

Mammoths and man

Andrew Hill

Paleoecology of Beringia.

Edited by David M. Hopkins *et al.*

Academic Press: 1983. Pp. 489. \$37, £24.60.

BERINGIA is a vast tract of land and sea near the top of the globe. The region links Siberia and Alaska, and forms the corridor along which humans, in the manner of Moses, originally reached the New World from the Old when the seas were parted. For the anthropocentrically-minded the nature and timing of this immigration is the area's principal source of fascination, but there are equally interesting problems of more general environmental and palaeoecological import. These centre on an apparent anomaly — climatic and palaeobotanical information suggest that primary productivity was unable to support the large herds of mammoth, bison, horse, reindeer and other ungulates known to have lived there.

Paleoecology of Beringia comes from one of the late, lamented Burg Wartenstein conferences of the Wenner Gren Foundation, and reflects the diversity and range that characterized many of these valuable events. It is almost mandatory these days to say of your proceedings' volume that it is 'more than a conference volume', but here it really appears to be true. The book is not just a collection of disparate items assembled before a meeting, for several of the papers, and much of the material in others, are the product of fresh ideas and insights that were provoked by the conference itself. All of the contributions have been brought up to date to include work carried out subsequently, and often refer to pertinent data still in press.

Twenty-four chapters are grouped into a number of sections dealing with palaeogeography and geology, palaeovegetation, the steppe-tundra concept, palaeoclimates, the mammals and the problem with primary productivity, and man in Beringia with his possible role in mammal extinctions. Each section is drawn together by a short introduction, and the main points of the book are summarized in a long concluding chapter written by the editors.

Among the contributors are Russian workers in eastern Beringia as well as their American counterparts; another useful feature is the inclusion of reports by specialists previously unconnected with the area, such as those involved in climatic modelling, and in the study of modern elephants and the people who hunt them.

Many of the problems remain. On a conservative estimate, people appeared in Beringia about 11,500 years ago. More extreme assessments, relying upon variously acceptable data from modified animal bones, range back as far as 125,000

years. The degree to which human beings were instruments in the dissolution of the ecosystem is still debated. A number of disjunct distributions of organisms are intriguing, and the productivity paradox is still not entirely explained.

The book is a valuable and current summary of what is known about this important region in the later Pleistocene. It is interesting that the productivity paradox has necessitated an abandoning of simple modern analogies, and has led to a move away from naïve contemporary compari-

sons to something more subtle and complex. Possibly we are dealing here with something quite different from any ecosystem found today. In this, and other ways, *Paleoecology of Beringia* is methodologically instructive for ecologists who work on times even more remote, and on mammals other than mammoths and man. □

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Carrying iron

Takashi Yonetani

Iron Porphyrins, Parts 1 and 2.

Edited by A.B.P. Lever and Harry B.

Gray.

Addison-Wesley: 1983. Pp. 540. Part 1 £29, \$38.95; Part 2 £28.45, \$37.95.

THE AMAZING diversity of biochemical reactions catalysed by haemoproteins is well matched by the variety of the valency and spin states and redox potentials exhibited by their prosthetic group, iron porphyrins. Thus, iron porphyrins are an ideal probe through which to gain insight into the structure-function relationship of haemoproteins. These two books, together comprising the first volume of a new series, *Physical Bioinorganic Chemistry*, provide a succinct overview of modern physical methods that are being applied to the study of iron porphyrins.

Part I starts with a review by Loew of how various approaches in theoretical chemistry can be applied to correlate spectroscopically-observable properties of iron porphyrins with their molecular properties. Scheidt and Gouterman then describe high-resolution molecular structures of iron porphyrins, and present semi-quantitative, theoretically predictable correlations between the valency and spin states of the metal ion, the nature of axial ligands, and the geometric structure of the molecule. In the following chapter, an incisive account of the analysis of the electronic spectra of haemoproteins by polarized single-crystal spectrophotometry, Makinen and Churg give a vivid demonstration of the importance of the interplay between theory and experiment in interpreting the complex electronic spectra of iron porphyrins and haemoproteins. Finally, Goff describes some well-selected nuclear magnetic resonance studies, especially paramagnetically-shifted nuclear magnetic resonance, to demonstrate the analytical capabilities of the technique in investigating the electronic, geometric and dynamic properties of iron porphyrins in solution.

Part II opens with an article by Mitra on magnetic susceptibility; highly orientated towards physics and chemistry, this

introduces theoretical and experimental approaches to iron porphyrins. Palmer covers theoretical and experimental aspects of electron paramagnetic resonance of haemoproteins, while Spiro's account of resonance Raman spectroscopy of metalloporphyrins and haemoproteins provides a good introduction to this relatively new spectroscopic technique which has emerged to provide precise data on the geometric, electronic and dynamic properties of metalloporphyrins in solution. Concluding the second volume is an article by Kadish on the electrochemistry of iron porphyrins; here the author gives exclusive attention to experimental aspects of redox-potential measurements of iron porphyrins in non-aqueous media.

Some contributors have chosen to limit themselves to either iron porphyrins or haemoproteins, even though a number of advances have been made in other areas. Nonetheless all the contributions are based on well-established theoretical and experimental results, so that together these two volumes will serve as a valuable reference work. The reader will require a basic knowledge of physical chemistry to fully appreciate many of the techniques discussed, but clear descriptions, cogent explanations and well-chosen illustrations will make the books useful to the non-specialist wanting a concise overview of these modern methods. In this day of specialization, however, the comprehensive coverage will perhaps be valued most by experts wishing to acquaint themselves with recent progress in techniques allied to their own. □

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A fresh analysis

The first volume of a third edition of *Methods in Enzymatic Analysis*, edited by H. Bergmeyer and published by Verlag Chemie, Weinheim, is now available.

The first single-volume edition, published in 1963, was followed by a second edition of four volumes in 1974. To keep pace, ten volumes are planned for this edition. The price is DM 230 for a single volume but DM170 for those who subscribe to the complete edition.