

reviews

Pulsar compilation

F. Graham Smith

Pulsars. By R. N. Manchester and J. H. Taylor. Pp. 281. (Freeman: San Francisco and Reading, 1977.) \$9.95.

THE ten years since the discovery of the pulsars have seen the publication of a bewildering flood of information on their properties, a plethora of theories about how they work, and a rather more coherent set of papers on their distances, their population within the Galaxy, and on the effects of the interstellar medium on the propagation of their radio pulses. Drs Manchester and Taylor have between them contributed a large proportion of the observational material now available to us, and it is very helpful to find so much assembled in one volume.

The difficulty with the pulsars is that we do not really know how they pulse; more precisely, we do not know how they produce the searchlight beam which crosses our line of sight each time the underlying neutron star rotates. The book cannot therefore start with an exposition of the structure of a pulsar, working from the core of the neutron star outwards, because it would be in difficulty as soon as it left the surface and entered the magnetosphere which is the seat of the observed phenomena. The authors therefore take the course of piling the observations into the first two-thirds of the book, leaving the reader dazzled with a rich assortment of phenomena, and presenting the theories in the remaining third. The theories have turned out to have almost the same richness and variety as the observations themselves. Here is the problem: should the authors select what they regard as the key observations, indicate those theories that can possibly accommodate them, and throw out the theories that now seem impossible? The alternative, which the authors adopt, is to keep an open mind and trust that the reader will be able to do the sorting out for himself. As a consequence, the origin of the pulses moves, from page to page, and even within a page, from near the surface to outside the velocity of light cylinder without much guidance to the reader.

The chapters on the interstellar medium and the population of pulsars are very useful and clear expositions. There are good discussions of the Crab

Nebula, and on the relativistic effects to be expected in observations of the binary pulsar. The chapter on X-ray pulsars is a useful introduction, although the subject grows so rapidly that it is already out of date.

The observational material includes some previously unpublished work, and is up-to-date in including the optical observations of the Vela Pulsar, made in January 1977. This latter work, incidentally, has been inserted into a

chapter on X-ray pulsars and binary systems, neither of which is an appropriate category.

Given that there is as yet no key to unlock the main mystery of the pulsars, this book is welcome as a compilation and an authoritative commentary. There is a good index to help one find one's way around. □

F. Graham Smith is Director of the Royal Greenwich Observatory, Herstmonceux Castle, Sussex, UK.

Protein chemistry for immunologists

Immunochemistry of Proteins. Vols 1 and 2. Edited by M. Z. Atassi. Pp. 438 and 485. (Plenum: New York and London, 1977.) \$53.40 each volume.

THE first volume is a hotch-potch of a book, masquerading under a false title and falling between a definitive work and a collection of contributors' 'pet topics'. Over half of the book is devoted to chapters by the editor himself (M. Z. Atassi) and a colleague (A. F. S. A. Habeeb), on chemical modification and conformational aspects of proteins, respectively. And much of what they say could hardly be considered as immunochemistry according to the accepted meaning of the term. Habeeb does, however, make a few comparisons between the structural and antigenic relationships of proteins of different species of origin, besides offering some reflections about the application of immunochemistry which include the somewhat obvious conclusion that "... advances in immunochemical research in the last two decades resulted from the development of new techniques and methodologies".

The selection of the topics treated by most of the other authors has obviously been on an arbitrary basis. For instance, along with useful contributions on histocompatibility antigens (still very much in the throes of characterisation) and the antigenicity of collagen and encephalitogenic proteins, there is but one chapter dealing with the study of antigen-antibody interaction (by the somewhat specialised fluorescence polarisation technique). There is also a chapter on lymphoid cell responses to protein and peptides. All in all then a 'very mixed

bag' of subjects, of variable immunological appeal.

The recent appearance of a second volume in the series has done little to mollify these types of criticism. Again, there are useful practically orientated chapters, such as the one by Parikh and Cuatrecasas on affinity chromatography and other more theoretically inclined ones dealing with topics like "the effect of antigen structure on immunogenicity". There is also a chapter on Concanavalin A.

Over half of this volume, however, is devoted to contributions on the antigenic structures of those proteins which have now been well characterised, that is, myoglobin, lysozyme and tobacco mosaic virus. And, although the major contributions to this field by Atassi and his coworkers serve as valuable models to those engaged in the similar characterisation of other proteins, one cannot help gaining the impression that these two volumes are mainly outlets for wider propagation of such approaches to structural characterisation rather than attempts to provide well balanced texts on immunochemistry. Where, for example, is any treatment of the contribution of the antibody to immunochemical reactions, or of other ancillary proteins like the complement components?

Perhaps such topics will be considered in later volumes. In the meantime, a fairer title of the present two volumes would be *Protein Chemistry for Immunologists*, but even then the coverage is 'uneven' to say the least.

D. R. Stanworth

D. R. Stanworth is Reader in the Department of Experimental Pathology at the University of Birmingham, UK.