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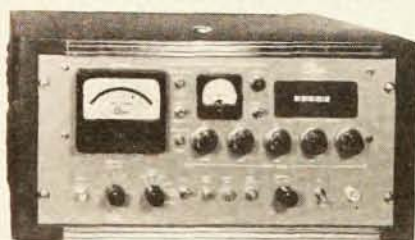
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tinguishes nuclear technology from any other engineering area. The book can serve as a useful first introduction to the subject for undergraduate engineers, by virtue of its interesting and descriptive character. As a text, however, the book would be more challenging with the addition of mathematical analysis and illustrative numerical examples. The problems at the end of each chapter would be very hard for the engineer to solve without supplementation by lecture material aimed at calculations.

Kerntechnik: Physik, Technologie, Reaktoren. Edited by Wolfgang Riezler, Wilhelm Walcher, Wolfgang Finkelnburg, Heinz Maier-Leibnitz. 1002 pp. B. G. Teubner Verlagsgesellschaft mbH, Stuttgart, Germany, 1958. DM 150.00. Reviewed by Hans Frauenfelder, University of Illinois.

KERNTECHNIK, best translated as "Nuclear Technology", is designed to cover within one volume the entire field of nuclear power. It should, in the words of its editors, teach the physics of fission and fusion to the engineer and present the technological and technical aspects of nuclear power to the physicist. The beginner should find an introduction and the experienced worker information and guidance to the literature.

It is clear that such an undertaking is very ambitious and exceeds the capacities of any one man. The editors hence enlisted the help of about forty scientists and engineers to treat the various aspects of nuclear technology. Despite the many contributors, the book makes a uniform impression in style and level. This uniformity and the excellent cross referencing indicate that the editors have not been content with assembling the various chapters, but have performed a good job of editing and balancing.

The book is divided into five parts. In Section 1, the relevant foundations of nuclear physics (introduction into nuclear physics, fission, passage of radiation through matter, nuclear measurements) are discussed in sufficient detail for understanding the later chapters. One misses, however, a treatment of transistor circuits. Section 2 is devoted to technological problems and contains chapters on the technology and metallurgy of reactor materials, chemistry of radioactive substances, isotope separation, radiation damage, radioactive waste, uses of radioactive materials, hot laboratories, radiation shielding, and health physics. In Section 3, theory and design of reactors are discussed and problems encountered in use (measurements, safety problems, organization, research) are outlined. One chapter is devoted to analog computers and simulators. Controlled nuclear fusion is contained in Section 4. This part will very likely become obsolete most rapidly. This is due in part to the present state of thermonuclear research and in part to the fact that fusion research in the United States is not discussed. Section 5 finally contains two chapters, one on economic aspects and estimated cost of nuclear power, and one on legal and insurance problems. Both chapters are written for German circum-

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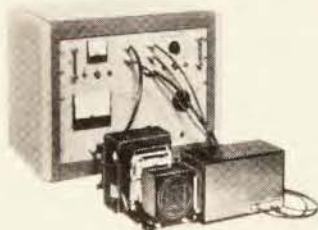
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stances and hence apply only in part to other countries. They incidentally show that science is international and universally applicable only as long as it is not invaded by lawyers, economists, or politicians.

The individual chapters of *Kerntechnik* start with an introduction, proceed to discuss the subject matter in some detail and then cite the literature for more advanced studies. The style is quite uniform, the cross referencing done carefully, and the index is complete. In short, it is a handbook in the best German tradition. To the reviewer's knowledge, no similar one-volume work exists in English. It is therefore recommended to anyone interested in nuclear power, student or experienced worker, for whom German does not form an unsurmountable potential barrier.

From Nucleus to Universe: A Course of Selected Lectures in Physics and Astronomy (Nuclear Research Found. Summer School for Science Teachers, U. of Sydney, Jan. 1960). Edited by S. T. Butler and H. Messel. 335 pp. Shakespeare Head Press Pty. Ltd., Sydney, Australia, 1960. 84s. *Reviewed by Frank Oppenheimer, Boulder, Colo.*

AS broad in scope as its title suggests, *From Nucleus to Universe* is a collection of lectures that was given as a course for high-school science teachers at the University of Sydney during the winter of 1960.

The lectures do not constitute a unified and organized course but they present an up-to-date summary of a variety of fields. The book contains lectures by a dozen different authors. There are, however, four outstanding articles: "The Universe and its Origin" by George Gamow, "The Observational Basis for Stellar Evolution" by Bart Bok, "The Origin of the Solar System" by T. Gold, and "The Interior of the Earth" by A. A. Day. In addition there are articles on stellar interferometry, thermonuclear research, cosmic radiation, auroras, meteors, and a final article on Antarctic IGY research.

The series starts with a summary of atomic and nuclear physics. This summary is very sketchy and would almost certainly not accomplish its purpose of making the following lectures any clearer to readers who are completely unfamiliar with these fields, unless supplemented with additional discussion of the subject.

I have found high-school students to be almost universally intrigued by astronomy and cosmology and with the history and structure of the earth. In fact these subjects frequently provide a much better motivation for learning about the basic principles of physics and chemistry than do the more familiar objects and gadgets which are usually described in elementary science texts. The selection of articles in *From Nucleus to Universe*, although not suitable for high-school students, can therefore provide stimulating useful background material for the teachers. I believe that the book would be most useful in connection with institutes for high-school teachers at which the articles could be discussed and explained. The book will prob-