**Neutron Physics.** By K. H. Beckurts and K. Wirtz, translated by L. Dresner. Springer-Verlag New York Inc. (1964). 444 pages, $17.00.

This book represents the third stage in the evolution of a text based on some lectures given by K. Wirtz at the University of Gottingen beginning in 1951. An expanded version of these lectures *Elementare Neutronenphysik* by K. Wirtz and K. H. Beckurts was published in Germany in 1958. The present book represents a new edition rewritten almost exclusively by the junior author. The uniformly excellent English translation is by Lawrence Dresner of ORNL.

The purpose of the original lectures was to introduce the student of physics to the work of an experimental neutron physics laboratory. This flavor has been retained although the book has been greatly expanded to include several new chapters on experimental methods and on the theory of neutron slowing down and diffusion in nonmultiplying media. The book is divided into four parts, the first of which deals with general methods of producing neutrons and measuring their nuclear interactions. Part II deals with the general theory of neutron fields. Part III deals with special methods of measurement of neutron spectra. It includes such topics as foil activation and the theory of foil perturbations, threshold detectors for fast neutrons, neutron flux and source standardization, and the measurement of the spectrum of low-energy neutrons in bulk media. Part IV deals with the experimental determination of neutron transport parameters such as neutron ages and transport mean free paths by stationary methods and the recent investigations of neutron thermalization by pulsed-neutron and other nonstationary techniques.

The subject matter of *Neutron Physics*, while therefore quite wide, is generally handled with skill and restraint. The emphasis is always on physical ideas and on clarity of understanding. The book would make an excellent text for a course in experimental neutron physics or experimental reactor physics. While such courses are not usually given in this country, they might well be initiated in applied physics curricula. It is unfortunate that the price of the book is a bit high as a general text for students ($17.00).

By far the best sections of the book are those on neutron thermalization, which are very thorough and up-to-date. The sections on neutron sources and detectors are also excellent. In some areas we would have preferred a more expanded discussion, in some areas less. For instance, the material on solutions of neutron slowing-down and diffusion problems tends to become too categorical, or 'Wallace and LeCainish.' The discussion of epithermal neutron activation leans too heavily on the imperfect Westcott recipe. The discussion of the relationship between flux and power in research reactors is imprecise. The discussion of resonance absorption of neutrons covers only the old narrow resonance formula for homogeneous systems and little of the experimental work of the past several years.

In general, the book is spotty in its treatment of U. S. work, particularly that prior to 1956. Thus the section on sigma piles does not cover such early U. S. work as the cadmium shutter technique, the methods of source placement to eliminate low-order harmonics or the use of image theory. However, we learn that Heisenberg and others also used the cadmium shutter technique during the 1940s but in spherical rather than prismatic geometry.

There are many handy short tables and appendices which will be appreciated by the experimentalist even though such tables rapidly become obsolescent. The appendices include thermal-neutron cross sections, dilute resonance integrals, tables of $E_n$ functions, and tables useful for the correction of foil activation data.

On the whole, this is an intelligent and intelligible book.

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Received December 29, 1964

*About the Reviewer: Jack Chernick started his career as a pure mathematician. Since 1947 Mr. Chernick has been noted primarily for his theoretical reactor physics studies at Brookhaven. In addition to making contributions of his own to the theory of reactor statics and dynamics, as leader of a group of reactor physicists at Brookhaven he has run an "international school" which has produced many leading research workers in these fields. He initiated a number of novel breeder reactor and research reactor concepts including Brookhaven's HFBR. He is a Fellow of the American Nuclear Society.*

**Fundamentals of Heat Transfer.** By Samson Semenovich Kutateladze. Academic Press Inc., New York City. (1963) 485 pages. $14.50.

Professor Kutateladze has written a heat transfer text that will be a pleasant surprise to those in