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## Book reviews

*Molybdenum Enzymes, Cofactors, and Model Systems*  
E.I. Stiefel, D. Coucouvanis and W.E. Newton (Eds.),  
ACS Symposium Series 535, American Chemical Society,  
Washington, DC, 1993, pp. 387 + xi, \$94.95 ISBN  
0-8412-2708-X

Molybdenum is the only element from either the second and/or the third transition series to be a normal constituent of biological systems. Its importance in nitrogen fixation has been recognised for over 60 years, and in other enzymes in the nitrogen, carbon, and sulfur cycles for rather less. Nitrogenase is perhaps the odd enzyme out in terms of its complexity and because the molybdenum is bound in a cofactor (FeMoco) which is different from that (Moco) apparently common to all other molybdenum enzymes. This book is a timely and informed set of reviews of our understanding of the function of molybdenum in biological systems.

The book opens with a survey of the occurrence and function of molybdenum enzymes by one of the foremost researchers in molybdoenzymes, E.I. Stiefel, followed by discussions of the various molybdenum-cofactor enzymes, all by acknowledged experts in the various topics. The second section is devoted to nitrogenase and nitrogenase models. It is salutary that notwithstanding the thirty years which have passed since cell-free extracts of nitrogenase have become available, and despite the enormous amount of work in the genetics, biochemistry, and chemistry of nitrogen fixation, culminating in some hard structural data, we still do not know how it works. What has been achieved are tremendous advances in techniques, in structural chemistry, the application of NMR and EPR spectroscopy, genetics, and coordination chemistry to specify just a few of the areas, which have implications for many aspects of science. This book is a challenge to those who insist on financially quantifiable proceeds for every piece of research. I would recommend it to anyone wishing to learn of the breadth, possibilities, and achievements of bioinorganic chemistry. The reviews are authoritative, and from most of the world

leaders in their various areas. It should be of value to researchers and students alike.

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*Catalysis of Organic Reactions*  
John R. Kosak and Thomas A. Johnson (eds.), Chemical Industries Series 53, Marcel Dekker, New York, 1993, pp. 581 + xv, USD185  
ISBN 0-8247-9140-1

The chapters of this book contain the papers presented at the 14th Conference on "Catalysis of Organic Reactions" which was held at Albuquerque in April, 1992. The 47 contributions cover a wide range of topics, including asymmetric hydrogenation and novel hydrogenation catalysts particularly designed to facilitate the reduction of specific functional groups. There are chapters on catalytic oxidation and on the production of important industrial intermediates such as phenols, monomers and various polymers and pharmaceuticals.

These short chapters provide a useful snapshot of the widespread importance of catalysis particularly in an industrial environment. Indeed many of the chapters are written by chemists working in industrial laboratories, and reveal the extensive development work that is often required not only to optimize a process but to make the catalytic system reliable and reproducible. They also provide useful examples of a facet of catalysis that is rarely appreciated by students. Other chapters describe the importance of an understanding of the role of surfaces in catalysis and the variations and improvements that can be achieved by using different supports.

If there were to be a criticism of the book, it would be that its value would be enhanced by an introductory chapter devoted to an overview of the current state of

the art and the recent significant developments. The book would also benefit from a clearer grouping of the chapters in terms of the topics to which they refer. Nevertheless, this is an interesting collection of articles with many examples that illustrate the development and application of catalysts in organic reactions.

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*Leaving No Stone Unturned: Pathways in Organometallic Chemistry*

F. Gordon A. Stone (*Profiles, Pathway, and Dreams: Autobiographies of Eminent Chemists*, Jeffrey I. Seeman, Series Editor) American Chemical Society, Washington, DC, 1993  
ISBN 0-8412-1826-9

This book is one of a series of 22 volumes, published by the American Society, each being essentially a (scientific) autobiography of an eminent organic chemist. With few exceptions (Professors A.J. Birch, E. Havinga, E. Huisgen, R.U. Lemieux, T. Mukaiyama, K. Nakanishi, T. Nozoe and V. Prelog) the authors have either been citizens of the USA or work there.

The inclusion of Professor Gordon Stone among this list is, therefore, exceptional in two major respects. First that he is an inorganic chemist, and second that he worked in the UK until his formal retirement in 1990 from Bristol, when he joined Baylor University, Texas.

Readers of this journal will, of course, be well aware of the massive contributions which Professor Stone has made over the years, starting with his early career as a Ph.D. student with Professor Emeléus at Cambridge and postdoctoral work with Professor Burg at the University of Southern California. A very productive eight year period at Harvard was followed by a short interlude at Queen Mary College, leading to his extremely fruitful time (1963–1990) in Bristol.

Gordon started his research career in the area of boron chemistry, this was briefly continued at Harvard; but he rapidly changed his main emphasis to organometallic chemistry starting with cyclooctatetrene–iron complexes. He then expanded his work into a wider range of  $\pi$ -complex chemistry including allyl-metal complexes, and made important contributions to fluorocarbon complexes of transition metals.

When Gordon arrived at Bristol as the foundation Professor of Inorganic Chemistry, the department was still housed in its old building, but by the late sixties the splendid present laboratories were ready for occu-

pation. Gordon formed a close and continuing friendship with the young Edward Abel. Among the early appointments made in Bristol in the field of organometallic chemistry were those of Michael Green and Peter Timms.

Bristol under Stone became a centre of organometallic chemistry; other major members of the faculty have included Selby Knox, Judith Howard (now in Durham), Michael Bruce (now in Adelaide) John Spencer (now of Salford), Guy Orpen and John Jeffrey. There was a continuing stream of sabbatical visitors and postdoctoral fellows, many of the latter from Spain.

In the early years, at Bristol, Gordon continued to work in the areas which he had initiated at Harvard. He made particularly significant contributions to the chemistry of complexes of platinum, particularly those in oxidation state zero, including the homoleptic alkene complexes.

Another field in which Gordon has continued to be active is that of metallocarboranes and of metallocycles derived from carbenometal or carbynometal complexes.

The book provides not only a scientific autobiography, but places Stone's work in the context of some wider trends that have developed over the years in organometallic chemistry.

Gordon formed close personal relationships with many scientists, above all those that have worked with him. Numerous others, including this reviewer, have enjoyed his friendship and the hospitality provided by him and Judy Stone. These features are well brought out, not only in reminiscences, but also in many photographs.

Although the book primarily charts a scientific journey, Gordon pays generous, and much deserved, praise for the support he has received from his wife Judy, who has been a constant partner in all his activities, and who is also greatly cherished by so many chemists.

The book is exceedingly readable. Those that do so will warm to its author, not only for his contributions to chemistry, but for his personal and professional qualities. He was a major figure in British science, having been a Vice-President of the Royal Society, and a Davy Medalist. He was active in the affairs of the Royal Society of Chemistry, having been President of its Dalton Division. He was an important member or chairman of various UK national science committees.

Professor Stone has received many other honours including the Longstaff Medal of the Royal Society of Chemistry and the distinction of being appointed CBE.

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