This book is the latest in the surfactant science series, and it covers an area of importance to chemists in a wide range of industries including cosmetics, detergents and textiles. Chapters are presented on amphoteric imidazoline derivatives; surface active betaines; amino acid type amphoterics; lecithin and related phosphatides; macromolecules; miscellaneous polar surfactants; and the analysis and testing of amphoteric surfactants.

The book emphasises the structures and physico-chemical properties of surfactants, rather than their applications, which are mentioned briefly in each chapter. The interest of the food chemist is mainly represented in the chapter on 'Lecithin and Related Phosphatides', written by R. D. Cowell, D. R. Sullivan and B. F. Szuhaj. This chapter of 35 pages gives a useful, though brief, account of the structures and properties of this group of compounds. No attempt has been made to discuss in detail the applications of lecithin, and the effect of lecithin in foods is also not discussed in depth. The final chapter dealing with the analysis and testing of amphoteric surfactants is also of potential interest to food chemists but the approach is to present general methods of analysing non-ionic surfactants, rather than to detail procedures for specific surfactants.

There are few mistakes in the book, but the depth of coverage of the various surfactants suggests that food chemists will benefit to a considerably smaller extent than chemists in other industries from reading this book. The price is high for a book of this length.

M. H. Gordon

Handbook of Polycyclic Aromatic Hydrocarbons. Edited by Alf Bjorseth. Marcel Dekker, New York and Basle, 1983. 744 pp. Price: SFr. 332.

Recent years have seen much public anxiety over the pollution of our environment and food; in particular the widespread occurrence of carcinogens (e.g. polycyclic aromatic hydrocarbons (PAHs)) has lead to much concern. However, as the editor states in his preface, a prerequisite for any discussion on the effect of such compounds is the need for accurate analytical methods, which can be applied to all those areas where these compounds may be encountered. The analyst is faced here with two major problems: firstly the compounds are present at very low levels (p.p.b.) and secondly the matrix is usually very complex and will lead to

extracts containing interfering compounds. This book attempts to address these problems and to show to what extent currently available analytical methods can solve them.

The choice of chapter titles is somewhat confusing and indeed the logic behind the order of presentation is not clear. Two criteria appear to have been employed to separate material, that is to say the analytical technique used and the area of application. This has led to considerable overlap of material and there is inadequate cross-referencing.

Chapter 1 contains an excellent account of the properties of PAHs and explains the sometimes confusing nomenclature of their ring systems. Much of this chapter will prove useful as basic data for the analyst. Chapter 2 concentrates on internal combustion engines with an account of all stages of the analytical procedure from sampling through to instrumental analysis. This chapter would more sensibly have come later in the book after the basic processes and techniques had been discussed. Indeed some of the references cited here are used again in subsequent chapters but with little cross-referencing within the book. Chapter 3 returns to more general matters with an account of extraction procedures, emphasising the problems encountered and providing much valuable experimental detail. Chapter 4 is concerned with the PAH profile from various sources of pollution and how they combine in an urban region. There is much of interest in this chapter but it would be more usefully discussed after the analytical techniques section. The maps showing distributions of PAHs across a city are not very helpful. The next five chapters are devoted to analytical techniques, high performance liquid chromatography, gas chromatography, mass spectrometry, optical techniques and thin layer chromatography. All of these provide a wealth of experimental data coupled with illustrative examples. Many of the data, e.g. chromatographic phases, are conveniently presented in tables. The coverage of the literature appears good but one is left with the impression that this book has been in production for some while, as there are few references beyond 1980. This is particularly true of Chapter 9 on thin layer chromatography, although this may be a reflection of the move in recent years to instrumental techniques.

The remainder of the book is given over to applications of the above techniques to specific areas of analysis, marine organisms, foods, long-range transport of PAHs, coal-derived materials, PAH metabolites, river waters and work atmospheres. Here again there is a wealth of experimental data and many well-illustrated analyses. Chapter 13 contains arguably

the most confusing chromatogram the present reviewer has seen in print, with some 279 numbered peaks some of which the reader is supposed to be able to identify. In stark contrast, Chapter 12 contains a puerile map of the United Kingdom with what appears to be a chimney protruding from Watford!

Ignoring the irritating points mentioned above this book provides a much needed collection of analytical methods for PAHs. The literature reviewed is really only complete to 1979 with few references for the 1980s. The reviews by experts in the field provide a body of invaluable experimental data. However, one feels the book could have been structured in a more logical manner and would have benefited from a more ruthless use of the editorial pen. The standard of printing and binding of this book can only be described as adequate.

R. Macrae