

little like a shopping list, but with 219 references it is certainly comprehensive and should be a useful source of information. The last chapter is in direct contrast, being confined to a single narrow topic, the synthesis of aspartame. It covers the three possible routes of synthesis by chemical methods, enzymic techniques and recombinant DNA technology and discusses their relative merits and problems in a scholarly and exemplary fashion.

In summary then, it is a generally useful and interesting book, very good in parts, less good in others. Within the selected topics covered, however, most of the chapters provide good and up-to-date reviews, which should be valuable background reading and useful sources of information to students and researchers interested in applying modern biotechnological methods to food-related work.

Anthony T. Andrews

Organic Colorants. A Handbook of Data of Selected Dyes for Electro-optical Applications. Physical Sciences Data 35. By M. Okawara. T. Kitao, T. Hirashima and M. Matsuoka. Elsevier, Amsterdam and New York, 1988. ISBN 0-444-98884-X. 504 pp. Price: US\$236.75/Dfl.450.00.

This book is Number 35 in a series which covers data on a wide variety of subjects in the physical sciences. This particular volume is divided into several sections, starting with some essential pages on the organisation of the book and abbreviations used for the solvents and journals referred to in the main body of the text. The next section gives a concise introduction to the 'Development of Special Dyes for Electro-optical Applications', including references to other texts in the field. As would be expected for a book of this type, the greatest part (383 pages) is devoted to a summary of selected properties of the dyes (2700 in total). The dyes are numbered and their names, structures, absorption data, physical properties, uses and references to the literature are all tabulated. This data is classified into ten sections according to chromophore, i.e. I: Spiro compounds (Ferrocene, Fluorenone, Fulgide, Imidazole, Phenazine, Phenothiazine); II: Polyene (Carotene, Maleic anhydride, Pyrazolone, Stilbene, Styryl, Perylene); III: Azo compounds (Dithizone, Formazan); IV: Quinone (Phthaloylacridone, Anthrone, Indanthrone, Pyrenedione, Violanthrone); V: Indigo (Indirubin, Oxindigo, Thioindigo); VI: Diphenylmethane and Triphenylmethane (Fluoran, Fluorescein, Rhodamine); VII: Polymethine (Cyanine, Pyridinium, Perylium, Quinolinium, Rhodanine); VIII: Acridine, Acridinone, Carbostyryl, Coumarin, Diphenylamine, Quinacridone, Quinophthalone, Phenoxazine, Phthaloperinone; IX: Porphine, Chlorophyll, Phthalocyanine;

X. Others (Crown, Squarilium, Thiafulvalene). The book possesses four indices (chemical compounds, molecular formulae, absorption maxima and end use of dye).

The authors are to be congratulated on the production of a book which has been carefully compiled and reproduced and which appears to be remarkably free of errors. Its use is clearly explained and is much aided by the presence of the four indices. It should be of use to the general chemist as well as the specialist. Its major drawback, as with so many books, is its price, and more copies are likely to be found in libraries than in personal collections.

Jenny Ames

Alternatives to Animal Use in Research, Testing and Education. Congress of USA, Office of Technology Assessment. Marcel Dekker, 1988. ISBN 0-8247-7977-0. 456 pp. Price: US\$71.50.

This substantial, yet moderately-priced, book presents an entirely balanced and unemotional account of the requirements for and alternatives to animal testing. The objective of the book is to be informative and synoptic about this important subject. It is therefore well-tabulated, has useful and extensive bibliographies at ends of chapters and ends with a useful glossary of terms and general index. One can, for example, look up LD₅₀ for a concise definition in the glossary of terms and then in the general index with the subsection 'alternatives to the LD₅₀'.

The book highlights tissue culture procedures and computer simulations as well as quantitative structure/activity relationships as alternatives for replacing, reducing and refining current experimental methods and discusses how to conduct tests more simply, reliably, economically and humanely.

Whilst it is scientific in its central theme, the book faces ethical questions and draws on federal agencies, animal welfare groups, and others, for expertise and carefully examines recent advances in ten countries other than the USA.

There is now a considerable body of international opinion against the indiscriminate use of animals for experimentation. In particular, the Draize eye test and the LD₅₀ test seem to be needlessly cruel and have focussed a lot of public outrage. The message is clear and some of us are already convinced, whilst others may be open to persuasion. On the other hand we must consider the advantages of medical research and p. 95 of the book, for example, graphically illustrates the pinnacle of success achieved for the coronary by-pass operation, after a multitude of steps (beginning in 1628) involving animal experimentation.