

Chromatographic Methods (Third Edition)

By R. Stock and C. B. F. Rice

Chapman and Hall; London, 1974

viii + 383 pages. Cased edition (ISBN 0 412 10560 8) £ 5.25: Science Paperback edition (ISBN 0 412 20810 5) £ 2.90

This book covers the basic aspects of chromatography. A general introduction to the subject is followed by self-contained sections on liquid-phase, gas, thin-layer and paper chromatography and electrophoresis. There is sufficient theory to explain many of the principles involved, but the book serves essentially as an excellent introduction to the subject with some practical details about the methods available and the advantages and disadvantages of each one for carrying out the required separations. From the beginner's viewpoint it is confusing to find, for example, reference to the Craig process (p.36) but no explanation until p.260. One half of the model experiments presented in the last chapter deal with inorganic ions: this section could be improved for the benefit and interest of the numerous teachers and students working with these techniques in biological fields, e.g. dansyl amino acids may be separated very quickly on polyamide-coated thin-layer plates, a method which is economic in solvent and in space.

There are more than 400 references, a useful bibliography of related journals and books and a list of available visual aids. The format is good, the typeface easy to read and illustrated with diagrams and the contents particularly in the paperback edition provide good value for money.

This book is the latest to appear giving broad coverage

of chromatography or separation methodology at a general introductory level and would be of real value to students taking Biology and science courses in Universities and other institutions. Amongst more recent publications it falls neatly between the more elementary [1,2] and the more comprehensive and correspondingly more expensive texts [3,4]. Further reading involves reference to the numerous specialized texts on specific aspects of chromatography [5-8].

- [1] Abbott, D. and Andrews, R. S. (1970) *Introduction to Chromatography*, Longman; London.
- [2] Browning, D. R. (1973) *Chromatography*, Harrap; London.
- [3] Heftmann, E. (1969) *Chromatography*, 2nd Edn., Van Nostrand, Reinhold; New York.
- [4] Karger, B. L., Lloyd, R. S. and Horvath, C. (1973) *Introduction to Separation Science*, Wiley; London and New York.
- [5] Littlewood, A. B. (1970) *Gas Chromatography, Principles, Techniques and Applications*. 2nd Edn., Academic Press; New York.
- [6] Smith, I. and Feinberg, J. G. (1972) *Paper and Thin Layer Chromatography and Electrophoresis*, Longman; London.
- [7] Brown, P. R. (1973) *High Pressure Liquid Chromatography: Biochemical and Biomedical Applications*. Academic Press; London.
- [8] Lowe, C. R. and Dean, P. D. G. (1974) *Affinity Chromatography*, Wiley; London.

A. Darbre

Gas Chromatographic Applications in Microbiology and Medicine

by B. M. Mitruka

John Wiley and Sons; New York, London, Sydney, Toronto 1975

xviii + 472 pages. £ 13.50

This book contains seventeen chapters, five of which are by other contributors. The first chapter of this book by the author on the historical development of gas chromatography in fourteen pages manages to include

over 340 references. Subsequent chapters on theory, instrumentation, preparation of samples and gas chromatography are similar in content to those found in many textbooks on this subject. At this point the

volume becomes unique and interesting with regard to the use of gas chromatography for the analysis of micro-organisms, identification of viruses, nematodes, cestodes, trematodes and subcutaneous and systemic fungal agents. There are four main methods: (1) The extraction of a specific group of substances such as lipids which may then be examined for their characteristic contents, (2) Headspace analysis, (3) Pyrolysis gas chromatography, and (4) Multicomponent analysis of specimens.

The book is balanced in giving sufficient details for the non-microbiologist to appreciate the life forms of some of the infective agents and for the biologist to understand the methods of analysis. The problems in identifying some characteristic gas chromatography 'peaks' which may be related to a specific abnormality of metabolism or related to some infective agent are clearly outlined. Jellum notes in his contribution that an unknown mass spectrum obtained with a GC-MS computer instrument may be checked and matched against a reference file of 24 000 compounds in 7 seconds. This is impressive. Excluding work related to micro-organisms, the use of gas chromatography in medicine is mostly in the diagnosis of metabolic disorders, of which there are many known today, the analysis of steroids, drugs and toxicological agents (including alcohol), chemical carcinogens and selected compounds of biomedical importance such as prostaglandins and vitamins. Practical details and references are given for analysing these compounds as

well as alcohols, amines, carbohydrates, fatty acids and amino acids. However, the index at the end is not entirely satisfactory, e.g. the most recent literature reference to a method for amino acids (p.223) is not indexed. Although references up to 1973 are quoted in some chapters, those of post-1971 seem to be limited in number and this is probably a reflection of the time taken for publication.

The book is well produced with figures and tables and few typographical or other errors were found. Its value lies in the way the application of gas chromatography to a wide variety of biological compounds has been collated, and it will be of interest to microbiologists, pharmacologists, biologists and biochemists. The price may restrict its purchase by individual workers. This reviewer has not seen other books which compete with this one and the most nearly related are already several years old [1-3].

- [1] Szymanski, H. A. (ed.) (1968) *Biochemical Applications of Gas Chromatography*, Plenum Press; New York.
- [2] Kroman, H. S. and Bender, S. R. (eds.) (1969) *Theory and Applications of Gas Chromatography in Industry and Medicine*, Grune and Stratton; New York.
- [3] Porter, R. (ed.) (1969) *Gas Chromatography in Biology and Medicine*, J. and A. Churchill; London.

A. Darbre

BOOK LIST No. 1 July 1975

Agricultural Research Council and Medical Research Council. Food and Nutrition Research. Report of the ARC/MRC Committee. Her Majesty's Stationery Office; London, and Elsevier Scientific Publishing Co.; Amsterdam and New York, 1974. xvi + 210 pp. \$ 12.50; Dfl. 32.00 paperback.

Ahmadjian, Vernon and Hale, Mason E., (eds.). *The lichens*. Academic Press; New York, London, 1974. xiv + 697 pp. \$ 35.00; £ 16.80. Reviewed in: *Nature*, 9.8.74, 250, 522 by D. C. Smith.

Arnold, D. R. et al. *Photochemistry: An introduction*. Academic Press; New York, London, 1974. 283 pp. \$ 15.00; £ 7.20. Reviewed in: *Chemistry in Britain*, March 1975, 11, 110 by William M. Horspool.

Avery, J., (ed.). *Membrane structure and mechanisms of biological energy transduction*. Plenum Press; London, 1974. 600 pp. £ 12.50; \$ 30.00.