

Applying physics to chemistry

Modern Physics in Chemistry. Vol. 1. Edited by E. Fluck and V. I. Goldanskii. Pp. xiii+406. (Academic: New York, San Francisco and London, 1977.) £18.50; \$36.10.

THIS is a collection of papers intended to describe the basic principles of some of the experiments of modern physics which have in the past decade been applied with such signal success to the problems of chemistry. It is not, as could easily have happened, primarily a collection of the various new spectroscopies, although inevitably resonance methods feature strongly. Chapters on positronium and mesic chemistry vary the diet.

This is not a unified, critical or comparative text which would serve, say for the education of physical chemists in newer methods. This is a disappointment for there is always room for well written interdisciplinary teaching books of this kind. It may, however, be interesting for the researcher to have under one cover such a collection of reviews which, though they are now rather dated (the manuscripts were collected in 1973), provide a useful insight into the Russian literature in some of the areas.

Two chapters on X-ray spectroscopy divide into valence shell and band structure and core level shifts, respectively. They are, however, really too brief to provide a useful

Gas chromatography methodology

Modern Practice of Gas Chromatography. Edited by R. L. Grob. Pp. (Wiley-Interscience: New York and London, 1977.) £16; \$28.

THERE are now so many good books on the theory and practice of gas chromatography that a newcomer to the ranks must be of high quality indeed to stand any chance of acceptance. The book under review has the now almost universal style of a multiplicity of authors, each of whom holds responsibility for his own chapter and the editor for the resultant patchwork. The subjects covered separately are: Introduction (history and nomenclature); Theory and Basics; Columns and Column Selection; Qualitative and Quantitative Analysis; Detectors; Instrumentation; Trace Analysis; Selection of Analytical data (data handling); Analysis of Foods; Clinical Applications; Physico-Chemical Measurements;

survey of this rather slowly but long developing field. Electron paramagnetic and nuclear quadrupole resonance methods have much fuller coverage. Nuclear magnetic resonance is not featured; it is not "modern" any longer, except in the form of chemically induced dynamic nuclear polarisation. Mossbauer spectroscopy is brought up-to-date with Mossbauer double resonance experiments.

Although a different viewpoint on these newer techniques is to be welcomed, it is rather difficult to see much benefit being derived from this first volume by anyone outside the ranks of the historians of science. Unfortunately, in translation, clarity has somehow escaped and even post-graduate students will find quite a lot of up-hill work, sometimes intelligent guesses being necessary to perceive exactly what the authors mean. There is little evidence of editorial effort to attain a unity of style or to secure an error-free translation (Gammert constant?) although stilted or archaic usage can, as the late Gerard Hofnung showed, have charm. More serious slips are to be found, including a blatantly erroneous diagram of nodal surfaces for the benzene π orbitals. It seems as if the chemists' voice has been too weak throughout. It is difficult to see who would be recommended to pay £18.50 for this volume.

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and Drug Analysis.

The sections are very variable. The best is by Touchstone and Dobbins on "Clinical Applications", where the descriptions are clear, concise and accurate and the authors have actually read papers appearing before 1968. One of the less good sections is that dealing with instrumentation where the illustrations are frequently commercial black boxes that convey no information at all (except advertising). The editor also needs to note that the same illustration is used on page 355 as on page 173 in a different chapter.

All-in-all, the book is rather like the curates egg (good in parts); and with a well understood and practised technique like gas chromatography, this is not good enough. This is a pity, since a lot of hard work has gone into the chapters; a clearer intent as to what needs to be put across in each section would have produced a shorter and better book.

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Organosulphur chemistry

Organic Chemistry of Sulfur. Edited by S. Oae. Pp. ix+713. (Plenum: New York and London, 1977.) \$48.

THE importance of organosulphur chemistry, as demonstrated by its rapid growth over the past decade or so, has meant that a book covering this area in breadth and depth is somewhat overdue. Twelve chapters on various aspects are contained in the book and these and their contents are arranged in a logical sequence. Each of the chapters is written by one or more leading authorities; and it is a compliment to the contributors and to the editor that, although individual styles are apparent, continuity is maintained.

In the first chapter, the basic theoretical aspects of sulphur bonding are described. This is followed by a discussion of elemental sulphur and its reactions, which provides a necessary introduction to the vulcanisation of rubber covered in the third chapter. The remaining chapters deal with the physical and chemical properties of specific sulphur compounds—thiols, thiones, sulphides (mono-, di-, and poly-), sulphoxides and sulphilmines, sulphonium salts, sulphones and sulphoximines, sulphinic acids and esters, and sulphonate and sulphate esters. Some detail is also given to sulphur biochemistry within various chapters.

On the credit side, the book contains many excellent qualities with the diagrams, tables and general layout being attractive and comprehensive. The mechanistic approach used is also a highly commendable feature.

On the debit side, however, it is surprising that the industrially important sulphonic acids are not discussed in some detail. Furthermore, over 2,300 references are quoted, but no references later than 1973 are included and very few 1972 or 1973 references are given. In fact, for the majority of the chapters, the literature is covered adequately only to the end of 1971 and for one chapter only to the end of 1970. This overlong delay between completion of the manuscript and publication must detract in some degree from the overall usefulness of the book.

In spite of these drawbacks, and the presence of a considerable number of trivial and typographical errors, the book is worthy of a place in chemistry libraries and on the bookshelves of the more affluent workers in the field.

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