

HPLC in Food Analysis, edited by R. Macrae. Academic Press, London, 1982. pp. xii + 340, ISBN 0-12-464780-4, £28.00.

Since the earliest days of chromatography, when Tswett and Lederer used column chromatography to examine natural pigments, chromatography has played an important role in the analysis of foodstuffs. Although for many years GLC was the method of choice, its application was largely limited to essential oils and pesticide residues, most other compounds of interest being too polar or thermally unstable for analysis. However, with the advent of instrumental liquid chromatography, these restrictions have been lifted and many more compounds can be studied.

The present work, edited by Dr R. Macrae, provides a useful introduction to HPLC and its application in food analysis. The book contains an overall view of the subject from instrumentation to specific applications but in doing so duplicates much basic material on HPLC to be found elsewhere. The introductory chapters cover basic theory (R. Macrae), instrumentation (R. Newton), separation modes (C.F. Simpson), and data handling and automation (C.R. Loscombe); although they occupy nearly 140 pages they contain few references to food analysis.

It is the later chapters that are most valuable, each surveying a specific area of food chemistry. The coverage is mainly up to 1980 with a few references from 1981. The topics covered include carbohydrates (D.J. Folkes and P.W. Taylor), lipids (E.W. Hammond), vitamins (P.J. Van Niekerk), food additives and colourants (K. Saag), mycotoxins (D.C. Hunt), and amino acids and peptides (A.P. Williams). The last area seems to stand rather on its own as many of the amino acid analyses are based primarily on resin-based ion-exchangers rather than bonded phases. The work surveyed in this chapter also predates many of the recent advances in the size exclusion separation of proteins. The topics are generally well handled and the chapters have little overlap. The final chapter by Macrae and Nursten offers a glimpse into the future with sections on microbore/capillary LC, size exclusion chromatography in aqueous systems (a hint of the scope for protein work) and HPLC-MS, all areas of active current development.

Some areas which might be important in food analysis are absent, such as chiral separations, contaminants and residues of pesticides or fungicides, and the active interest in *N*-nitroso compounds. Additional chapters on such topics could well have replaced the earlier general sections and increased the breadth of the book. Overall this is a useful introduction to the field of food analysis by HPLC and will provide the reader with a framework for further study.

Roger M. Smith

Computers in Analytical Chemistry, Philip G. Barker. Pergamon Press, Oxford, 1983, pp. xvi + 472, ISBN 0-08-024008-9, £37.50.

Recent months have seen the launch of at least two new journals dedicated to the applications of microcomputers in the analytical laboratory, reflecting the rapid rise of the use of computers as integral components of almost every modern instrument and as data stores, analysers, word processors, and memory banks. Developments in this area are now occurring at such a rate that new instruments have a lifetime of no more than two years before being replaced by yet newer models with more memory, more control, bigger processors, greater facilities, and sometimes even less cost. In such a rush of developments many analysts feel the need to step back and obtain an overall view of developments, to see how their area of work is being affected and to try to assess the ways the trends are moving. It would seem therefore that this book by Philip Barker, a chemist turned lecturer in computer science, might have been produced at an opportune moment.

The book is aimed at readers with some knowledge of chemistry from advanced undergraduate to the practising analyst. It starts with three chapters describing the author's view of the analytical method, analytical techniques and instrumentation, which according to the book's cover are intended "for the chemist". However, the treatment is erratic and suggests

a lack of familiarity with current laboratory practice. Subsequent chapters discuss the structure of computers, large, medium and small, and their role in data collection, interfacing and communication channels, and automation in the laboratory. The final sections cover applications of the computer in the handling of data, data bases, information systems and computer networks.

Despite having been prepared from camera-ready copy there are few references after early 1981, almost a generation of developments ago. As a consequence many recent advances are not included. Even with this failing the book could still have been valuable as a background source to which the reader could add from the current literature. However, the style is such as to discourage all but the most devoted reader. It desperately needs severe editing; much of the material is badly structured, the same topic and discussion often being repeated in different places. Some sections add little to the overall subject and serve only to confuse. Throughout the book numerous trivial details are distractingly included. Is it really significant that the PET has a control on the rear to adjust screen brightness or that a soldering iron is needed for interfacing? The overall view (not unexpectedly) is that of the computer scientist, in which the larger computers, mini or main frame, play a major role in the laboratory. The dramatic changes caused by the microcomputer, primarily because it freed the individual analyst from the computer 'experts', seem to receive little emphasis. It is this change from centralized systems to the personal or free-standing bench system under the direct control of the user which has so characterized the computer revolution. This lack of awareness by the author is particularly apparent when the advantages of microcomputers in instrument control are being discussed. In some sections manufacturers' claims seem to have been accepted without critical assessment. When describing a HPLC programmer, is one of the advantages of a micro-processor really that it has a "touch keyboard"; what other kinds are there?

The author has an irritating habit of referring important topics, such as Fourier Transform, to references rather than giving a necessary but brief description. Few basic concepts are well explained and in particular, bit and byte, serial and parallel, and RAM and ROM receive only passing descriptions. Annoyingly many of the cited references are to technical bulletins, catalogues and other inaccessible sources.

Some of the worst areas of the book are those which the analyst might have expected to find most useful. In the chapter on interfacing, the IEEE 488 interface and the non-standard PET user port are described in detail, but the RS-232-C specification rates only a paragraph. Its details appear instead in a later chapter on communication systems. A/D converters receive only superficial treatment, only one type being mentioned, even though they have played a central role in the rise of the computer in the laboratory. Many of the practical problems of data collection, including signal size, frequency of collection and noise are skated over. Overall the book contains numerous errors both in typing, starting with "alcohol" [*sic.*] on p. 1, in diagrams, and in references from text to figures. The diagrams, most of which are typed box charts, are often confusing and frequently add little to the clarity of the text, having inadequate captions or labels.

Although the later chapters on information sources and data bases are possibly the better topics in the book, even here the author loses his way and frequently repeats himself: the KWIC index is defined three times within two chapters. To a large extent these chapters refer to the general uses of data in chemistry rather than the specific needs of the analytical laboratory, although the section on networking could serve as an introduction to current advances.

Despite the hope suggested by the title that this might prove to be the analyst's source book, this text is disappointing and a definitive and useful work in this important area is yet to be produced. I could not recommend this book to any of the groups suggested. In particular, I would hesitate to commend it to students for fear of turning them off both chemistry and computing. Nor is it sufficiently up to date to be of real use to a practising analyst, even one willing to seek out the information required amongst the trivial and the unnecessary.

R. M. Smith