chapter seems to be slightly out of place in this volume, but basic studies in relation to applied and industrial microbiology must be brought to the attention of researchers and applicators.

This volume is of considerable interest to microbial biochemists especially in industry and does contain a selection of useful and timely material. The typesetting of the book however is not very attractive, nor easily read in some chapters.

A. Wiseman

Topics in Enzyme and Fermentation Technology: Volume 3

Edited by A. Wiseman
Ellis Horwood; Chichester, 1979
294 pages $43.00, £19.50

This work is the third volume in a series. It contains a short introduction by the editor and 5 reviews by specialists, all on topics of industrial importance in the expanding field of biotechnology. The series is timely because of the current increased interest in this field.

Professor S. A. Barker and Dr P. J. Somers discuss Uses of Anions in Enzyme Equilibrium Displacement. This is a subject of general interest in cases where the normally attained equilibrium gives a relatively low conversion of substrate to product, as happens for example in the production of fructose from glucose using glucose isomerase. Only 11 of the 49 references quoted are subsequent to 1973, and as many of the earlier observations are now considered to have been misinterpreted the authors clearly feel that much fruitful work could now be done on this subject.

Dr W. M. Fogarty and Dr C. T. Kelly discuss Developments in Microbial Extracellular Enzymes. Their review covers carbohydrate-degrading enzymes and proteases, and concludes with short sections on enzyme production and enzyme immobilisation. It provides an introduction for newcomers to what is now a very active field of development.

R. Scott discusses 'Rennets' and Cheese and this contribution includes a long introduction. The main text, of roughly equal length, is devoted to traditional and more modern methods of inducing coagulation. Inevitably this article is largely descriptive. It contains a large bibliography.

The most extensive review in the volume is by G. T. Banks, who provides 97 pages on Scale-up in Fermentation Processes. This is a very clear account, which identifies and discusses three main scale-up problems: development of the inoculum, medium sterilisation and aeration–agitation. Very little of the work discussed is recent, and most will be very familiar to the few who are regularly involved with scale-up. For others, newly interested in the field, this is a very fine introduction. The section on inoculum development should be mandatory reading for geneticists interested in producing industrial strains by the newer methods of genetic manipulation to emphasise the problems presented by culture degeneration to industrial microbiologists. Such difficulties are likely to be greater with some of the specially designed 'safe' microorganisms at present being used in genetic manipulation work.

The final review is a short essay on New and Modified Invertases and their Applications by Dr A. Wiseman, which demonstrates that this classic enzyme is still of interest both to academics and to industry.

K. Sargeant