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### Book Reviews

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## Book Reviews

Toxic Metals and Their Analysis by E. Berman. 304 pp.  
Heyden: London, 1980. £18.00. ISBN 0 85501 468 7

One of a series of monographs published by Heyden and Son Ltd. on International Topics in Science, under the overall editorship of L.C. Thomas, this is the second contribution to the series by Eleanor Berman. The cover fold claims the book will be of interest to toxicologists, biologists, environmentalists and medical personnel and be a special reference work for those in analytical and clinical fields.

Certainly under the title given it might be expected that the emphasis would be on analytical methods. However, my impression is that at least as much attention is paid to the various toxic effects of the thirty-one metals and metalloids, from aluminium to zirconium, which are the feature of separate chapters. This is not to say that the book is not interesting and at £18.00 a copy it is quite good value by present day standards.

The book opens with a general introduction to the subject of metal and metalloid toxicology, highlighting the fact that almost all the elements considered are probably needed by man, albeit in some cases in extremely small amounts, but that at high dosages all have toxic effects. The chapter also includes a brief outline of the development of analytical methods as an aid to the investigating toxicologist.

The subsequent thirty one chapters deal individually with each element and those considered include all those of most popular interest, i.e. lead, mercury, cadmium, chromium, arsenic, beryllium etc. Each chapter outlines the uses of the metal, its biochemical role and toxicology and its distribution in the human body. Normal concentrations in the human body are defined and each chapter concludes with an outline of the various methods available for analysis, their advantages and limitations. The book is certainly not

simply a competent review of the available literature, although it is claimed that 1700 references are cited. The section of each chapter dealing with effects, in many cases describes incidents in which the author was personally involved and, if nothing else, clearly demonstrates the practical as well as literature experience on which the author has been able to draw.

In addition to the information given in the separate chapters on analytical techniques available for each metal, which include colorimetry, fluorimetry, chromatography and various spectroscopic techniques, there is an Appendix which gives details of the atomic absorption procedures routinely used in the author's laboratory.

I liked the style of writing used by the author, informative but easily readable, and the 300 or so pages are set in a clear and accurate type - evidence of very careful proof-reading here. It was good to see a book in this era giving attention to some of the older colorimetric techniques: many have stood the test of time and are still useful today, especially to those who do not have access to the sophisticated instrumentation with its demands for stable power supplies and easy availability of ancillary facilities such as gasses, which so many of us nevertheless tend to regard as essential. I can certainly recommend the book as a useful introduction and sources of more detailed information via its references, to any individual attracted by the words in the title. However, with an average chapter length somewhat less than ten pages it does only serve as an introduction.

J. E. PORTMANN

Environment and the Industrial Society edited by N. Holmes.  
247pp. Hodder and Stoughton: London 1976. £2.95.  
ISBN 0 340 17192 8

Most books on the environmental crisis have been written by people who have fairly strong views that the development of industrial society is excessively damaging to the environment. *Environment and the Industrial Society* falls clearly into this category. The six contributors have an evident concern for the present direction of industrial society in terms of its use of the earth's resources. In the first five chapters the problems are stated and are then developed from various viewpoints. These include the industrial use of natural resources and the actual and

potential consequences, the problems of city life and the importance of environment to society. Chapters 6 to 8 examine three important facets of societies' reactions to environmental problems. These are the economics of pollution, which weighs up the cost-benefit approach to pollution control against the ecological approach; next, population control, and here the importance of political action is stressed as the logical way forward in a democratic society; thirdly, the education, especially of adults, in the field of environmental sciences is identified as an area of need. In the final chapter, the editor, who co-authored one chapter and wrote 3 others, re-emphasised the need expressed throughout the book for immediate action in confronting environmental problems.

The book is written with a British emphasis but the basic views expressed should hold true for other developed and developing industrial countries. It is certainly difficult to digest in one reading but there is little in it which will not be understood by the scientific reader. The framework presented by the editor is in a nutshell the need to harmonise industrial society with the natural environment. This central theme tends to be hidden within the subject matter of some of the chapters. The innumerable environmental problems which industrial society is faced present a clear need for identifying the priorities but this was not attempted in the book. In its favour the book manages to discuss a wide range of topics sensibly and without an excess of emotion. It is also good value for money. But in a subject where views are tending to become polarised the committed environmentalist will probably agree with the analyses presented in the book, many of the rest will not even accept the premise of an impending crisis.

J. G. PARKER

Foundations of Food Science by John Hawthorn. 195pp.  
W.H. Freeman; Oxford 1981. Board ISBN 0-7167-1295-4, £10.00  
Paper ISBN 0-7167-1296-2, £4. 95.

