references, the subject index is much too brief to be of real use. However, the book is very readable and the author has achieved his stated objective and, as such, it can be recommended. It does, unfortunately, relate to just one method of protein 'tailoring' and one which may well be overtaken by others, such as genetic engineering, before its technological problems are solved.

A. P. Williams

Protein Tailoring for Food and Medical Uses. Edited by Robert E. Feeney and John R. Whitaker. Marcel Dekker, New York. 1986. xii + 392 pp. Price: US$83·50. ISBN 0-8247-7616-X.

This book aims to review chemical and enzymatic techniques for the modification of both food and medicinal proteins. There are 14 chapters based on papers presented at an American Chemical Society symposium held in September, 1985, in Chicago. The book is intended for food scientists, food technologists, medicinal and agricultural chemists and biochemists, nutritionists and pharmacologists. Although highly recommended to those currently working or about to start research in protein engineering or 'tailoring', they should be warned that there are only five chapters relating to food compared with eight on medicinal uses. Those interested in the latter also get better qualitative value, as exemplified by the two chapters on genetic engineering in which the medical applications are excellently reviewed by Wetzel in a way in which even newcomers to the field will find interesting and easy to follow. In contrast, the preceding chapter on food contained a number of mistakes, not least of which was the four ways of spelling engineering, which made it difficult to follow.

Since the editors had stated that rapid advancement in this area had resulted in the coinage of new words and phrases that have different meanings to different individuals, one would have wished for greater care to have been taken in this respect. This, of course, is one of the risks taken with direct reproduction of the original mauscripts. The advantage is the speed with which symposium proceedings can be published and for that, the editors, publishers and participants are to be congratulated. The references are also very up to date, another important factor in a fast developing field.

This is the third of this series of symposia and comparison of the contents pages of the proceedings shows a considerable change of emphasis. Apart from those already mentioned, the current volume contains chapters on the covalent attachment of essential amino acids to proteins (Whitaker), enzymatic modification of proteins (Arai *et al.*), bitter peptides (Adler-

Nissen), opioid peptides from milk proteins (Chiba and Yoshikawa), mechanism-based enzyme inactivators for medical uses (Silverman), probing the active site of a steroid isomerase with a solid phase reagent (Benisek and Hearne), entry of protein toxins into cells (Sandvig and Olsnes), immunotoxins (Marsh and Neville), tailoring enzymes for use as therapeutic agents (Poznansky), attaching metal ions to antibodies (Meares) and the tailoring of an antitumour protein drug (Maeda *et al.*).

A. P. Williams

Food Analysis: Principles and Techniques, Volume 4: Separation Techniques. Edited by D. W. Gruenwedel and J. R. Whitaker. Marcel Dekker, New York. 1987. 480 pp. $119·50. ISBN 0-8247-7573-2.

Food analysis is a subject that has grown considerably over recent years and is likely to continue to do so as instrumentation develops further and the pressures on the analyst from consumers and governments increase. It can be a particularly frustrating subject and isolating the component of interest from the complex matrix that generally makes up food is one of the major problems. This book, the fourth of an eight volume treatise on food analysis, covers separation techniques. The editors state that their objective was not to produce an undergraduate text nor to produce a cook-book but to produce a reference book for the professional food scientist and analyst. Whilst, generally, the book achieves these aims there are a few frustrating moments along the way, in particular due to the uneven approach adopted by the individual authors. As this book is part of a large treatise, a more structured book would have been welcome.

The seven chapters are well written, giving good coverage with plenty of references to each of the techniques discussed. In two of the chapters, 'Distillation' and 'Membrane Separation Processes' the preponderance of the material seems to be more concerned with the processing aspects of the subjects rather than analysis. The remaining chapters are concerned with the various chromatographic techniques. The techniques covered are: 'Ion-Exchange and Affinity Chromatography', 'Exclusion Processes', 'Thin-Layer Chromatography', 'High-Pressure Liquid Chromatography' and 'Gas Chromatography'. Each technique could easily be the subject for a book which means that each contributor has had to make some selective judgements regarding material. Generally the editors' objectives are adhered to, resulting in a useful guide to separation techniques.

Richard King