JOURNAL OF CHEMICAL EDUCATION

Book and Media Review

pubs.acs.org/jchemeduc

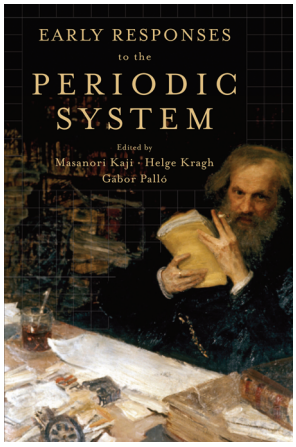
Review of *Early Responses to the Periodic System*

Robert E. Buntrock*

Buntrock Associates, Orono, Maine 04473, United States

Early Responses to the Periodic System, by Masanori Kaji, Helge Kragh, and Gábor Palló, Eds. Oxford University Press: Oxford, UK and New York, USA, 2015. xvii + 1−322 pp. ISBN 978-0190200077 (hardcover). $35.

Many renditions of Mendeleev's discovery of the periodic table and system have been published, but only a few discuss in depth how scientific communities perceived and utilized this landmark discovery. Notable resources for previous treatments include van Spronsen,[1] Scerri,[2] and Brush,[3] which are cited in the introduction of this book. Inspired by presentations at two meetings, 15 historians of science cooperated in authoring this book, which was edited by three of them, to compare the reception of the periodic table and systems in 12 countries in the 50-year time period from 1870 to 1920. The first date coincides with Mendeleev's publication of his discovery and the last marks the dawn of the age of quantum mechanics. The subsequent period is deemed by the editors to be worthy of another book.



Cover image provided by Oxford University Press and reproduced with permission.

In the introduction of *Early Responses to the Periodic System*, parameters of the discussion are outlined, which is followed by 12 chapters, each covering developments in one country. Through diligent research of original contemporary documents and books, the authors of the subsequent chapters answer most or all of the relevant questions regarding acceptance of the periodic system. Their resources were articles, presentations, textbooks, and communications in the popular media of the time. Among the approximately three-dozen questions answered are the following: What were the earliest articles describing periodicity? Were they by local authors or translations or local perceptions based on predominant practicality or theoretic emphasis? and Did the perceptions change? The effects on research and teaching are important as well as discussion of criticisms of periodicity or even rejection, and implications on descriptions of the structure of matter and atomic theory. Descriptions of local communications of the periodic system are presented, including the use of translations and the media involved, including public media. The impact of the periodic system and inclusion in textbooks and reference books is especially important. In some countries, inclusion of the periodic table in textbooks did not occur until after the stated time period.

The 12 countries covered are Russia, Germany, Britain, France, Central European/Czech-speaking areas, Sweden, Denmark, Norway, Spain, Portugal, Italy, and Japan. Although one author is American, the United States is not covered, probably because the developments in the United States were covered previously.[3] Reasons are given for the variances in acceptance and implementation of periodicity, including politics and prevailing emphasis on theoretical or practical chemistry. Emphasis on the latter tended to delay acceptance. The degree and rapidity of acceptance of the periodic system in a given country also depended on the strength of the educational system. In Russia and Japan, both lacking strong educational systems at the time, acceptance was more rapid.

The editors note deficiencies in the presentation, including the need to cover additional countries and areas, the need to expand the time period of coverage (i.e., the quantum era), and the need for additional graphic representations of the periodic table. However, the latter is covered in other sources.[4]

Early Responses to the Periodic System is recommended for teachers of chemistry, history of science and chemistry, and their more advanced students.

AUTHOR INFORMATION

Corresponding Author

*E-mail: buntrock16@roadrunner.com.

Notes

The authors declare no competing financial interest.

REFERENCES

(1) van Spronsen, J. W. *The Periodic System of Chemical Elements: A History of the First Hundred Years*; Elsevier: Amsterdam, 1969.

(2) Scerri, E. *The Periodic Table: Its Story and Its Significance*; Oxford University Press: Oxford, U.K., 2007.

(3) Brush, S. G. The Reception of Mendeleev's Periodic Law in America and Britain. *Isis* **1996**, *87* (4), 595−628.

(4) Mazurs, E. *The Graphic Representation of the Periodic System during 100 Years*; University of Alabama Press: Tuscaloosa, AL, 1974.

DOI: 10.1021/acs.jchemed.6b00026
J. Chem. Educ. XXXX, XXX, XXX−XXX