

The Chemistry of Living Cells

By Prof. Helen R. Downes. Pp. x+549. (London : Longmans, Green and Co., Ltd., 1955.) 45s. net.

THE book is a very useful introduction to biochemistry for biologists. It is well written and thoroughly up to date in the topics which it treats. The historical introduction is useful and well balanced. The introduction is followed by two chapters dealing with some selected properties of aqueous solutions and the structure of living cells. The further subdivisions of the book deal, on one hand, with organic constituents of cells and, on the other, with intermediary metabolism.

However, there are a certain number of rather serious deficiencies. The physico-chemical side of biochemistry is very inadequately treated and in particular there is no account whatever of rate processes. Thermodynamic considerations are scarcely mentioned ; and what is surprising, considering how very up to date this book is in other respects, is the lack of incorporation of the very large amount of information which has been derived in recent years from cytochemical studies. Neither the information which has been obtained by the study of tissue sections by cytochemical methods, nor the information which has been obtained by the fractionation of cells into constituents such as nuclei and mitochondria, is in the least adequately presented. This lack is a grave disadvantage from the point of view of the average biologist. It is also unfortunate that that there is no discussion of macro-molecular specificity and interactions such as are involved in the formation of antibodies and their interaction with antigens.

Nevertheless, these rather striking disadvantages are often characteristic of the teaching of biochemistry, and can scarcely be considered an individual failing. As books go which treat of the chemistry of living cells, this is to be highly recommended.

J. F. DANIELLI

Information Theory

Papers read at a Symposium on "Information Theory" held at the Royal Institution, London, on September 12th to 16th, 1955. Edited by Colin Cherry. Pp. xii+401. (London : Butterworths Scientific Publications ; New York : Academic Press, Inc., 1956.) 70s.

LONDON Symposia on Information Theory have become something of an international institution, and readers of *Nature* may remember Dr. E. C. Cherry's account of the third, held in September 1955, at which scientists from many disciplines and from many countries exchanged ideas and problems in this borderline territory. The published Proceedings, which make a volume of more than four hundred pages, have had to be somewhat condensed, but only a few papers, which were submitted but not read, are printed in abstract. The papers presented cover semantic aspects of the subject in addition to the Wiener-Shannon statistical calculus, and include several on biological and other topics which belong to information system theory if not to information theory itself. The whole affords a remarkable indication of the scope and usefulness of the new methods of approach which information theory makes possible.

This is not to say that all current applications of the theory are of equal value or of equal promise. At this exploratory stage it was intended that these symposia should offer scope for tentative essays

designed to stimulate discussion as well as for more solid elaborations of established technique. But the net effect is to make this a much more stimulating volume than if it were less controversial, and the new reader has the more incentive to develop his own judgment in a field where judgment is needed.

Defects and Failures of Metals

Their Origin and Elimination. By Prof. E. P. Polushkin. Pp. xvi+400. (Amsterdam : Elsevier Publishing Company ; London : Cleaver-Hume Press, Ltd., 1956.) 72s.

ONE of the more chastening tasks of the metallurgist is to examine the failures of metals during manufacture or service, and to ascertain its causes. This diagnostic work requires a sharp eye, good memory, and long experience. Over the years a vast number of threads have been established, from practical experience, connecting the visible defects of metals with all the irregularities of composition, fabrication, and heat treatment, inherited from manufacture, and with the various severities of stress, heat, and environment, encountered during service. The value of Prof. Polushkin's book is that it lays out these threads in large numbers, plainly and simply, extracted partly from his own experience, partly from a vast bibliography, and that it emphasizes particular peculiarities rather than broad consistency of behaviour. The subjects treated include segregation, porosity, piping, impurities, decarburization, scaling, residual stresses, fatigue, flakes, overheating, burning, embrittlement, cracks, distortion, wear and corrosion. The book is essentially a collection of notes, a guide to the literature, and as such it will prove a useful work of reference for the specialist in metallurgical autopsies. But it is a decidedly unsuitable companion for a long aeroplane flight.

A. H. COTTRELL

Adventure of the Sea

By James Fisher. Pp. 70. (London : Rathbone Books, 1956.) 15s. net.

A BEST-SELLING novel, a number of dangerous voyages by rafts and small boats, submarine exploration with artificial lungs, and the discovery of remarkable relics like *Latimeria* and *Trigonia* have led to contemporary interest in the sea on a scale unsurpassed since the rise of rapid communications. Because of this interest, Mr. James Fisher and his publishers have shown admirable discernment in producing this book, which should find a ready audience. The title is somewhat misleading as the contents include not only accounts of the way in which the sea has been fought and overcome by man but also of the animals which live in, above and near the sea as well as the use made of the sea and its products by man. This, however, is but a small blemish in an excellent book which, besides clearly written text which combines science, technology and history to make a smooth-running narrative, contains a remarkable collection of more than two hundred paintings, maps and diagrams in a profuse range of colours. However much the purists may object to some of these, the reader for whom the book is intended will be caught and captivated. It is most unfortunate that the binding will need immediate reinforcement from those who wish to keep the book in one part.

T. H. HAWKINS