

This book should contain something of interest for most food microbiologists. However, any complacency that the series will prove an exclusive vehicle for keeping up with the field is soon dispelled by the observation that even the same publishers also produce several closely related developments series relevant to food microbiology.

**M. R. Adams**

**The History of Scurvy and Vitamin C.** By K. J. Carpenter. Cambridge University Press, Cambridge, 1986. vii + 288 pp. ISBN 0-521-32029-1. Price: £27.50.

Scurvy has the dubious distinction of being, after malnutrition itself, the deficiency disease that has caused the greatest amount of death and misery to mankind.

In this book Kenneth Carpenter traces the history of the disease and the efforts of the small numbers of people in succeeding generations whose observations and insight led to the discovery of, first, preventative treatments and, finally, the isolation and identification of the antiscorbutic vitamin—vitamin C.

The history of the disease is charted using contemporary accounts and Dr Carpenter has refrained from using modern knowledge to make judgements, with hindsight, on the various and often baffling observations that the early writers made.

It is intriguing to discover just how often the observers failed to see in their observations and early attempts at the evaluation of treatments the 'correct lead', or what we now know to be the effective treatment. Dr Carpenter helps us to understand the early writers' problems by outlining the intellectual climate in which they worked, and how this limited their horizons and constrained the imaginative insights that would have led to the early elimination of scurvy. The history shows that a succession of experimenters had evidence of the effectiveness of citrus juices in their hands; however, even Lind was constrained by his personality, which limited his ability to push his ideas against the then current climate of opinion.

The book has salutary value in showing how mysterious the disease appeared to the early experimenters, often appearing to be multifactorial in origin just as pellagra had seemed.

The book traces the history of the disease from the early voyages of exploration, the experience of the British Navy and Captain Cook and the adoption of empirical solutions, to land scurvy in communities deprived of fresh fruit and vegetables such as Ireland in the years of the potato famine. Nearing modern times the appearance of infantile scurvy seemed to be

associated with affluence. This coincided with the early days of the nutritional sciences which led to the eventual elucidation of the role of ascorbic acid. Once again it is salutary to follow the paths of the 'great men and women' of this classical period of nutrition—and to see that they sometimes followed spurious lines conditioned by the scientific culture of the times. It is also clear that without the guinea pig the discovery of the vitamin would have been even more delayed.

Only in the final chapter does Dr Carpenter release himself from the standard he set originally to look back at the maze of observation and experiment and use modern knowledge to retrace the path from scurvy to vitamin C.

The book is excellently produced and the referencing is meticulous. It tells a fascinating story and should be required reading for the latter-day nutritionalists wrestling with other diseases where a nutritional factor is anticipated.

David Southgate

**Membrane Separations in Biotechnology.** Edited by W. Courtney McGregor, Marcel Dekker, New York, 1986. xx + 386 pp. ISBN 0-8247-7465-5.

This book contains 13 chapters, ranging from 10 to 54 pages, an index and an appendix, and is concerned with the applications of membranes in biotechnology. The chapter titles are: Selection and Use of Ultrafiltration Membranes; Protein Ultrafiltration—Some Neglected Considerations; Cell Harvesting; Recovery of an Extracellular Antibiotic by Ultrafiltration; Ultrafiltration Affinity Purification; a Process for Large-scale Biospecific Separations; Practice of Ultrafiltration—Diafiltration in the Plasma Fractionation Industry; Blood Plasma Processing by Electrodialysis; Membrane Separations in the Production of Alcohol Fuels by Fermentation; Membrane Separations in Food Processing; Membrane Bioreactors; Plant Tissue Culture using Membranes; The Application of Artificial Organs to Biotechnology; Waste Treatment with Reverse Osmosis Membranes. Thus the book gives a comprehensive coverage of the subject area. There are 21 contributors: 18 from North America, two from Sweden and one from the UK. The book is therefore biased toward the American market.

Some articles are very general whilst others are extremely specific. It is pleasing to see that full references are provided in most of the chapters. The standard of presentation is high and the text is relatively free of typographical errors: the main one noticed was the spelling of the word