

a list in the front of the book, by volumes on twenty-four further subjects.

P. J. SCHEUER

Peptides

The Organic Chemistry of Peptides. By Harry D. Law. Pp. viii+235. (Wiley Interscience: London and New York, December 1970.) £4.25.

ONE of the attractions of peptide research lies in the varied chemistry which it involves; whereas the name centres attention on the backbone of the molecule, the physical, chemical and biological properties depend largely on the nature and position of the side chains—alkyl, benzenoid, and heterocyclic—with a selection of simple functional groups. An immense amount of work has been devoted to the perfection of the organic reactions used in the analysis, structural investigation, and synthesis of peptides, and not all the results of this research have been assimilated into the body of general organic chemistry. This book is therefore most welcome and timely. It reviews methods for the determination of the primary structure of peptides and methods of synthesis, discussing the underlying chemistry; naturally occurring peptides (in which are included insulin and ribonuclease, and those with structural features not typical of proteins) and their synthesis are surveyed; there is a valuable chapter on structure and biological function, which rightly includes proteins in its scope and outlines proposed mechanisms of enzyme action; and the volume ends with an account of the biosynthesis of proteins.

An interesting feature is the incorporation in the text of exercises designed to make the reader think ahead by presenting him with the problem which is to be answered in the following section. This is an approach which deserves careful evaluation and consideration for more general use. Other exercises are of the more usual kind, not specifically dealt with in the text but relevant to material already discussed, and answers are appended.

I noted very few errors but comment is needed on one point. In the discussion (page 84 *et seq.*) of active esters reference is made to the relationship between the pK_a of the phenol and the rate of aminolysis of the ester derived from it, and the data of Pless and Boissonnas are quoted; these figures refer to solutions in aqueous dioxan. It is unfortunate that in the subsequent passages these same pK_a values (about two units higher than those for aqueous solutions) are used without qualification, and although the answer to exercise 3.16 (page 214) refers to this point, it seems too much to hope that the reader should not be confused to find other values quoted elsewhere.

The text is intended for use in honours degree courses at the end of the penultimate year or early in the final year. It is perhaps questionable whether, if a broad grounding in chemistry is to be given, the time required can really be afforded. The author has shown convincingly that important chemical concepts can be exemplified very suitably in peptide chemistry, but of course it does not necessarily follow that these are the most appropriate examples. To me it seems probable that this volume will be found most useful in graduate studies; indeed, its price is likely to put it out of the reach of most undergraduates, unless a paperback edition is offered. As a text for graduates and particularly for those starting research in this field its value would be greatly enhanced by the inclusion of references to the original literature.

G. T. YOUNG

Science of the Sea

The Science of the Sea: a History of Oceanography. Edited by C. P. Idyll. Pp. viii+280. (Nelson: London, 1971.) £6.30.

THIS book, the latest of a number of popular books dealing with the oceans which have appeared in recent years, covers a wide range of topics, going beyond the science of oceanography to include a variety of applications. Its subtitle is a valid description in the sense that the historical development of each topic is used to introduce an account of its present status. In most cases an assessment of prospects for the future is also given.

In the preface, the history of oceanography as a science is said to have begun on January 3, 1873, when HMS Challenger made the first soundings and dredge hauls of its famous voyage. This definition has not, however, inhibited the authors from going much further back in tracing early work, even to the voyage of Queen Hatshepsut of Egypt to the "Land of Punt" in about 1500 BC. One author cites the view that Aristotle was the father of marine biology and another that chemical oceanography was born when Robert Boyle published a well known paper in 1670. In a date list at the end of the book, Edward Forbes and Matthew Fontaine Maury are credited as the "founding fathers of oceanography".

Of the ten chapters in the book, each by an expert in his field, the first five are concerned with the more basic scientific aspects and cover the physics, chemistry and biology of the sea and the topography and geology of the seabed. Two of the following chapters are devoted to fisheries and fish farming and another to mineral resources and power. There is a chapter on underwater archaeology, which starts with a brief history of

diving techniques, and the final chapter deals with submarines and other underwater vehicles and the attempts which have been made to set up seabed habitats.

In a collective work of this kind there is always the danger of repetition and unevenness of style. On the whole these dangers have been avoided and the nine authors who have contributed to the book have achieved a coherent treatment. Much of their subject matter will be familiar to students of oceanography and to people whose general scientific interests have kept them in touch with marine topics. Such readers will probably find more interest in the ideas which the various contributors express about likely developments in the future. Some make rather cautious and sober assessments, as in the chapters on food resources of the sea and the prospects for fish farming. The latter has great possibilities for expansion but there are also real problems to be overcome. The writer makes the point that these are socio-economic rather than biological, though perhaps the more difficult for that. The author of the final chapter, referring to natural resources of the sea in more general terms, allows himself a more sanguine view which ventures into the realm of science fiction.

The book is well illustrated throughout with photographs and drawings. In addition there are four "colour essays", inserted at appropriate places in the text, each consisting of eight pages of coloured illustrations prefaced by a short introduction. The chief value of the book is probably as a layman's guide to the oceans: what we know about them today, how this knowledge has been acquired and what developments may be expected in the future. In taking such a broad view it cuts across the boundaries of geography, history, science and technology but it is none the worse for that.

K. F. BOWDEN

Many Particle Systems

Quantum Theory of Many-Particle Systems. By Alexander L. Fetter and John Dirk Walecka. (International Series in Pure and Applied Physics.) Pp. xiv+601. (McGraw-Hill: New York and Maidenhead, March 1971.) £9.35.

DURING the past twenty years, the fundamental theory of many body systems has been developed into an imposing and solid edifice. Although various aspects of this theory appear in several books and monographs, no really thorough and satisfactory text has been available for the use of students proposing to study, and ultimately to work, in this field. This book has been written to remedy this situation by two university teachers