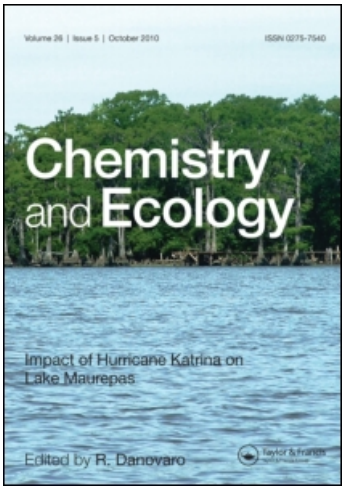

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Book Reviews

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Book Reviews

SOVIET SCIENCE REVIEWS—SECTION B., CHEMISTRY REVIEWS. Edited by M. E. Vol'pin. Volume 5. Organofluorine Chemistry pp 397. Volume 6. Organophosphorous Chemistry pp 442. OPA Ltd., for Harwood Academic Publishers, 1984. $170 each. Hardback. ISBN 3-7186-0139-7 and ISBN 3-7186-0139-7.

The object of the review series is to make rapidly accessible in the English language, important developments in Soviet Science. Five sections, A to E, cover Physics, Chemistry, Mathematical Physics, Physiochemical Biology, and Astrophysics and Space Physics with the aim of developing international cooperation and a greater understanding between scholars and scientists.

The first four volumes of Section B., Chemistry Reviews, were devoted to mixed articles covering various disciplines of Chemistry, but from volume 5 onwards single fields are to be covered each year "for the convenience of readers." By inference many fields of development will regrettably no longer be rapidly accessible unless several volumes are produced each year.

Volume 5 is devoted to Organofluorine Chemistry dealing with the use of fluorosulphates and peroxydisulphur difluoride in organic synthesis, the chemistry of fluoronitro compounds, fluoroolefines and perfluoroazomethines, and some investigations of polyfluorinated enols and carbanions.

Volume 6 is dedicated to organophosphorus chemistry which has a long tradition in Russia beginning with the classical works of Arbuzov. The achievements of well known research groups in Moscow, Kazan, Kier and Novosibirsk are highlighted in eight parts dealing with the theoretical and synthetic aspects of organophosphorus chemistry including organic derivatives of both tri- and pentavalent phosphorus, and with the different phosphorylation

reactions including their use in oligonucleotide and carbohydrate chemistry.

I particularly enjoyed the first paper of Volume 6, by Arbuzov *et al.*, 'Investigations of Cyclic Phosphorus Derivatives', since the introduction took the time to emphasise the usefulness of organophosphorus compounds as models in the investigation of important theoretical problems of organic chemistry. It also leads the non-specialist reader with confidence into a complex subject made more reader friendly by the inclusion of original hand written formulae and reaction pathways.

In the interest of speed of publication authors of both volumes have not seen proofs and are not therefore responsible for translation or technical errors that might occur. Presentation is clear and easy to read with numerous references to each chapter. Subject dedication to a volume perhaps offsets any inaccuracy of text but at a price of $170 each for around 400 pages, beauty must surely lie in the eye of the beholder!.

JOHN F. SPENCER

CURRENT TOPICS IN CHINESE SCIENCE–SECTION B., CHEMISTRY. Volume 2, pp 572 and Volume 3, pp 563. Gordon and Breach Science Publishers, 1984. $64 and $68 both soft covers. ISBN 0-677-06230-3 and ISBN 0-677-40385-2.

Current Topics in Chinese Science is a series of annual selections of current research papers in pure and applied science from two leading journals of the Academy of Science of the Peoples Republic of China; Scienta Sinica (Science in China) and Kexue Tongbao (Science Bulletin). There are seven sections A to G., in the series covering, Physics, Chemistry, Mathematics, Biology, Astronomy, Earth Science and Medical Science with publication mainly in English and occasional contributions in other major European languages.

