The molecular basis of toxin action in each case is thoroughly and clearly described. Among the most interesting accounts are the analysis by Bennet and Cuatrecasas of the kinetics of activation of adenylate cyclase by cholera toxin, the description by Collins of the similarities between diphtheria toxin and the lethal toxin of Pseudomonas aeruginosa, both of which cause covalent attachment of ADP ribose to elongation factor 2, and Holland’s account of the hydrolysis of 16S RNA in 70S ribosomes by colicin E3.

The summaries relating to tetanus toxin (by Bizzini) and botulinum toxin (by Simpson) are both timely as these toxins have not been reviewed recently. Bizzini outlines the current evidence that tetanus toxin blocks the presynaptic release of the inhibitory neurotransmitters glycine and γ-amino butyric acid in the CNS and argues that tetanus toxin is a useful pharmacological tool for studying the mechanism of secretion of neurotransmitter substances. His assessment of the contribution of Kryzhanovsky and co-workers is particularly useful to the general reader who might not have covered the Russian literature. Simpson’s account of the mode of action of botulinum toxin and β-bungarotoxin from the venom of Bungarus multicinctus, both of which block acetyl choline release at peripheral nerve endings, serves to emphasise the value of these agents in studying trophic effects of nerve and muscle. The redistribution of acetyl-choline receptor sites after nerve section or toxin action would be such an application.

Present knowledge of the mode of action of the cytolytic (membrane-damaging) toxins is reviewed by Alouf. His account of the methods of studying membrane damage by observing the release of intracellular markers is of value to workers in this field. These toxins act directly on membrane components and induced permeability defects in susceptible cells. In some instances the target site in the membrane has been identified and Staphylococcus aureus β-toxin (sphingomyelinase C), Clostridium welchii α-toxin (phospholipase C) and the cholesterol-specific, oxygen-labile toxins have been used as specific probes of membrane structure and function.

Finally, a detailed review of batrachotoxin is given by Albuquerque and Daly; this steroidal alkaloid toxin from a small neotropical frog depolarises excitable membranes by its ability to activate sodium channels selectively.

It must be emphasised that the contributions to this volume are highly specialised and the general reader might find some of the material difficult to digest. However, toxin action is a complex subject that derives its stimulus from many disciplines and if toxins are to gain general acceptance as selective inhibitors it is necessary to provide the potential user with as much relevant background information as possible and to indicate the limitations of our knowledge. This volume will undoubtedly be read with interest by “toxinologists” but it should also prove a useful source of information for other biologists. It is unfortunate that the index was not prepared with greater awareness of the needs of the non-specialised reader.

J. P. ARBUTHNOTT

Antibiotics in general practice


This book consists of two sections. The first, after general introductory chapters, treats each antimicrobial or group of antimicrobials in turn while the second deals with the management of individual infections. Here the author does not confine himself to antimicrobial aspects of therapy, but ranges widely over the many diagnostic and therapeutic problems that these infections present. The last few chapters deal with opportunistic infections, antibiotics in special circumstances (renal failure, the neonate and liver problems) and with chemoprophylaxis, while an earlier general chapter gives a sound practical approach to the problem of chemotherapy in undiagnosed fever. Other valuable features include tables of incompatibilities, a summary of dose schemes and adverse effects and, within the main text, many new summary tables. For example, because the need to desensitise patients to antituberculous drugs is rare, it is hard to know how best to do so, and suitable schemes are here provided.
Dr Hillas Smith has performed a remarkable feat in his assault on this huge subject; his book is wide-ranging, easy to read and packed with useful information and its success may be judged by the publication of this, the third edition, in 8 years. Unfortunately, while avoiding the sort of nit-picking so easy to indulge in with a book as full of facts as this, one has to point to a number of flaws in the text, some of them serious. The most notable is the sketchy and misleading chapter on urinary infections, culminating in an apparently random list of three references, including a 1961 paper on cycloserine as the only reference to a specific antimicrobial. There are many puzzling errors and omissions in other chapters, some of them indicating deficient updating of the text. No reference is made to the special characteristics, among the tetracyclines, of doxycycline in renal failure; to the controlled trials in the USA showing the harmful effects of IDU in herpes encephalitis; to the use of clindamycin in osteomyelitis; to the limitations of the cephalosporins in staphylococcal septicaemia; to the role of bowel antibiotics in prophylaxis of infection in the immuno-suppressed patients; and to the need for longer-than-conventional treatment in pharyngeal and rectal gonorrhoea. Some of the clinical sections offer clear guidance but others, such as the section on bacterial shock, recite a list of possible moves instead of providing a scheme of management for the inexperienced reader, and some statements are positively misleading; as Dr Smith knows very well, the assumption, which he apparently accepts, that a particular septicaemia may result from infection with a Gram-negative species, is one that should not be made as Gram-positive and Gram-negative organisms can produce identical syndromes.

This is a lively, readable and discursive book, well worth reading and keeping to hand for reference, but marred by a number of errors and omissions.

H. P. LAMBERT

The mycobacteria

This is one of a series of 12 monographs published as pocket-sized (20 cm × 14 cm), paper-backed books under the general title of "Patterns of Progress". Although the reviewer is not familiar with this series of monographs, it is clear from the scope of subjects chosen that it fairly represents patterns of progress in microbiology and each monograph is written by a leading worker in the subject. The inclusion of mycobacteria within the series is fully justified as the genus Mycobacterium includes M. tuberculosis and M. leprae, which are still responsible for millions of cases of tuberculosis and leprosy, respectively, throughout the world. In addition, mycobacteria have been increasingly used as adjuvants in the fields of humoral and cell-mediated immunity, and have recently been used in the immunotherapy of cancer.

In the last 15 years there have been important advances in our knowledge of these organisms. Dr Ratledge, a biochemist at the University of Hull and one of the leaders in the British school concerned with mycobacteria, succinctly summarises and critically assesses the advances since 1960 in classification, structure, growth requirements, lipid metabolism, nucleic acids, protein synthesis and genetics. These are covered in five of the seven chapters of the book. The introductory chapter on the diseases caused by mycobacteria and the immunological responses to infection is adequate but less detailed. The final chapter is on anti-mycobacterial agents and their modes of action; the part that deals with the clinical aspects of chemotherapy is sadly deficient and seriously out of date, but the mode of action of the various anti-mycobacterial agents is excellently reviewed.

In the preface to this monograph Dr Ratledge hopes that his efforts will be useful for clinicians, bacteriologists, research workers, teachers and even students who wish to know more about mycobacteria. This will undoubtedly be so and, considering the excellent assessment and bibliography, at a remarkably modest price. However, Dr Ratledge also makes it clear that his contribution was based primarily on a review of the literature completed in early 1973. In an attempt to remedy this, he has added a final section with brief information and limited references on progress up to 1975. With no criticism of Dr Ratledge,