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A Review of "Neither Physics nor Chemistry: A History of Quantum Chemistry"

Joel F Liebman [a]

[a] Department of Chemistry and Biochemistry, University of Maryland, Baltimore County, (UMBC), 1000 Hilltop Circle, Baltimore, MD, 21250, USA

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Book Review

Neither Physics nor Chemistry: A History of Quantum Chemistry, by K. Gavroglu and A. Simões, MIT Press, Cambridge, MA, 2012, ISBN 978-0-262-01618-6, xiv + 351 pp., $40.00.

This is part of the MIT series of monographs "Transformations: Studies in the History of Science and Technology," under the general editorship of J. Z. Buchwald. The current volume is an unusual book in that it deals with a theoretical discipline that is highly mathematical and abstract in its origin, coupled inseparably with computer technology, and increasingly ubiquitous in its appearance in both the undergraduate and graduate curriculum and its application to diverse areas of both the biological and physical sciences. Quantum chemistry is a relatively new area of study, still under 100 years old since its inception, and very much more recent in its name and the glories of its study. Much of what is discussed is almost frighteningly recent—if some of the major discoverers are venerated as ancient ancestors, and their discoveries are now the subject of historical discourse, much of this overlaps with the reviewer's personal history as well. The reviewer of this book recalls meeting some of the key individuals cited in the current volume at conferences, workshops, and seminars when he was a student, reading their seminal works when they were just published as part of his education, making his own professional and even personal decisions based on freshly posted signposts and recently trod paths of pioneers.

The book is clearly and personably written. There are numerous citations to the primary and secondary research literature in physics and in chemistry, and though their contents add to the understanding and enjoyment of the book, they are not necessary. One does not need to be multilingual nor to be able to read sheet music to enjoy opera. The book has very few mathematical equations and chemical structures accompanying a verbal, even conversational, style. In this regard, the reviewer believes that the professional theoretician, and even the undergraduate and graduate student of non-molecular natural sciences and even the "nuts and bolts" experimentalist and *a fortiori*, the engineer, the participant in the social sciences and the humanities should feel at home with the contents of this volume. Being a theoretical chemist, such as this reviewer, is neither necessary nor sufficient for the understanding and appreciation of this volume. I note now that presumably in the name of brevity, there were necessary omissions such as that of Leland C. Allen and his group at Princeton, and Ira N. Levine and his now classic, multi-editioned and still evolving, undergraduate text. The reader may note other seeming omissions—these should not affect the understanding and appreciation of this volume.

Let me close this laudatory review by noting that this volume has a very unusual cover, one sadly not transcribed from the book jacket onto the book cover. More precisely, there are two items, neither to be identified by many readers nor explained by the authors. One is a correlation diagram for two atom molecules (a diatomic was once described as a molecule

with one too many atoms) and the other is a slide rule (an earlier, seemingly almost essential part of attire).

Joel F Liebman
Department of Chemistry and Biochemistry
University of Maryland, Baltimore County, (UMBC)
1000 Hilltop Circle
Baltimore, MD 21250, USA