scerri: The periodic table: a very short introduction

Oxford University Press, Oxford, England; New York, NY, 2011, xx+ 147 pp., ISBN: 978-0-19-958249-5 (paperback) $11.95; £7.99

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A quick question! Who's the first name that comes to mind when the periodic table is mentioned? Dmitrii Ivanovich Mendeleev is the obvious and universal answer. And the second name? Most of you would probably agree with my answer: Eric R. Scerri, Lecturer in Chemistry and History and Philosophy of Science at the University of California, Los Angeles, and founding editor of this journal, devoted to the philosophy of chemistry, another of his specialties.

Through the years I have followed Scerri's work on the periodic table, reading his numerous articles and reviewing his two previous books (Scerri 2007; Laing and Kauffman 2007; Scerri 2009; Kauffman 2011). In his latest book he comprehensively but succinctly examines this true cultural iconic symbol of science that is used by artists, advertisers, and of course, scientists in all fields. It is almost as familiar to the general public as the chemical formula for water, and an understanding and appreciation for it is essential to the physical sciences. He conclusively demonstrates that, almost a century and a half since its inception, the periodic table is still very much a subject of interest and development.

In Chapter 1, "The elements" (9 pp., the shortest chapter), Scerri considers what he calls the "occupants" of the periodic table—the elements. Beginning with the four elements of the ancient Greek philosophers—earth, air, water, fire, and water, he deals with the five Platonic solids, Lavoisier's definition and list of the elements, and their discovery, names, and symbols.

Chapter 2, "A quick overview of the modern periodic table" (20 pp., the longest chapter), lays out some thematic foundations, defines some key terms, and considers forms of the table (More than 1,000 different forms have been published), typical groups of elements in the table, the periodic law, reacting elements and ordering the elements, different representations of the periodic system, recent changes in the system, and understanding the system.

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Chapter 3, "Atomic weight, triads, and Prout" (12 pp.), begins the story of the development of the modern periodic system, beginning with its birth in the 18th and 19th centuries.

Chapter 4, "Steps toward the periodic table" (16 pp.), begins with the Karlsruhe Convention (1860) and reviews the contributions of Émile Béguyer de Chancourtois (1862), John Alexander Reina Newlands (1863), William Odling (1864), Gustavus Hinrichs (1864, 1865, and 1869), and Julius Lothar Meyer (1864 and 1889).

Chapter 5, "The Russian genius—Mendeleev" (14 pp.), discusses the work of the most famous Russian scientist of the modern era, including his discovery of the periodic system (1869), the nature of the elements, both his successful and incorrect predictions, and the inert gases.

Chapter 6, "Physics invades the periodic table" (12 pp.), reviews the discovery of radioactivity, X-rays, and isotopes as well as the work of Ernest Rutherford and Henry Gwyn Jeffreys Moseley.

Chapter 7, "Electronic structure" (14 pp.), surveys discoveries concerning the arrangement of electrons in atoms and the influence of early quantum theory, especially that of Niels Bohr, in explaining the periodic table and culminating in Wolfgang Pauli's introduction of a fourth quantum number and his Exclusion Principle.

Chapter 8, "Quantum mechanics" (11 pp.), explores Werner Heisenberg's Uncertainty Principle and the mutual explanatory relationship between quantum mechanics and the periodic table.

Chapter 9, "Modern alchemy: from missing elements to synthetic elements" (13 pp.), surveys the elements that chemists and physicists have synthesized up to element 114.

Chapter 10, "Forms of the periodic table" (26 pp.), explores questions such as: Why have so many periodic tables been published and why are there so many currently on offer in textbooks, articles, and on the Internet? Is there such a thing as an "optimal" periodic table? Does such a question even make sense, and if so, what progress has been made towards identifying such an optimal table? Scerri concludes that in terms of chemical and physical evidence he doesn't think we can yet settle the issue of a definitive periodic table.

Oxford University Press' very short introductions (www.oup.com/vsi) are written by leading authorities for anyone desiring stimulating and accessible brief introductions to a wide variety of subjects in history, philosophy, religion, science, and the humanities. This series of inexpensive paperbacks, which began in 1995, now comprises 300 volumes, published in more than 25 languages worldwide. I am pleased to recommend highly Scerri's contribution to the series, which would make an ideal modestly priced gift to anyone interested in the "central icon" of the "central science," especially students and young persons in general.

References

Kauffman, G.B.: Book review of Scerri, E.: Selected papers on the periodic table. Imperial College Press, London, England; Distributed by World Scientific Publishing Co., Singapore/Hackensack, NJ (2009). J. Chem. Educ. **88**, 261–262 (2011)

Laing, M.J., Kauffman, G.B.: Book review of Scerri, E.R.: The periodic table: its story and its significance. Oxford University Press, Oxford, New York, NY (2007). Chem. Educ. **12**, 445–447 (2007)

Scerri, E.R.: The periodic table: its story and its significance. Oxford University Press, Oxford, New York, NY (2007)

Scerri, E.: Selected papers on the periodic table. Imperial College Press, London, England; Distributed by World Scientific Publishing Co., Singapore/Hackensack, NJ (2009)