

from fat-rich samples using a suitable adsorbent (organochlorine and organophosphorus compounds).

The third section contains methods for analysing residues of 22 individual substances (later volumes are planned which will extend this list). The methods in this section have all been independently assessed by an impartial laboratory on several crops named at the beginning of each entry. The entry format includes an introduction summarizing the physicochemical characteristics of the substance, followed by an outline of the method listing the apparatus and reagents required. The extraction and cleanup procedures are considered in detail, with operating conditions for the gas chromatograph or other equipment used in the determination. Finally, each entry includes evaluation of results, calculations, useful notes and references. The entries are in alphabetical order.

The section on multiresidue analysis contains 17 entries which cover methods for, *inter alia*, urea and triazine herbicides, organochlorine and organophosphorus insecticides, dithiocarbamate and phthalimide fungicides and bromine-containing fumigants. Each method names crops independently tested by that method and indicates, just below the title, the techniques of cleanup and analysis incorporated in the method.

This first volume, of a work eventually comprising two or three volumes, is clearly not comprehensive in that major pesticides, such as pyrethroids, phenoxyalkanoic acids and several groups of systemic fungicides are not covered by it. Nevertheless, this clearly written and well-produced book is likely to become a valued laboratory manual for the analyst concerned with pesticide residues in food, soil or water.

**K. A. Hassall**

**Developments in Food Microbiology—3.** Edited by R. K. Robinson. Elsevier Applied Science Publishers (London and New York), 1988. x + 198 pp. ISBN 1-85166-131-X. Price: £34.00.

This is the third book in a series concerned mainly with general aspects of food microbiology, and which consists of seven chapters by experts, 198 pages with 21 tables and 14 illustrations; it contains 590 references. The book covers a wide range of topics in food microbiology including beer, fermented vegetables, food-borne fungi, water supply, tissue culture, economics of fermentation and cellulosic technology which complements the other topics that have been dealt with in the previous two volumes.

Beer is covered by D. R. Lawrence, and this chapter deals adequately with

spoilage organisms in this field. In the reviewer's opinion, the section on quality control is very informative, especially to undergraduate students, and this chapter is extensively referenced and up to date. Nevertheless, there are some minor points such as:

- (a) *Lactobacillus delbrueckii* should be referred to as *L. delbrueckii* subsp. *delbrueckii*, and similar comment for *L. casei*,
- (b) *lactobacilli* is abbreviated as *L.* (in Chapter 1) and *Lac.* (in Chapter 3), and
- (c) some references are not cited in the proper order (e.g. p. 44 ref. 55–57, p. 45 ref. 61–62 and p. 46 ref. 127–128).

Chapter 2 by T. D. Pennington gives an overview of the techniques of plant tissue culture to undergraduates in food science which includes the methods of sterilisation, preparation of plant regeneration and choice of nutrient media. This field could be a challenge to food microbiologists.

Lactic acid bacteria in fermented vegetables (Chapter 3) is reviewed by J. R. Stamer, which is primarily related to the subject in the United States of America. The reviewer would have also liked to include data, for example, from Europe so that undergraduates from either side of the Atlantic would have benefited. Incidentally *Leuconostoc mesenteroides* should have been referred to as *L. mesenteroides* subsp. *mesenteroides*.

Chapter 4 by R. S. Moreton and J. R. Norris highlights the important economic criteria to be considered between scientists and financial managers when a corporate investment is decided for an industrial fermentation process.

S. Sukan has reviewed the potential use and some problems encountered during the utilisation of cellulosic residue from agricultural and agro-industry (Chapter 5) as potential sources for microbial fermentations; thus, as in the previous chapter, Chapter 5 provides undergraduates with more resourceful ideas for future developments.

Chapter 6 by P. F. Cannon provides the reader with an up to date classification and nomenclature of food-borne fungi which is important to both scientists and quality controllers in the food industry.

Chapter 7 by M. R. Snowball and I. S. Hornsey sets out, clearly, the developments in purification of water supply using ultraviolet light for the food industry; this chapter provides sufficient data to the reader, especially the section on the inhibition of micro-organisms and the successful industrial applications of sterilisation of water systems.

To summarise, this book is well written by different professionals from different parts of the world, well produced and provides a wealth of information to scientists and undergraduates. Readers who already possess

the previous two volumes will purchase this book, but at a cost of £34.00 the book may be pricey to undergraduates.

**A. Y. Tamime**

**Modern Carbohydrate Chemistry.** By Roger W. Binkley. Dekker, 1988. 344 pp. ISBN 0-8247-7789-1. Price: \$108.00.

For chemists this is an excellent little book. It begins with an attempt at definition, structural, stereochemical and conformational analysis, then goes on to all the main chemical reactions, approaching the subject in a very up to date way. To anyone familiar with this class of compounds it seems that definition is impossible. One should describe, rather than attempt to define, carbohydrates and the author does come to this conclusion and makes a very good job of explaining all the salient points. Dr Binkley is a well-known carbohydrate chemist and his treatments of the D & L steric reference system are admirable and authoritative. For the food chemist there is little detail on glycosyl amines and Amadori products. However, the basic principles of modern carbohydrate chemistry, such as anomeric effect, protection of sugars and the main reaction pathways, are explained clearly and extensively.

As in all textbooks a few errors do occur and an example is in Fig. 4 (p. 50) where, after a careful explanation, the author labels the structures drawn as methyl 2,3,4-tri-*O*-acetyl- $\beta$ -D-xylopyranoside. In fact they are L-isomers.

The book does not stray at all into the biochemistry of carbohydrates and therefore enzymic implications are absent. This is clearly not a concern in a simple—yet modern—book addressed to the chemistry of carbohydrates. My one slight disappointment, however, was the very minimal coverage of hydrogen-bonding, hydration and solvent effects.

Overall, this book makes a very welcome, clear and valuable addition to the carbohydrate literature. Chemists interested in this subject will find that it is well worth the price.

**Gordon Birch**

**Sucrose: Nutritional and Safety Aspects.** Edited by Gaston Vettorazzi and Ian Macdonald. ILSI Human Nutrition Reviews, Springer Verlag, 1988. ISBN 3-540-19526-2. xvii + 192 pp. Price: £22.

The editors of this book intend it to be a 'user-friendly thesaurus' with an 'up to date compilation of references'. It is one of the valuable ILSI series which