source of information, if they already have some knowledge, especially in the field of liquid crystals. Citation of literature seems to be fairly complete, and opens the field for further studies.

The subject index contains about 160 key words, a small number when compared with the numerous new definitions and items presented in the book. Some of the key words, such as earthquake, catastrophic theory, turbulence and others which are not explained in the text could have been dropped, others which are extensively treated are not included. Since the index contains relatively more mistakes and errors than could be detected in the various chapters this reviewer recommends a revision of the index for the next edition. This seems to be the only criticism that could be raised of this useful book.

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Point defects and defect interactions in metals. Edited by JIN-ICHI TAKAMURA, MASAO DOYAMA and MICHIO KIRITANI. Pp. 990. University of Tokyo Press and North-Holland Publishing Company, 1982. Price US $106.50, Dfl 250.00.

This book is a report of the Yamada Conference V on Point defects and defect interactions in metals held in Kyoto, Japan, in November 1981. Thus it is the latest in a series of independently published reports of international conferences on the present or closely related topics. The earlier conferences were held at Kyoto, Argonne and Jülich in 1962–64–68 and at Gaithersburg, Gatlinburg and Argonne in 1973–75–76.

In all the volume contains some 200 contributed papers. They are mainly short typical conference report papers of 3–4 pages, with a group of larger (8 page) keynote papers presumably submitted by invitation. These latter papers, although not reviews in the full sense, provide the reader with a brief statement of our current state of knowledge in various topics. The papers in the book are divided into eight major categories: *Advances in techniques*–11 papers; *Atomic defects*–55; *Point defect solute interactions*–44; *Diffusion*–16; *High-concentration alloys*–14; *Defect clusters*–16; *Interaction with dislocations and grain boundaries*–9; and *Radiation damage*–37. Further division into sub-categories is made for the three major categories above. For example, the *Radiation damage* category is divided into *Primary damage*, *Radiation-induced microstructure* and *Solution stability and segregation*. There is also a ninth category, *Future problems and comments*, to which three of the prominent participants have contributed very brief assessments of the conference achievements and attempt to point the way ahead.

The contributed papers cover a very wide range of experimental techniques for the detection and analysis of point defects and their interactions. Of these techniques, some will already be familiar to most scientists with an interest in the solid state. These include resistivity studies, thermal expansion measurements, X-ray Bragg and diffuse scattering, transmission electron microscopy and Mössbauer spectroscopy. Other techniques reported which are probably less widely familiar include ion-channelling, nuclear magnetic resonance, ultrasonic attenuation, positron annihilation (lifetime, line shape and angular correlation) and muon spin resonance techniques. Clear exposition of the applications of these techniques to defect studies are found in some of the larger papers. Other papers are devoted to purely theoretical studies. For example, in the category of *Atomic defects*, there are papers concerned with: the calculation using self-consistent pseudo-potential theory of the electronic structure and formation energy of a vacancy in aluminium; the electronic structure of impurities in the transition metals; the lattice vibrations around point defects; and several other topics.

A good feature of the book is the extensive report of the discussion evoked by the various papers. The discussions, which total some 112 pages, are presented as a series of questions and answers for individual papers and are grouped together at the end of each sub-category. The requirement of submitting questions and answers in writing has in most cases resulted in a greater understanding (though not necessarily agreement) between the contributor and questioner than is often the case during oral discussions. Occasionally, however, the *reader* is still left in some doubt through the misprinting of words in either question or answer, *e.g.* on p. 139 in discussion of paper on p. 113 we have 'Our calculated results show the small *electric* binding energy between a vacancy and an In impurity in Zn and the small negative binding energy in Cd' . . . electric = positive . . .?

As with all large conference volumes there is a significant variation in the standard of the contributed papers, both in scientific content and in the clarity of their presentation. It is also a very large book, 990 pages, but it has been given both an author index and a very good and detailed subject index. The final result is that the book with its approximately 200 papers and their attendant discussion comprises a worthwhile conference report but does not reach the editors' aim (flyleaf notes) of being 'a general text presenting the current state of the existing fundamental knowledge of point defects and their interactions in metals'.

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Radiation effects computer experiments. By J. R. BEELER JR. Vol. 13 of **Defects in solids.** Edited by S. AMELINCKX, R. GEVERS and J. NIHOUL. Pp. xviii + 881. Amsterdam: North-Holland, 1983. Price US $168.00, Dfl 395.00.

The study of radiation effects in solids involves the interactions of energetic primary radiation particles with one or,