

Chapter 23 deals with adverse effects from excessive, usually grossly excessive, zinc intake by humans and experimental animals.

Finally, in Chapter 24, the editor contributes an overview of the present level of understanding, and lists various problems that await solution.

The general standard of these reviews is high, though Chapter 13 on the immunological aspects of zinc biochemistry is rather short, and does not do justice to this important aspect of the topic.

I warmly recommend this important book to all biochemists, nutritionists, and in general to all those interested in the biochemical origins of disease. My own review copy is already well-thumbed.

**D. Bryce-Smith**

**Fat-Soluble Vitamin Assays in Food Analysis.** By G. F. M. Ball. Elsevier Applied Science Publishers, London, 1988. ISBN 1-85166-239-1. xii + 326 pp. Price: £45.00.

This book comprises a comprehensive review of physico-chemical methods for determining the fat-soluble vitamins in foods and feedstuffs. The author describes their chemical structure, natural occurrence and biological activity in an early chapter, and then discusses aspects relevant to sample preparation. A chapter on non-chromatographic measurement of fat-soluble vitamins is then followed by the main chapters, which deal with the principles and applications of gas-liquid chromatography (GLC) and high performance liquid chromatography (HPLC) in the analysis of these vitamins.

The chapters on extraction and purification of vitamin-rich extracts are very useful and illustrate some of the precautions required to minimise losses of vitamins in the early stages of the analytical procedure. The chapters on GLC and HPLC analysis of fat-soluble vitamins provide rather more experimental detail than is really required, since if an analyst is trying to reproduce an analytical procedure he will surely go to the original paper in the literature. In addition, many of the analytical procedures described involve minor variations, and merely illustrate the range of stationary phases and mobile phases that can be used in the analysis of fat-soluble vitamins. Many chromatograms are reproduced in the book and this is valuable in allowing the analyst to assess the quality of the separation achieved by many of the procedures described.

The book is well referenced, with good quality diagrams and there appear to be few errors. The author has produced a very comprehensive review and this text is likely to be an essential purchase for scientists involved in the analysis of fat-soluble vitamins.

**M. H. Gordon**