

tioned earlier, and there is no quantitative discussion of the performance of imaging detectors. The fact that these points are noted is, in a way, a further tribute to the book—it is so complete in almost every other way. The author and the Hughes Aircraft Company deserve our thanks for making available what is surely a standard textbook for years to come.

J. RING

SUPERCONDUCTORS

Type II Superconductivity

By D. Saint-James, G. Sarma and E. J. Thomas. (International Series of Monographs in Natural Philosophy, Vol. 17.) Pp. x+294. (Pergamon: Oxford, London and New York, August 1969.) 105s; \$14.

ALTHOUGH type II superconductors were first investigated in 1937, it was not until their usefulness in producing high magnetic fields was realized in 1961 that their properties were thoroughly and systematically studied. The later realization that the 1957 theory of Abrikosov was relevant was a further spur to theoretical and experimental effort; now their reversible properties are well understood and their irreversible properties at least partially understood. This is then a good moment for the publication of the present book, the first to be devoted to type II superconductivity.

The work is divided into two parts: the first part, written by the first two authors, is on the reversible properties which are better understood; and the second part, written by Thomas, is on irreversible properties.

After a brief introduction to superconductivity, there is a very clear account of the Ginzburg-Landau theory and of its range of validity. Apart from two chapters on the microscopic theory and some of its applications, the bulk of the theoretical considerations of the book is based on this theory. Included in the following discussion are Abrikosov's theory of the vortex line structure of type II superconductors in magnetic fields, a comprehensive account of surface superconductivity, a derivation of the Ginzburg-Landau equations, the paramagnetic effect, gapless superconductivity, flux trapping and flux movement, critical current characteristics and some applications. Some topics that receive some mention but which one might have expected to be treated in greater detail are the excitations bound to a vortex line, the attempts at theories of the resistance of type II superconductors, and the connexion between the voltage produced by the moving vortex lines and a voltage produced by magnetic induction. A fuller treatment would not have gone beyond the mathematical or conceptual level of other topics treated.

In this complex field, the reader will be grateful for the clarity and care with which the many parameters needed are defined, and with which the region of validity of any argument or formula is stated. There is a great deal in this book that gives pleasure as well as information, and I particularly enjoyed the chapter on surface superconductivity. The lucid style of the Frenchmen writing in English is a joy and an example to be followed.

Altogether, this is a book to be recommended to theoretical and experimental physicists, but rather more doubtfully to the engineers mentioned by the publisher.

G. RICKAYZEN

REACTIVE SPECIES

Carbenes, Nitrenes and Arynes

By T. L. Gilchrist and C. W. Rees. (Studies in Modern Chemistry.) Pp. 131. (Nelson: London, June 1969.) Board 42s; paper 21s.

ONE of the major developments in organic chemistry in recent years has been a concentrated study of reactive

intermediates, both actual and potential. After a first generation of radicals, carbonium ions and carbanions prominent among the second generation of reactive intermediates are carbenes, nitrenes and arynes; each of the latter has been the subject of separate extensive reviews, but this is the first occasion on which a composite consideration of all three related species has been attempted: the result is an authoritative, interesting and extremely useful publication from authors who have themselves made important contributions in this field and who clearly know it intimately.

The book opens with a short but trenchant discussion of the structure of the three species, followed by separate chapters on the generation of carbenes, nitrenes and arynes; there is then a consideration of the reactions of each species—that of the carbenes being divided into separate discussions of cycloadditions, and insertions and other reactions. Finally, there is a useful summary chapter on synthetic applications. The work is directed primarily at the more advanced undergraduate and to that end most chapters conclude with a set of graded problems taken from the recent literature, each provided with the appropriate reference to its original author's solution. The book will, however, also prove most useful to graduate students and to any chemist wishing to obtain an idea of the scope and possibilities of the subject. The more significant references to the literature are provided up to mid-1968.

The arrangement of the book is clear and sensible, the writing simple and economical without becoming the telegraphese of so many reviews, and the reproduction of formulae is neat and clear. It can, in short, be unreservedly recommended, the paperback version being particularly good value for money.

PETER SYKES

READABLE PARASITOLOGY

The Physiology of Cestodes

By J. D. Smyth. (University Reviews in Biology, No. 11.) Pp. xiii+279. (Oliver and Boyd: Edinburgh, September 1969.) Boards 70s; paper 42s.

WHAT makes Professor Smyth's books so readable is that he does not forget the parasite when discussing its physiology and biochemistry. To paraphrase Edward Reinhard: when the physiology of tapeworms is stripped of its host/parasite background it becomes dull, without face, voice or spirit. Its worth as knowledge is not impaired, but it loses much of its power to arouse interest. *The Physiology of Cestodes* is not just a compilation of graphs and tables derived from cestode breis, it is a brave attempt to integrate an extremely uneven mass of physiological data into the development of a tapeworm through its multifarious hosts and environments. The word brave is used deliberately; to have produced a compilation would have been easy and deadly dull; to have attempted to form a coherent story at the present stage of our knowledge when so much of the physiological work on cestodes is divorced from reference to the worm's natural environment must have been extremely difficult. In some chapters, "The Biology of the Egg" and "Developmental Biology of Larvae", the pendulum is well over to the parasite; a clear developmental story is told and the physiological problems which arise and what is known about them are well integrated. In other chapters, notably the three dealing with chemical composition, respiration, carbohydrate, fat and protein metabolism, the pendulum swings to the biochemical side, but in these chapters Smyth has introduced short explanatory sections—"general considerations", "basic problems"—to help bind together the observations that follow.

In a book which not only deals with the physiology of tapeworms but also attempts to summarize the salient features of the physiology of the mammalian intestine,