Immunology

Lymphocyte Stimulation. By N. R. Ling and J. E. Kay. Completely revised edition. Pp. xii+398. (North Holland: Amsterdam and Oxford; American Elsevier: New York, 1975.) Dfl.110; \$42.50.

LYMPHOCYTE stimulation encompasses most of immunology; in addition, it has long served as a popular and accessible system for studying the control of cell proliferation. Thus the boom in tumour biology and the continuing popularity of immunology assure that this second edition of Ling and Kay's *Lymphocyte Stimulation* will be widely read, if not widely purchased at \$42.50. Although I have not read the first edition, it is clear that the second has been largely rewritten. It reviews the properties of T and B lymphocytes and their stimulation by specific antigens and nonspecific mitogens in a thorough and readable fashion.

The first two thirds of the book deal with the descriptive biology of lymphocytes, their subpopulations and properties, methods of culturing them, their *in vitro* responses to soluble antigens, allogeneic cells (mixed lymphocyte reactions) and nonspecific mitogens, (lectins, bacterial products, antibodies to surface antigens), and the properties of activated lymphocytes. Though they present a reasonably up to date review, these chapters are considerably weakened by the omission, or cursory treatment, of various recent and exciting advances in cellular immunology that are relevant to lymphocyte stimulation. Examples of these are the I-region associated antigens (Ia), the physical association of $\beta 2$ -microglobulin with the major histocompatibility antigens, the possibility of cooperation between subpopulations of T cells (which may under some circumstances recognise different histocompatibility antigens) in the generation of cytotoxic cells, and the general importance of suppressor T cells.

The final third of the book deals with what is known about the molecular mechanisms of lymphocyte activation and the metabolic changes occurring during the activation process. These chapters, which deal almost exclusively with lectin stimulation of T lymphocytes, are thorough and well reasoned, and are the best discussion of this subject that I have seen. They provide an excellent background for anyone attempting to evaluate the most recent evidence for the possible roles of Ca^{2+} and cyclic nucleotides in the early stages of the activation process.

I suspect that the first part of the book will be particularly useful to cell biologists interested in the lymphocyte as a model of induced cell prolifera-

tion, and that the latter part will be of most interest to immunologists, who must in the end come to grips with the molecular biology of lymphocyte activation. The extensive bibliographies that follow each chapter should be invaluable to anyone working on and/or writing about lymphocyte responses.

Martin Raff

Combustion

Combustion: The Formation and Emission of Trace Species. By John B. Edwards. Pp. xiii+240. (Ann Arbor Science: Ann Arbor, Michigan; Wiley: Chichester, September 1974.) £10.80.

AN understanding of the genesis of air pollutants in combustion processes is an important and necessary prerequisite to the assessment and engineering of emissions control measures. This book goes some way towards providing a basic text, drawing together pertinent information previously scattered widely throughout the scientific literature. Choosing a predominantly chemical approach, the author has presented in five short chapters a non-mathematical account of premixed flames, secondary combustion processes (thermal reactors, after burners and catalytic reactors), diffusion flames and applications.

The non-mathematical treatment, doubtless adopted with a broad spectrum of readers in mind, has almost entirely precluded any discussion in depth and so the book fails to reach the level of a basic text and reference volume that is claimed of it; indeed a certain superficiality results in places. It would not satisfy the requirements of a British graduate course in science or engineering without considerable supplementation. On the other hand, it should serve admirably as an introductory text and as a guide for those whose primary concern is with other aspects of the air pollution problem.

Although the author admits to only minimal consideration of the detail of specific applications it is unfortunate that the final chapter is little more than an excellent selective bibliography of nearly 300 references. Treatment of one or two applications, even if only for illustrative purposes, would have given the reader an idea of the complex interactions between the chemical, engineering, economic and legal aspects of the emissions problem, thus adding context to the book.

Nevertheless, this useful volume fills a definite gap in the literature.

N. H. Pratt

Small points

The Mitochondria of Microorganisms. By David Lloyd. Pp. xii+533. (Academic: London and New York, January 1975.) £13.60; \$36.00.

MITOCHONDRIA have been the subject of study and speculation since around 1890 but until a satisfactory method of isolation was devised by Hogeboom, Schneider and Palade in 1948, little progress was made. During the following 15 years immense effort was devoted to the study of oxidative phosphorylation in animal mitochondria but relatively little attention was given to the mitochondria of yeasts, moulds and protozoa. The isolation of mitochondrial DNA in 1964 and the demonstration that this DNA had genetic independence made eukaryotic microorganisms attractive as tools for the study of mitochondrial function.

Until now, however, there has been no adequate text book for those entering the field so that in writing this book, David Lloyd has no competitors. This is not an easy book to read but it is accurate, up to date and comprehensive; indeed, the difficulty presented to the reader is occasioned largely as a result of the determination of the author to leave no unexplored corners. Most of the significant work on mitochondria has been done with organelles from animals, yeasts or neurospora, but other lesser known organisms are covered so thoroughly in the text that at times it is difficult to distinguish the significant from the somewhat trivial. This is, however, a minor criticism of a very worthwhile text book. It is symptomatic of the changed outlook in the field that relatively little attention is devoted to oxidative phosphorylation and that the main emphasis is on biogenesis and on genetics of mitochondria. But there is an excellent and very necessary review of the need for good, clean, undamaged mitochondrial preparations if meaningful results are to be obtained.

It is no easy matter when publishing a major textbook to ensure that it is up-to-date. Dr Lloyd is to be congratulated, therefore, on his success in this respect. The book is divided into three parts: first, structure and function; second, biogenesis; and finally, evolution; but it is not always easy, having read the text, to find again some particular bit of information which may be wanted. This is my only major criticism of a first class text book. More cross references within the text and a more comprehensive index would add greatly to the ease with which the vast amount of information collected by Lloyd could be used by his colleagues and by future students.

T. S. Work