hosts and attempts to redress the usual bias towards the adult worms and their vertebrate hosts. It opens with an account of the flukes which is largely concerned with phylogeny. The conventional derivation of the Digenea from turbellarian ancestors is questioned and it is suggested that they may have evolved with the Mesozoa and the Aspidogastrea, and have no relationship with the rest of the Platyhelminthes. The six living classes of mollusc are briefly described and attention is focused on tissues and processes which are important in their role as hosts. Three chapters deal with the successive stages in the life-cycles of flukes from eggs to cercariae, and with the influence of environmental conditions on successful development and transmission. The chapter on host–parasite relationships covers the obvious topics such as tissue responses and immunity and goes on to describe the fascinating situations which arise with multiple infections. The book ends with an account of the taxonomic difficulties which arise from the inherent variability of both flukes and snails and of the application of biochemical techniques to help solve the problems.

The author has assembled a remarkable number of facts from the literature and has constructed a useful picture of what is known and how much remains to be investigated. He has tried to avoid undue emphasis on schistosomes and liver-flukes to achieve a balanced account and to draw attention to less well-publicized studies. This seems to have led to the omission of most available observations on the quantitative aspects of transmission. Topics such as the survival and infectivity of cercariae and the epidemiological effects of dams and irrigation schemes are not discussed. The book fills a gap in the existing literature and can be read fairly quickly. It should prove a useful introduction for those who are not already involved with these animals. Indeed, few readers can fail to learn something new but some will find it frustrating that only 129 references are cited. A. D. BERRIE

Maintaining Polymers

Polymer Stabilization. Edited by W. Lincoln Hawkins. Pp. viii+452. (Wiley: New York and London, February 1972.) £11.75.

THERE seems to be a growing tendency for scientific books to be written by groups of authors; there are obvious attractions for the contributors but the advantages for the readers may be accompanied by some rather serious disadvantages. The readers can expect that the various contributors are real experts in their fields and that they can write authoritatively. On the other hand, there may be considerable differences between the styles adopted by the authors; in some cases, there is considerable overlap between chapters, and yet an absence of adequate cross-references. Strong and effective editing is essential for a book of this type to be really successful. Dr Hawkins has obviously done a great deal to ensure that the various chapters of *Polymer Stabilization* fit together properly. His task may have been eased by the fact that he wrote the first and last chapters but it is significant also that colleagues of his at the Bell Telephone Laboratories wrote four of the other eight chapters.

The prevention of physical and chemical changes in polymers during storage, processing and use is obviously a matter of great importance; without it, there would be serious and deleterious changes in the properties of the materials and failures would occur far too readily. In many cases, profound effects can result from quite small chemical changes; thus, in a typical polymer, breakage of only one valency bond in 20,000 may lead to a halving of average molecular weight. Dr Hawkins and his team have acted upon the sound principle that any effective approach to the problem of stabilization must be based on a proper understanding of the mechanisms of the various changes which can lead to deterioration. There is little sign of this book degenerating into a catalogue of additives and their applications; instead, in the main, it presents a fundamental analysis of the problem and possible solutions.

Two of the longest chapters concern reactions of polymers with oxygen at quite low temperatures and another deals with effects of ozone; other chemical reagents are dealt with more briefly. One chapter is devoted to the effects of high temperatures on systems essentially free from oxygen; its prime significance is therefore in connexion with the processing of polymers although degradation in these conditions has received much academic attention. Another chapter deals with the combustion of polymers and methods employed to make them less flammable. A long chapter on the effects of high energy radiations and on protective agents includes very little on biological polymers. There is a chapter concerned with biological stability of polymeric materials. Dr Hawkins himself has contributed a useful introductory chapter and a final chapter dealing with testing procedures.

The book can be strongly recommended but it is perhaps unfortunate that it contains nothing about the disposal of waste polymers. It would have been quite appropriate to have considered this subject which is, after all, closely connected with mechanisms of degradation; for example, the chapter on combustion might have been extended to include discussion of the practical difficulties of incinerating polymers.

J. C. BEVINGTON

Complications of Spin

Spin and Isospin in Particle Physics. By Peter Carruthers. Pp. ix+258. (Gordon and Breach: New York and London, November 1971.) $19.50; £8.10.

PROFESSOR CARRUTHERS is well known to graduate students in theoretical particle physics for his excellent little monograph on SU(3) symmetry. His new offering on spin and isospin is, therefore, something of a disappointment.

The book divides naturally into three parts: the first deals with the homogeneous and inhomogeneous Lorentz groups; the second with the discrete transformations and isospin; the final one with some applications of the previous two parts to three and four point functions of physical interest. It is the only book known to me that includes more recent developments such as Weinberg's approach to high spin fields. It fills a gap left by traditional volumes on field theory which never find the space to discuss spins beyond 1. This book not only deals with arbitrary spin fields but also discusses their application to phenomenology in a way which does not depend on perturbation theory.

The author's style throughout is sparse and dry rather in the manner of lecture notes. This is no introduction to the subject: a first year graduate student is served far better by the numerous excellent texts on particle physics that have appeared in recent years such as those by Gasiorowicz or Martin and Spearman, to mention only two. In general, the book reads more like a research paper than a book written for graduate students.

In spite of these drawbacks, this volume is a valuable addition to the literature on spin and its complications. It is a useful reference book and is adequate as a brief guide through the confusing literature on high spin by assembling the bare essentials in a compact form. For those graduate students seeking an introduction to the subject it will not be as useful as one might have hoped, and at £8.10 for 258 pages of terse writing it will have nothing like the appeal of its predecessor on SU(3). P. G. WILLIAMS