deliberately draws on the experience in "solid-state studies performed at the Deutsches Electronen-Synchrotron (DESY)" and in doing so apologizes "for the insufficient credit given other workers, particularly those at the Tokyo, Frascati and the National Bureau of Standards synchrotrons."

As the title of the review indicates, it is "user" oriented, considering the synchrotron "as a giant light bulb." For this reason the properties of the radiation emitted by the orbiting electron are condensed into about 11 pages. The author approaches the formalism of the characteristic properties of synchrotron radiation by using intuitive physical arguments. The reader who wishes a more formal approach can use the abundant reference list. This is followed by practical consideration and advice about the use of the radiation. The review mainly is devoted to solid-state experiments carried out in Germany.

The documentation is quite good and up to date. All in all about 170 references are given, with a good number published in 1968, and even a few in 1969. Sokolov and Ternov's book is mentioned, with adequate reference to the voluminous Russian literature on this subject.

The second review in this slim volume is a 45-page examination of the electron-phonon interaction and the Boltzmann equation in narrow-band semiconductors. It is a purely theoretical investigation of the interaction of electrons, or holes, with acoustic and polar phonons in electronic bands with a width $\Delta E$, which is of the order of $k\theta$ or even smaller than $k\theta$. The Boltzmann equation is derived and applied to a one dimensional model. A few remarks are added on the three-dimensional case.

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## Advanced Physical Chemistry: A Survey of Modern Theoretical Principles

**By S. M. Binder**
554 pp. Macmillan, London, 1969. $13.95

This book is written at the graduate level and covers the following topics: a mathematical introduction (about 400 pages); classical and quantum mechanics (60 pages); theory of gases (100 pages); thermodynamics (100 pages) and statistical mechanics (130 pages). The material is set out well and the topics are sensibly chosen.

It was interesting to examine where this book introduced material not normally treated in physics courses. I think I could identify 5% as such, meaning that 95% overlaps with physics. Then one has to say that the title "Physical Chemistry" must be justified by the difference in the treatment. It is true that the approach is different, and it is a little more colloquial than most texts. Now and again some clear immaturities are found; for example, a whole page is devoted to how a hypodermic syringe can be used to fill ink capsules. Also some strangely opaque statements occur: For example, in discussing standard states (dear to physical chemists) the author states that "For real gases, a hypothetical standard state is defined: the state of unit fugacity. Fugacity is the thermodynamic analogue of pressure in nonideal gases."

As a physicist engaged in biology, I looked in vain for the regions where normal physics treatments do *not* cover areas of chemistry, notably the liquid state. For students, an exposition of Frenkel's work would be most valuable and some idea of the whole concept of water and how its conformations interact with ions and nonpolar substances would be extremely useful.

I could not help thinking that the kind of course for which this book would be used represents a bypass of what should be given by physicists in a physics department. Maybe the whole collection is not to be found in such departments, and, if so, I suggest physicists get the message and introduce the course needed.

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## Type II Superconductivity

**By D. Saint-James, G. Sarma, E. J. Thomas**
294 pp. Pergamon, New York, 1969. $14.00

Interest in type-II superconductivity has recently been encouraged by the discovery that many type-II superconducting compounds have high critical fields that allow their use in superconducting magnets. In addition, many of these compounds have exceptionally high transition temperatures. D. Saint-James, G. Sarma and E. J. Thomas have made considerable contributions to the theoretical and experimental understanding of type-II superconductors. In *Type II Superconductivity*, the authors present the results of their research and give an interesting survey of the available information.

The first half of the book, written by Saint-James and Sarma, covers reversible properties. The opening chapter is a general introduction to superconductivity, similar to the development in the initial chapters of P. G. deGennes's book, *The Superconductivity of Metals*