Editorial 47

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The issue opens with a further paper from Novaro and Ramirez-Solis from Mexico on the vexed question of the placement of helium in the periodic table. In this contribution the authors appeal to some of their more recent, and more accurate, calculations and still conclude that helium should sit at the top of the noble gases rather than above beryllium in group 2.

Conal Boyce from Minnesota provides an intriguing article lying at the borders of chemical education and the philosophy of chemistry and physics. The basic premise of the paper is that the traditional order of presentation in which the Pauli principle is followed by the aufbau and finally Hund's principle is mistaken. Instead Boyce proposes what he calls a "tighter approach to aufbau".

Giovanni Villani, from Pisa in Italy, presents an original approach to the concept of "system" that he examines across various disciplines. This includes the argument that chemistry is the first true systematic science that is based on an analysis of the concepts of molecule and compound, while drawing on historical sources.

Green chemistry is a topic that has been surprisingly under-represented in this journal. This omission is corrected here by a Brazilian contribution from Marques and Machado who discuss green chemistry in relation to environmental sustainability.

Amihud Gilead from the University of Haifa considers the relative virtues of actualism and a consideration of "pure possibilities" as exemplified in a number of episodes from the history of modern chemistry including the discovery of the structure of protein molecules, the existence of quasi-crystals, that of noble gas compounds and the role of CFCs in the destruction of the ozone layer.

The issue closes with an intensifying debate between the chemical philosopher Paul Needham and the chemical historian Alan Rocke on the role of atomic theory in 19th century chemistry. Needham has previously been a critic of the explanatory role of

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Dalton's atomic theory, a position that Rocke criticized in a recent article in this journal. In the exchange presented here each author seeks to clarify further what each one believes about Dalton's theory, explanation, and the role of theory and experimentation in general.

Last but not least, the distinguished author and historian of chemistry, George Kauffman reviews a recent book on the history and philosophy of the periodic system.