

An Introduction to Medical Physics. By Edwin G. A. Aird. Pp. viii+293. (Heinemann Medical: London, May 1975.) £4.95.

THIS book deals in a straight-forward way with those applications of physics in medicine that are most used. It is broadly divided into "Ionising Radiations and their Uses" and "Other Applications of Physical", roughly 2 : 1 giving a rather classical, 'measure the dose', hospital physics flavour. It reads easily, however, and in the radiation sections, the clarity and succinct presentation were appreciated. In the second part some of the information could have been made more up-to-date—although this is where the subject is expanding very rapidly, for example, chapter 8 on the use of ultrasonics.

The discussion of physiological measurement is most welcome for it is here that physics and physiology merge. The emphasis, however, is entirely on the technical—as it is throughout the book—with no attempt to show, even in a small way, the conceptual stimulus of physics.

The number of errors detected were small, an indication of the care in both writing and production, although the confusion between longitudinal and transverse orbits of the medium in the propagation of sound waves is too fundamental to go unremarked (p179) and p184) and should be corrected as soon as possible.

Overall, the book demonstrates clearly one facet of the applications of physics in the community. It can be warmly recommended to its author's intended audience—hospital technicians, radiographers and graduate or specialist nurses. For a graduate scientist entering the field it is well worth reading quickly as the introduction it purports to be.

R. G. Gosling

Comprehensive Chemical Kinetics. Volume 14: Degradation of Polymers. By C. H. Bamford and C. F. H. Tipper. Pp. xv+562. (Elsevier Scientific: Amsterdam, Oxford and New York, 1975.) Dfl.200; \$83.50.

THIS series has been a brave and generally very successful attempt to review the whole field, which is loosely described as chemical kinetics. The present volume describes the very complex reactions which cause degradation in synthetic polymers and it is not surprising that the emphasis is on mechanisms rather than detailed kinetics. Indeed, few polymer degradation reactions are well enough understood to enable precise descrip-

tion of the kinetics of the elementary steps. The book has four chapters, classified according to the mode of initiation of the degradation reaction. The first, dealing with thermal degradations contains an excellent introduction to the kinetic models used in describing these reactions, followed by detailed discussions of the behaviour of a wide range of common polymer types. A similar pattern is followed in chapters two and three, which describe degradations induced by high energy radiation and by photochemical methods. The final chapter is concerned with the complex reactions which can occur when polymer degradation occurs in the presence of oxygen or ozone.

Books brief

As a whole this book is clearly and concisely written and all the authors have done a good job in reviewing their fields. There is much material of interest both to the expert and the beginner. One serious criticism is that the literature coverage does not extend beyond 1971. A publication delay of four years is excessive by any standards and together with the price makes the value of this book rather doubtful, even for specialist libraries.

N. C. Billingham

Films on Solid Surfaces: The Physics and Chemistry of Physical Adsorption. By J. G. Dash. Pp. xi+273. (Academic: New York and London, September 1975.) \$26; £13.

THE powerful battery of techniques both experimental and theoretical, which have evolved over the past 20 years has enabled the field of surface studies to progress from a state consisting largely of guesswork to one of increasingly detailed understanding. Attempts on the experimental side in the early 1950s to verify the predictions of 'two-dimensional theory' were generally unsuccessful and the apparently confident prediction—that perfect two-dimensional states, for example, crystals, magnetic arrays, superconductors, could not exist—could hardly be questioned. Thanks to the impressive advances in methods such as electron spectroscopy, field-emission and field-ion microscopy, molecular scattering and to the ease with which ultra-high vacuum conditions can be established,

an increasing amount of reliable information on adsorbed films is accumulating. There is an increasing interest in the study of the statistical thermodynamics of physisorption and on the thermodynamics of non-interacting monolayers, which latter relates to the important question of mobility of adsorbed atoms in the formation of surface films. Much of the progress on the experimental side has come from physicists for whom a volume such as the present one will form an invaluable introduction to some of the more chemical aspects of the subject. The introduction to theoretical studies is clearly written and a useful selection of experimental results—limited presumably to keep the overall length in check—gives an excellent view of the present state of the field.

O.S. Heavens

The Heavy Transition Elements. (A Macmillan Chemistry Text.) By S. A. Cotton and F. A. Hart. Pp. x+272. (Macmillan: London and Basingstoke, September 1975.) Hard cover £8.95; paper cover £4.95.

THIS book is a logical sequel to a cognate volume from the same publishers, which dealt with the 3d transition elements. A first impression is that of the wealth of descriptive inorganic chemistry contained within its covers. Here is a truly up-to-date account of the significant chemistry of these elements, without the loss of older well-established facts.

The choice of structural figures to illustrate chemical points is excellent; and chapters, sections and subsections of the text are well organised and, helpfully, are consistent from chapter to chapter wherever possible. At the start of each chapter there is a table of coordination number against oxidation state for the corresponding 3d element of the group, which gives a useful summary for comparison purposes.

The book, in addition to covering the 4d and 5d elements from zirconium and hafnium through to silver and gold, has excellent chapters on the lanthanides and actinides, and another chapter devoted to metal complexes containing π -bonding ligands.

Although not intended as a work of reference, the bibliography is adequate, and each chapter is referenced with a range of appropriate review articles.

This book is a must for libraries, and very desirable for the bookshelves of individual inorganic chemists.

Edward Abel