The papers published in Section B: Chemistry are facsimiles of the originals. Each volume, it is claimed, will include all the papers published during the preceding year thus presenting a wider opportunity to learn of the major works in China which hitherto has been limited to those with direct access to the original research or a

knowledge of Chinese. With this in mind, the current political and trading climate in China will hopefully present increasing opportunities for the U.K. chemical industry during the run up to and after the administrative changes of Hong Kong. To this end Current Topics in Chinese Science will contribute to the fostering of scientific communication and thereby the enhancement of trading prospects. The time span between the original research and the published collective volumes is, however, hardly a 'state of the art' situation and perhaps two volumes per year, each covering six months, would be more advantageous.

The broad spectrum of papers in these two volumes places them very much as reference works for the library if they are to be cost effective. At $64 and $68 respectively, Volumes 2 and 3 are soft backed and strongly bound but, with the weight of nearly 600 pages each, a more durable plastic 'flexicover' would be more appropriate.

One small irritation is that Volume 2 has an error of minus two in the contents list page numbering, from p 185 onwards. The presentation otherwise is good with a clear printing of formulae and subscripts and a good reproduction of the figures.

JOHN F. SPENCER

THE EXPORT OF HAZARD. Transnational Corporations and Environmental Control Issues. edited by Jane H. Ives. 229 pp. Routledge and Kegan Paul: Boston, London and Henley. £14.95. ISBN 0 7102 0072 2

In a book of 12 chapters, a bibliography of exports from the United States and an appendix relating to the Bhopal disaster, an appreciation of the export of hazard is given by 16 authors of whom 13 are either citizens of or are based in the United States, 2 are from Colombia and 1 from India. The topics covered include a consumer perspective, a review of U.S. and international restrictions on exports of hazardous substances, ethical problems and policy proposals, occupational health in Latin America, hazard export in the Irish Republic, policy issues in transfer technology, remedies against hazardous exports, the view of a local union in the United States, and health effects.

At first sight, this is a timeous publication since there is a worldwide concern relating to trade in hazardous substances or processes be it at international or national level. Regrettably, this is a somewhat incoherent book concerned primarily with the activities of U.S. industry, with asides in the direction of Europe. The enlightenment offered would surely have been greater if the objectives of the book had been more clearly defined and if the authorship had been more international. Much of the authentication seems poor and the examples given are not necessarily of the export of hazard: thus on p. 21 "Other incidents which later came under congressional scrutiny dealt with the export in large quantities of Leptophos and Kepone, which also led to harm abroad," and on p. 91 "Pollution episodes that cause environmental and economic devastation, like Kepone in Virginia, can cost more in damage suits than the business was ever worth in profits." Neither of these statements has a proper authenticating reference, nor do they refer the reader to pp. 202–203 where a selection of references is given under the heading "Export of Hazardous Products from the United States: A Bibliography by Rashid A. Shaikh". Further, a brief examination of these sources and others in the literature suggests that it was perhaps the U.S. itself which suffered worst from Kepone and if so the term "export of hazard" is an incomplete description. Similarly, it is stated on p. 120 that one reason for the increased incidence of river pollution is "the increased use of fertilisers, causing higher nitrate levels in the water". This simplistic statement ignores the fact that knowledge of nitrates as a problem in water and its role in infant mortality is long-standing (see for example *Water Quality Criteria,* 1972 EPA.R3.73.033.March 1973, The Environmental Protection Agency, Washington D.C.) and that the presence of additional nitrate in water may prevent worse problems in some circumstances (see for example *River Pollution 2: Causes and Effects* by Louis Klein 1962, London: Butterworths). Further, the Haber Process of nitrogen fixation was developed before World War I and permits the production of ammonia and nitric acid anywhere on earth. In the context of the above statement, it hardly comes into the category of hazard export/ import. Yet there are important considerations relating to the Rhine, for example, and these do not apparently merit consideration.

