latitudes. The second part is concerned with inter-oceanic differences in the degree to which predation-related adaptations in shell structure are developed, and the third part reviews inter-oceanic differences in patterns of extinction and speciation along latitudinal gradients.

One has the impression that the author has drawn on a considerable personal experience of marine communities in many parts of the world and although most of the examples are taken from the Mollusca, particularly from the shelled gastropods, this does not seriously detract from the fundamentally interesting ideas which emerge from the text. The main problem with the book is that in many ways the intuitive ideas expressed in the text are ahead of the data necessary to support them. This is due in part to the difficulty of quantifying architectural differences in shell type and partly to the global comparisons ranging through geological time. Nevertheless the trends are illustrated as far as possible by profuse photographs, although the uninitiated (including myself) may find some of these difficult to interpret.

The chapter on vulnerability to extinction in stress-tolerant, opportunistic and "biologically competent" species and its relevance to biogeography throughout an evolutionary time scale will be of particular value to scientists and senior students with interests in palaeobiogeography. Nevertheless, I personally would have felt the work as a whole to have been more satisfying if there had been some more serious attempt to quantify the trends which are illustrated in the photographs. As the author himself admits frequently in the text, a great deal more data need to be obtained to verify some of the ideas raised in the book. However, informed speculation, particularly when expressed in a thoroughly readable and lucid style as it is in this book, can play an important part in promoting new work on the nature of animal adaptation. In this respect the book is a valuable addition to the literature and represents a significant contribution to our understanding of the ways in which biological interactions influence the structural design of living organisms.

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Radiation damage in semiconductor materials

Radiation Effects in Semiconductors and Semiconductor Apparatuses. By V.S. Vavilov and N.A. Ukhin. Pp. 280. (Consultants Bureau/Plenum: New York and London, 1978.) £30.

AN English translation of a scientific book by an authoritative Russian author is always of interest as an insight into Russian thinking. When the subject has strong connections with technological fields such as semiconductors and nuclear science, the interest is even greater. It is thus a disappointment to find that the original of this book was finished over ten years ago — much too long ago in a fast-developing subject such as this. Viktor Vavilov has done distinguished work in the field of radiation damage in silicon, especially in the fields of photoconductivity and photovoltaic effects, and such work requires an extensive background knowledge of radiation damage in bulk silicon and germanium. The surveys of these latter topics are useful, especially as the classic work in this field was done before 1967. Moreover, the accounts given of the carrier removal rates and other defect phenomena in these semiconductors include summary tables which can be used by research workers for a long time. On the other hand, the fact that the semiconductor technology discussed is over 12 years old lends to other parts of the book an overwhelming impression of ancient history. In addition, the crediting of work to various authors is vaguely done, so that many sections do not even serve as historical guide. No specifically Russian insights are revealed, as much of the best work discussed is American. Evidence that the present anonymous translator was not an expert in the field comes from the mangled versions of US workers' names (Prines for Pines; Byub for Bube, and so on — products of translation into Russian and then back to English). "Apparatus" in the title should, of course, read "Device".

The surveys of radiation damage and transient radiation effects seem fairly complete, except for a curious (even political?) omission of the work of Rappaport, Wysocki and co-workers on lithium doping in silicon. The discovery by this group of the action of lithium in the 'healing' of radiation damage in solar cells was an astonishing technological application of basic radiation damage physics. Could it be that Vavilov does not wish to admit that, although engrossed in basic studies of lithium in damaged silicon, his group missed this particular trick; or is there some defence application of the principle which puts the work outside the realm of discussion in the USSR?

Due to lack of other good summaries of the field, this book will find a place on the shelves of research workers, but its main rôle is that of an historical record.

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Mechanical properties of ceramics

Mechanical Behaviour of Ceramics. By R.W. Davidge. Pp. 165. (Cambridge University Press: Cambridge, 1979.) £15.

THIS book fulfils a need that has existed for some time now. The mechanical properties of ceramics have been a subject of comparatively intense research for some two decades or more — in fact, ever since the 1950s, when the hope was expressed that these brittle materials might be made tougher by more research, the optimism centring initially at any rate on the prospects for improvements in the ductility of polycrystalline ceramics by analogy, I suspect, with the history of improvements to cast iron. As becomes apparent from reading this book these hopes were not well founded. It would be hard to find a better author for this book than Dr Davidge who has been at the forefront of research in this subject for numberous years.

The layout of the book is essentially classical, mapping out our knowledge of the factors affecting the intrinsic elastic and strength properties of ceramics, the treatment of flaws through fracture mechanics and finally reviewing the essential details of plasticity and the reasons for many ceramics being inherently strong. These areas are reviewed in the first 5 chapters of the book.

Chapters 6-9 deal with the fracture strength,impact resistance, toughness, thermal shock, and last but not least, engineering design data. The scientific arguments are well presented and the accent is inevitably on the so-called engineering ceramics which are comparatively simple ones, usually single-phase polycrystalline and low in porosity. I suspect that the industrial ceramist who is often dealing with multi-phase, inhomogeneously textured ceramics often containing appreciable porosity, may view the book critically. For example, he will not find any comment on the well established strength/porosity relationships. Neither is there any attempt to demonstrate how the knowledge developed can be used to design a ceramic. No doubt Dr Davidge takes the view that our understanding has not developed sufficiently to take such issues on board.

However, the above remarks are not meant to detract from the excellence and usefulness of this book which I am sure will be welcomed by the scientist researching into the subject.

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