

contraction", or (page 24) Cu(II) is a transition metal ion, whereas Cu(I) is not, or (page 35) "the spin-orbit coupling is very important in determining the detailed magnetic properties of many transition metal ions", or (page 49) "For inorganic complexes  $g$ -values are higher than 2. The anisotropy of the  $g$ -value can give much information"; and "The position of the Etr resonance gives the field at which it occurs". There are also occasional errors, the most glaring from the point of view of a chemist being the implication that the  $d$ -orbitals of a metal in a tetrahedral complex are split into  $t_{2g}$  and  $e_g$  sets.

This selection of examples is taken from the first section of the book, which manifestly cannot be recommended. The subsequent discussion of metallo-enzymes, though sometimes stodgy, provides much useful information to the judicious reader. There are more than 500 references, and some indication of those which are more appropriate to students would have been useful. I doubt whether biological inorganic chemistry is yet a discipline in its own right and a satisfactory textbook has yet to be written. This volume is not more than a brave attempt.

G. J. LEIGH

## Neural Biology

*Nervous Systems.* By Peter N. R. Usherwood. Pp. v+122. (Edward Arnold: London, April 1973.) £2.80 boards; £1.40 paper.

THE author's choice of contents for this book reveals how he reflects our times by presenting a standard account of the electrochemistry of the nerve impulse with a fairly detailed account of conduction and synaptic transmission but with a hotch-potch of physiological examples and anatomy to try to illustrate how nervous systems actually work. To be given the nerve impulse in such detail is bound to be puzzling to students when the whole point about the nervous system is the way in which the elements interact with each other. A fault is that the anatomy in this book is mainly the gross external shapes of ganglia: lack of space is no excuse, for most of the illustrations could have been drawn as composite pictures and to fit the page width. A whole page to show the position of a frog's tympanum is only one of eleven illustrations on hearing in a book that is pinched in other ways. Numerous examples, as in much scientific work, show that the author received inadequate critical comment on the manuscript. It is misleading to suggest, for example, that synapses resemble the remarkable scanning electron microscope picture of a molluscan ganglion which so far as I know never

proved repeatable. Other minor errors of judgment are easily overlooked, for example, that the mnemonic is an elementary memory unit of the octopus optic lobe: it is an idea relevant to many learning studies but, for some strange reason, in favour mainly with a few who study molluscs. To be non-critical in a section on RNA in a chapter on memory could again be misleading at this level, and to accept axon flow in addition to axoplasmic flow could be contentious.

The main teaching problem in this subject at present is to promote understanding of neurone interactions as causes of perception, of movement control and so on. This book shows something of the structure of the nervous system at gross and at electron microscope level, but little about its essential nature as a communicating system. It certainly does not convey how behaviour has its basis in the choice of which neurones are active. It illustrates sense organs and their action but not pattern abstraction: it details the processes at synapses but fails to follow up with the marvels of integration that are explained by the synaptic mechanism.

The mechanism of origin and the importance of the frequency code seem to have been forgotten, but a great compensatory feature is that the book is written with enthusiasm. Finally, an essay topic for extreme optimists is the final suggestion of the book, that maybe we shall even know all there is to know about that enigmatic structure the human brain.

G. ADRIAN HORRIDGE

## Organic Chemistry

*Organic Reaction Mechanisms, 1971.* Edited by B. Capon and C. W. Rees. (An Annual Survey Covering the Literature dated December 1970 through to November 1971.) Pp. x+648. (Wiley Interscience: London and New York, December 1972.) £16.

THIS is the seventh in a series reviewing annual progress in the study of mechanisms in organic chemistry. The field is covered in fourteen chapters written by thirteen authors and is interpreted in a fairly broad manner, with a chapter on photochemistry, and extensive references to enzymic catalysis, to organometallic systems, and to structural information on species related to reaction intermediates. The aims of the book are thus similar to those of the Specialist Periodical Reports of the Chemical Society, which does not have a title in this area at present, presumably because of the success of the Capon and Rees series.

Comprehensive literature coverage is claimed (almost 5,000 papers were scanned for this volume) and the authors provide brief exposition and comment on the papers they consider interesting and important. The value of a book like this depends on two things: (a) the quality of the exposition and comment on individual papers and (b) the ordering and juxtaposition of material to bring out relationships between different pieces of work. On the first count this volume seems to be excellent. I can find very few examples where the main import of a paper has been missed. On the second count the degree of overlap and of cross referencing seems to me to be about right in general. The chapters divide the subject up in a simple and natural way, though there is perhaps a little more overlap between the first two chapters on "Carbonium Ions" and on "Nucleophilic Aliphatic Substitution" than is necessary. In one or two places the organization is beginning to show signs of age in preserving emphasis on matters which were of great interest in 1965 but have perhaps faded out now. The cumulative index is a very valuable feature.

In all, a good volume in an established series; the price is, of course, set for library purchase only.

R. W. ALDER

## Chemistry of Surfaces

*Surface Chemistry and Colloids.* Edited by M. Kerker. Consultant editor, A. D. Buckingham. (MTP International Review of Science.) Pp. 306. (Butterworth: London; University Park: Baltimore, 1972.) £10; \$24.50.

THIS book is volume 7 of the series (Series One) on physical chemistry, which in all comprises thirteen volumes plus an index volume. Similar series on inorganic chemistry and organic chemistry are either now available or in preparation. All are reviews and deal with the period 1967-1971; the whole venture is to be repeated in 1974. Thus there is considerable similarity in aim with *Annual Reports of the Chemical Society*.

This volume contains eight chapters of varying length, contributed by authors from all parts of the world, and covering broadly both surface chemistry and colloids. Short chapters on "Insoluble Monolayers" (by G. L. Gaines), on "Recent Advances in the Study of Solid Surfaces" (by W. P. Ellis) and on "Chemisorption on Tungsten Crystal Planes" (by H. Wise) occur, but much longer contributions on "Membranes: their Interfacial Chemistry and Biophysics" (by H. Ti. Tien) and on "The