acquiring details of Russian research. The publication of the present volume, which is heavily biased towards Russian contributions, is therefore of interest, not only in order to compare it with British and American reviews, but also to have so many Russian papers assessed in one volume. The title is however, somewhat misleading, as the treatment of the porphyrins is almost completely concerned with the physical properties of the compounds; general methods of synthesis of porphyrins are not included and only a few of the chemical reactions receive treatment. Much greater attention is paid to the porphyrins related to heme than to the purely synthetic products. The physical properties selected for detailed treatment naturally reflect the personal interests of the author and they include molecular structure (including quantum-chemical data), ionisation and coordination properties (including thermodynamics and kinetics), mechanisms of proteolytic dissociation of metal complexes, thermodynamics of complex formation, electronic-optical properties, i.e., ultra-violet and visible spectra, and other properties including oxidation-reduction reactions and catalytic activity. Even here, there are some noticeable gaps and no mention is to be found, for example, of infra-red spectra, nuclear magnetic resonance spectra or mass spectra. The most telling criticism however is the date of the text. Only a handful of references to the Russian literature are to 1976-7; no references to work outside Russia after 1973 was noted. This of course causes major drawbacks; thus, no reference is made to the authoritative volumes on this topic edited by K. Smith and D. Dolphin respectively, and the only phthalocyanin review quoted is that by Moser and Thomas in 1963. In summary therefore, the book is a highly restricted text which is appreciably out-of-date. It may be useful to have a review of so much earlier Russian work but in my opinion the result does not justify the effort of the translation. It will have little appeal other than to a relatively small number of physical specialists in porphyrin chemistry, and it cannot be recommended to general readers.

A. W. Johnson

Microbial Cell Walls and Membranes

by H. J. Rogers, H. R. Perkins and J. B. Ward
Chapman and Hall; London, December, 1980
x + 564 pages. £30.00

When ‘Cell Walls and Membranes’ was published in 1968 under the authorship of 2 (Drs Rogers and Perkins) of the 3 authors of the current volume, it was both feasible and desirable to bring together in a single book, the broad body of knowledge of surface structures of diverse cellular origins. In the intervening 12 years or so, as the authors point out in the Preface such a coverage is now ‘manifestly impossible’. Confining the present monograph to walls and membranes of micro-organisms has enabled the authors with their combined, formidable expertise in various facets of the field, to produce a cohesive work of admirable quality.

This book takes us through the ultrastructure of bacterial envelopes, through wall and membrane isolation to the basic similarities in structure and function of both prokaryotic and eukaryotic cell membranes (chapters 3,4) and ultimately to the contrasts of the unique differences between bacterial and fungal walls and the biosynthetic pathways for the assembly of their major structural polymers (chapters 6-8 and 13,14). I found this feature of the book particularly attractive and it successfully fulfills one of the authors goals of aiming this work at ‘final year undergraduate students in microbiology and postgraduate students working on appropriate subjects’. Moreover, we have found the material and illustrations, particularly in chapters 8,9,13 and 14, a valuable reference source for teaching our medical students. Much has happened in the field of antibiotic inhibitors of bacterial wall synthesis and it is not surprising from the involvement of all 3 authors in aspects of
this work that about 100 pages has been devoted to this topic. There is an excellent account of the penicillin-binding components, an exciting area in the action of β-lactams on bacteria, although in such a rapidly advancing field it is to be expected that some of the most recent discoveries such as those of Matsushita’s group have been lost in the inevitable publication hiatus.

Although the major portion of the book is devoted to bacterial structures, including the Mycobacteria singled out for special treatment because of the important immuno-modulating properties of their wall components, the inclusion of chapters on yeasts and filamentous fungi gives the volume balance. In addition, the authors have struck an excellent balance between Gram-positive versus Gram-negative surface structures, the latter having been heavily emphasized in various recent publications.

The authors are to be congratulated for the lucidity of presentation, excellent selections of illustrations and valuable reference sources. This volume is highly recommended for students and research workers as a scholarly, rounded text on a rapidly advancing frontier of research.

Milton R. J. Salton

Mass Transfer and Process Control

Advances in Biochemical Engineering: Volume 13

Edited by T. K. Ghose, A. Fiechter and N. Blakebrough
Springer-Verlag; Berlin, Heidelberg, New York, 1980
214 pages. DM 88.00; $48.40

This series is establishing a leading position for itself in the literature on biochemical engineering. The 4 articles in volume 13 add to the reputation of the series for scholarship and thorough, critical reviewing.

The review of dissolved oxygen electrodes is comprehensive and covers virtually every aspect of the design of the electrodes from theory to a users guide of the different types on offer. The limitations of the electrodes are discussed. The user or designer of oxygen electrodes will probably find all available information here.

Brauer contributes a real engineering study of the power consumption in stirred reactors with reference to the demands of fermentation processes. The more biologically inclined biotechnologist will also find his interests well covered.

The ‘loop reactor’ has rapidly come to the forefront of bioreactor design. Blenke has aimed to review largely the work of his own laboratory in this field, which is welcome because of their extensive pioneering work on loop reactors. Again the study is developed very much from the engineer’s point of view, but also with understanding of the microbiological problems.

The review by Hampel of the application of microcomputers to studies on microbial processes is timely. This article provides a well-balanced account of the principles and equipment available. The examples of data outputs add much to the value of the account.

The book is illustrated with a wealth of clear and excellently presented diagrams and figures. The 4 authoritative surveys in this book form valuable works of reference.

S. J. Pirt