

compounds, are dealt with under separate headings. Similarly, phenols and derivatives are treated separately from other species in the aromatic series.

In Chapter 3, essential oils are described according to the botanical classification of the parent plant; oils from plants which do not fit comfortably into this system are described in a separate section. Experts in sensory evaluation might question the comment made in this section that bitter orange oil has a bitter aroma.

The short chapter on animal secretions is followed by even briefer chapters on Quality Control and Toxicology. In addition, there is a literature citation index (somewhat dated), a formula index including CAS registry numbers, and an alphabetical index of the fragrance and flavour compounds cited in the book.

Although the publishers plan to translate the whole encyclopaedia, two volumes having been completed already, this in no way detracts from the usefulness of the present text. That so much valuable information could be included in such a slim volume is a tribute to the admirably concise style of presentation. This is an extremely attractive book: it is clearly printed; it is well bound and contains few typographical errors, although one unfortunately appears in the text on the back cover.

In scope and content, this volume compares favourably with the heavyweight 'bibles' of this field such as Arctander's *Perfume and Flavour Chemicals* or Fenaroli's *Handbook of Flavour Ingredients*. I agree with the Editor's assertion that this book should be of interest to perfumers, flavourists, food technologists, chemists and even laymen. My wife, who is in the last category, derived much enjoyment from the section on essential oils.

B. D. Baigrie

High Performance Liquid Chromatography in Biochemistry. Edited by A. Henschen, K. P. Hupe, F. Lottspeich and W. Voelter. VCH Verlagsgesellschaft, Weinheim, Federal Republic of Germany, 1985. 638 pp. Price: DM198, US\$88.

There can be no doubt that research in the field of biochemistry would not be possible in its present form without liquid chromatographic techniques, and, of these, HPLC is probably the most important. Thus, it is not surprising to find a number of texts given over to this subject. This book is billed as providing 'an introduction to the theoretical and

instrumental principles of HPLC and a detailed treatment of its application to compounds of biochemical interest'. Quite clearly, this aim is achieved but the present reviewer has some reservations about what is becoming the standard format for books of this type. HPLC has now become very well established in many applied sciences and there are many excellent texts describing its principles and necessary instrumentation and so it could be argued that it is not essential, in a book such as this, to dedicate some 137 pages to this material. However, the presentations are quite clear, although some of the theoretical aspects would not now be considered acceptable in a more detailed text; for example, the treatment of adsorption chromatography. The value of this book is, then, to be found in the application chapters, of which there are ten, covering amino acids, peptides, proteins, lipids, carbohydrates, biogenic amines, nucleosides, nucleotides, porphyrins, steroids, vitamins and organic acids. The amount of detail in these chapters is staggering and the literature has been well plundered; indeed, in some cases, there are so many references that it would be difficult to know where to start. An attempt has been made to concentrate this wealth of information into Tables, which has been partially successful, but a Table of some 14 pages (with over 60 citations of the same reference) is still very difficult to assimilate. The introductory sections of some of the chapters could have been more ruthlessly edited as many of them contain subject matter that has already been covered in the preliminary chapters. The contributions all contain sections on the determination of the relevant compounds in biological materials but, in general, these sections are rather perfunctory. Perhaps the book could have been more realistically titled 'HPLC of Biochemicals' rather than implying that their determination in biological matrices is to be discussed. In many instances the chromatographic problems have been largely solved and it is the more difficult problem of sample clean up that remains.

In conclusion, this book provides a very thorough survey of this area of analysis. It is extremely well referenced, although there is some evidence that the script has been in production for several years; for example, the chapter on vitamins contains only three references after 1980, and one of those is to work by one of the Editors. It will prove to be a valuable reference book but it is not likely to become a best-seller, mainly because it does not address the problems of analysis from a practical point of view.

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