Catecholamine transport systems

The Mechanisms of Neuronal and Extraneuronal Transport of Catecholamines. Edited by David M. Paton. Pp. xi+370. (Raven: New York, February, 1976.) $27.50.

THE discovery by Axelrod and his colleagues that radioactively labelled catecholamines are transported into sympathetically innervated tissues has led to a much better understanding of the physiology and pharmacology of adrenergic neurotransmission, and the early work was summarised in 1967 in what is now becoming a classic book *The Uptake and Storage of Noradrenaline in Sympathetic Nerves* by L. L. Iversen. It is particularly welcome, therefore, that we are brought up to date by the book under review. The editor, in an historical introduction, also reminds the reader that possibly the earliest suggestion that circulating adrenaline might be transported into nerve endings was made by J. H. Burn in 1932 and first shown experimentally in 1943 by Raab.

The book contains 17 chapters contributed by well-known workers in the field and covers the major catecholamine transport systems known, those across the membranes of sympathetic neurones, of synaptic vesicles and of non-neuronal cells in a variety of tissues. It is of fairly specialised interest, but most workers who study catecholamines and other neurotransmitters will want a copy in their library. Unfortunately, there are some inconsistencies in the book between different authors. Several define precisely what is meant by the term 'uptake' and their definition is welcome; but other authors in the book use the term loosely and are less critical. Finally, the title was not a good choice, for only one chapter covers what is generally understood by the word 'mechanism': the way in which the catecholamine molecule passes across a membrane.

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Spectroscopy updated

Spectroscopy. Vol. 1: Pp. 304. Vol. 2: Pp. x+362. Vol. 3: Pp. x+324. (Science Paperbacks.) Edited by B. P. Straughan and S. Walker. (Chapman and Hall: London; Halsted: New York, June 1976.) Paper £5.50 each volume; hardback £9 each volume.

THIS set of three volumes consists of a major reform of *Spectroscopy* by S. Walker and H. Straw issued in two volumes in 1961–62. It covers most of non-nuclear spectroscopy with an approach favouring the molecular aspects rather than deep fundamental theory. Each of the nineteen chapters has its individual authorship, although in some places recognisable parts of the earlier work re-appear. There is a modest amount of cross reference, a degree of common style and no serious duplication apart from the deliberate repetition of an appendix containing some more mathematical features in both volumes 2 and 3. The editors have been effective in imposing SI where units are required but they have not had an eagle eye on the associated algebraic forms, many of which lack a factor $(1/4\pi\varepsilon_0)$ to be consistent with SI. They also eschew $\hbar$ in favour of the cumbersome $h/2\pi$.

Volume 1 contains atomic spectroscopy and various forms of spin resonance including quadrupole nuclei and the Mössbauer effect. In this volume, nuclear magnetic resonance is only allocated 64 pages which seems light for balance and solids are largely omitted. Volume 2 contains the rotation and vibration features and a chapter on group theory which is at a deeper level than is common in such student texts; the chapter on force constants is more appropriate to this scientific level. The chapter on the far infrared provides interesting experimental detail; instrumentation elsewhere is inevitably briefly covered. Volume 3 covers essentially electronic molecular spectroscopy and includes a special chapter on photoelectron spectroscopy and another on astrophysics and astrochemistry.

This replacement is timely and will be widely welcomed by those who found the earlier edition valuable. The books are somewhat lengthy in parts for chemistry or physics undergraduates, but the volumes should be available in the libraries they use. At M Sc level—or possibly undergraduate chemical physics—it would be very suitable; and also as an introduction to research. It can be strongly recommended for these purposes, although it retains a slightly old fashioned approach to quantum theory which restrains the enthusiasm of this reviewer. **D. H. Whiffen**

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Hydrolysis equilibria of metal cations

The Hydrolysis of Cations. By Charles F. Baes, Jr, and Robert E. Mesmer. Pp. xxi+489. (Wiley-Interscience: New York and London, May 1976.) $49.40; £27.66.

THE first three chapters of this book will be useful to anyone who wishes to acquire a good background knowledge before beginning a study of the complicated hydrolysis equilibria of metal cations. Methods of measurement (chiefly potentiometric) and the interpretation and treatment of data are covered systematically and in a clear style. The authors conclude this section of the book (pp69–70) with a slightly philosophical attempt to answer the question: How certain can we be that the scheme of equilibria that "best" fits the data is indeed the correct one? The meaning to be attached to the word "correct" in this question would seem to be open to a lengthy discussion among philosophers of science.

The next fourteen chapters are devoted to accounts of specific cations, covering almost all the appropriate elements in the periodic table. This part of the book fulfils the authors' object of assembling in convenient form a great deal of information, most of which was published during the 25 years up to 1974. It is not claimed that the information on any particular topic is complete, but each section (together with the references—there are about 900 altogether) provides a good starting point for further study. In the last chapter a brave attempt is made at the difficult task of surveying and rationalising the variety of behaviour described earlier in detail.

There is no conventional subject index but there is a single-page alphabetical index of hydrolysing species, a chapter index in the form of a periodic table and a ten-page list of contents. The book should therefore be quite convenient to use, but the casual reader should not overlook the summary of symbols and definitions. These are not always conventional, and they include the rather unexpected definition, $pH = -\log[H^+]$. The standard of production is high—as is the price. It is abook for libraries rather than for the individual buyer. **J. S. Coe**

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