

They cover the cell model, the theorem of corresponding states, a little bit about mixtures, and a little bit about direct calculation of the radial distribution function. The French is remarkably clear and easy to read. Indeed, because the book contains essentially nothing of the new developments in the theory of liquids, its primary use will be as a French reader for students studying for the PhD language examination. I have already tried it out for this purpose and find it to be very good because the subject matter keeps the student interested.

To sum up, the material presented in the monograph is not sufficiently modern to warrant purchase of the book except under conditions where the fact that it is written in a foreign language can be put to good advantage.

Parametric and Tunnel Diodes. By Kern K. N. Chang. 256 pp. Prentice Hall, Englewood Cliffs, N.J. 1964. \$10.95. Reviewed by H. J. Hagger, *Albiswerk Zürich, Switzerland.*

Modern electronics has a wide field of application for parametric and tunnel diodes. The author of this book aimed to present a combined treatment of both the physics and the application of parametric and tunnel diodes, but in such a short volume there is not enough space to treat this complex subject thoroughly.

Almost every book on semiconductor devices starts with an introduction into band theory of solids, and the same happens here. One may ask whether a reader of such a book should not already be very familiar with this theory. In the reviewer's opinion it is not necessary to devote one-eighth of a book just to the remark that the capacitance of a semiconductor diode varies exponentially with the applied voltage. This criticism does not apply in the same sense to the twenty pages of theory on tunnel diodes, which is quite valuable. In the chapter on manufacturing these diodes, more recent fabrication methods are mentioned, but they are not explained to the extent one would have wished. The chapter on parametric amplification considers the non-degenerate, the degenerate, and the converter cases. Some rough drawings

of experimental designs are included. One chapter deals with harmonic and subharmonic wave generation, and even microwave logic circuits are mentioned. Very often the author refers to applications which have been suggested, but he does not give credit to the inventor of a device or a circuit, nor does he refer to the bibliography at the end of the book.

The amplifier and the oscillator sections give a reasonable survey of tunnel-diode applications; the section on digital elements with tunnel diodes, however, is just a brief mention that these elements exist. In the section on converters, experimental results are given, but there is no reference to the source. The few photographs in the book show laboratory models in some breadboard stage, which is neither characteristic nor informative. The photographs are so unhappily taken and badly explained that the reader does not gain any profit from them.

In the last part, on recent progress in the field, the only definite statement the reviewer could find was that development work on parametric and tunnel devices has shown some progress. The book finishes with a bibliography on these diodes and their applications, covering publications through 1962 and some part of 1963. One comes to the conclusion that the author has mostly written about the things that interested him. The book does not contain enough information for the specialist to be indispensable to him, but it may serve as an introduction to the subject provided that it is well supplemented by reading the references. But sorting them out is difficult because the text contains no references to the bibliography.

Uranium, by J. H. Gittus. 623 pp. Butterworths, Washington, D.C., 1963. \$24.75. Reviewed by M. E. Straumanis, *University of Missouri at Rolla.*

This book is the eighth in the series of "Metallurgy of the Rarer Metals". The dust cover reveals that *Uranium* provides a concise and up-to-date account of the production, properties, and applications of uranium metal, its alloys and compounds. It covers a wide range of related topics, in-

cluding geology, mineralogy, mining, some chemistry, chemical engineering, nuclear physics and technology, and metallurgy.

There are 15 sections in the book, and at the end of each section there is an extensive up-to-date bibliography which includes references to Russian publications. As one of the purposes of the book is to permit and facilitate the design of power-producing nuclear reactors, space is devoted to a discussion of the effects of pile irradiation on the metal. In appendices some data useful for reactor design are tabulated, such as nuclear cross sections of the elements and various conversion factors. Tables are also given, describing the main features of 270 reactors of the world.

The book gives very extensive information on uranium metal. It is well written, supplied with many good drawings and photographs. It is well printed on good paper, and is easy to read and can be well used by all those who are interested in uranium. There is no author index at the end, but a fairly extensive subject index. Of course, one cannot expect in a comparatively short book a deep treatment of the subject in each of the chapters, but it seems this was not the intention of the author.

Fluid Flow. A First Course in Fluid Mechanics. By Rolf H. Sabersky and Allen J. Acosta. 393 pp. Macmillan, New York, 1964. \$8.95. Reviewed by H. A. Liebhafsky, *General Electric Research Laboratory.*

Fluid dynamics rests upon a deceptively simple theoretical foundation that is a combination of the principle of conservation of mass with the equations of motion into which the Newtonian law of fluid shear has been introduced. The equations built on this foundation are complex and cannot often be used to describe flows as they are. The situation is saved by recourse to dimensionless ratios, such as the Reynolds number, and to empirical coefficients. The authors take great pains to show how fluid dynamics has become a useful science in spite of the contrast between the simplicity of the theoretical foundation and the complexity of the actual phenomena. The student who understands how this