In Chapter 8 an attempt is made to approach political responsibilities, but in the absence of adequately educated and responsible politicians, the matters touched on will remain empty talk. In general it is no longer good enough for either importers or exporters to claim that accidents arise because the population is illiterate. If these same illiterate populations can be transported to a particular destination by an appropriately coloured bus, it is surely not beyond the wit of man to use such an approach in labelling chemicals, processes and plant: a nettle which the book fails to grasp.

There are some careless mistakes of which perhaps the worst is the statement on p. 125 that in 1841 the population of Ireland was 65 million (cf. *The Great Hunger* by Cecil Woodham Smith, London: New English Library, 1968 who states "in 1841, when a census was taken, the population had reached 8,175,124, ... ; therefore in 1845 when the famine came the population might well have been above 9 millions.") Regrettably, too, as of so many books originating in the United States the index is poor, thereby reducing its value considerably to the would-be purchaser. Though the flysheet states that "the book's critical analysis is addressed directly to the institutional level best suited to constructive action" it is difficult to decide the nature of the presumptive audience. In the end, I must admit to disappointment in its treatment of this most important subject.

E. J. PERKINS

ENVIRONMENTAL CHEMISTRY by Peter O'Neill. 232 pp. Allen and Unwin 1985. ISBN 0-04-551085-7, £20. ISBN 0-04-551086-5 Pbk, £8.95.

This handbook is intended for students taking first year degree courses, or science sixth forms, who may lack sufficient background knowledge or understanding of chemical principles important in environmental sciences. The author sets out to provide a broad survey of the operation of natural systems with emphasis on the natural transfer of elements and their compounds through biogeochemical cycles. He argues that "environmental chemistry attempts

to explain why a specific change occurs and why a particular pathway is followed" and defines environmental chemistry as "the study of the role of chemical elements in the synthesis and decomposition of natural materials . . . including changes brought about by human actions."

The book is divided into four sections. The first, "The oxygen rich planet" (30 pp), outlines the history of the earth and relationships with atmosphere, ocean, crust and mantle, with passing recognition of some important biological processes. It includes a more detailed treatment of the role of oxygen in chemical processes, especially in atmosphere. The second part, encompassing "Major elements in living matter" viz. H, C, N, S (86 pp), deals with the global cycle of each element in turn, and its biologically important reactions. Then follows a section on "Major elements in the Earth's crust" (55 pp), viz., Si, Fe, Al, Ca and Mg.

As a reader with biological training and acknowledged deficiencies in understanding of modern chemistry, I found the book rather disappointing in the light of its declared objectives. The wide scope of the text, from global cycles through to biochemical mechanisms, health effects and occasional excursions on industrial processes and corrosion leads inevitably to a superficial, at times even dismissive, treatment of some topics. On the other hand some topics are given more detailed treatment, although the basis for such discrimination is not clear, being apparently neither related to their present perceived importance in science or in the popular view, nor reflecting particular growing points in scientific understanding. On topics with which I am most familiar e.g. S cycle, acid rain and aluminium toxicity, I found the text misleading, even wrong in places (perhaps because of the rapid scientific advances in this field), reflecting a limited acquaintance with the published literature. In this contentious topic, there was little to suggest that many aspects are not well understood.

I was puzzled also to find space given, for example, to an explanation of normal vs. log normal data distributions, and to the distinction of accuracy and precision (perhaps originating as asides in a lecture?) which I would have expected readers to have acquired elsewhere. Similarly, a section on energy seems out of place; this and other topics outside of the natural environment extend the scope of the text to its disadvantage. Tables and figures often fall

short of what is needed—they sometimes seem to have been selected independently of the text, and are not always explained clearly, in some cases containing redundant information.

The faults for the most part must lie in the too broad scope of the text—it must be impossible to encompasss all to the satisfaction of readers who may be well informed on some topics and ignorant of others. In spite of his heroic attempts, the author might perhaps be encouraged to focus on a few chemical themes in order to achieve his objectives. As it stands the book cannot be said to replace some older texts, albeit these cover only a more limited scope and have less ambitious objectives.

G. HOWELLS
27 February 1986.