Trends in Fish Utilization by J.J. Connell and R. Hardy.  
A Buckland Foundation book. 103pp. Fishing News Books:  
Farnham, Surrey. ISBN 0-85238-120-4, £6.00

Because the two books are concerned with different aspects of the same subject, it seems reasonable to treat

them together. *The Foundations of Food Science* is a comprehensive account aimed at a wider audience than students of food science and technology. It will, I believe, succeed in its aims. As a measure of its potential for success, the strong ecological thread running through the book will attract members of that discipline even though they are not an audience specifically in view. Thus the environmental conditions required by each of the principal organisms utilised in the human food supply are dealt with briefly, but adequately. In this way an understanding of the underlying reasons for the differences in growth, availability and utilisation is gained. The influence of climate, location, nutrient status, season of harvest and method of harvesting, state of development, exposure to stress and diet upon the chemical composition and quality of the food organism is dealt with in an interesting and informative manner. Similarly, though not specifically referred to in terms of ecology, the processes of spoilage, and the associated presence of more or less toxic substances is of interest to the ecologist. Modern man is now unfortunately used to such events as fishing mackerel from otherwise clean water only to find that the flesh is tainted with diesel oil, but in the chapter on fish spoilage the author notes that fish from polluted waters carrying polluting organisms on their skins, gills and perhaps intestines have frequently been incriminated in outbreaks of food poisoning. In this last connection, the author makes the significant point that the trend to urban living has markedly increased the possibility of large scale disaster from some tainted food source: in itself an interesting aspect of human ecology.

Although this readable, well presented account of food science is concerned primarily with the composition and quality of human food, it offers a view of what might be expected in predator/prey and energy flow relationships generally. It is well indexed and at the price represents a good buy.

*Trends in Fish Utilisation* is an addition to the series produced by the Buckland Foundation. As such it is a permanent record of annual lectures maintained by the bequest of the late Frank Buckland. As the title implies it is concerned with the utilisation of existing fishery stocks (both vertebrate and invertebrate) and the possible utilisation of presently unexploited species. As is usual in this series the presentation of the book is good and Chapter 2, in particular, of interest to the fishery biologist. It is unfortunately marred by a sloppy index.

The periwinkle *Littorina littorea* is referred to as *Littorina saxatilis* (the rough periwinkle) on p.32: since the females of this latter species carry shelled young for much of the year, this combined with its smaller size is unlikely to make it a welcome addition to the human food supply. At a price of £6.00, this books seems a comparatively expensive buy.

E. J. PERKINS

Seminari internazionali sull'inquinamento marina: held in the University of Genoa 16th May to 27th June 1980. 151pp. edited by N. Della Croce. Published by Istituto Scienze Ambientali Marine, Università di Genova, 1982.

These seminars were organised as the "Gruppo Ricerca Oceanologica-Genova" became aware of its need to discuss its five year project with scientists from other countries. Of the subjects considered, the first two, viz., waves on beaches and suspended matter in the sea, are peripheral to the interests of *Chemistry in Ecology*. The remainder are concerned with atmospheric diffusion, the impact of power stations and urban effluents, metal complexation in sea water, the behaviour of metal ions at physical interfaces, the responses of the mussel *Mytilus edulis* to environmental stresses and the mechanism of uptake and storage of heavy metals in the food chain.

The whole forms a useful presentation likely to be of interest to many workers in the aquatic field, though some will, I suspect, criticise it on the grounds that it is multilingual: certainly summaries of each in Italian, French and English, although adding to the cost of production would have been invaluable. The inclusion of a consideration of atmospheric transport mechanisms is a worthy addition to a collection of papers in this field. So too is that concerned with the measurement of metal complexation in sea water. It is encouraging to note that interest in the latter is increasing, for without it and related studies aquatic toxicology will remain an imperfect discipline. Even in the compilation under review it is stated that chloramines and bromamines are formed by the interaction of chlorine injected by power stations and the ammonia or ammonium compounds present in sea water. In another well referenced paper no reference was given, and yet this is a topic of considerable interest. Moreover, there is no suggestion that there might be "competition"

for the added chlorine by the many unsaturated carbon bonds present in sea water: such could account for the observation on p.143 that "the effectiveness of chlorination may be site specific". The most troubling feature of this compilation is, however, the use by J.M. Peres of an anonymous source for 10 of the 11 figures presented: I trust that this is not a precedent for future publications.

The University of Genoa is to be congratulated both for holding the seminars and the well turned out publication which resulted. There is no doubt of its wide appeal and the whole exercise sets a precedent worthy of a wider emulation.

E. J. PERKINS