

NEW!

Prentice-Hall Books

MATTER, EARTH AND SKY

by GEORGE GAMOW, Univ. of Colorado

THIS NEW BASIC TEXT FOR COURSES IN PHYSICAL Science includes discussion of things familiar from everyday experience; the flight of a tennis ball, the waves in the ocean, warmth streaming from the fireplace, the sound of good music, the rainbow in the sky. . . . Next the reader is taken into the world of atoms. He goes down into the world of restless molecules of gas, and inspects the beautiful architecture of crystals. He enters the atom with its swarms of unruly electrons, and the atom nucleus itself. He then sees the interior structure of our globe, visits the depths of the oceans, and the outer fringes of the atmosphere.

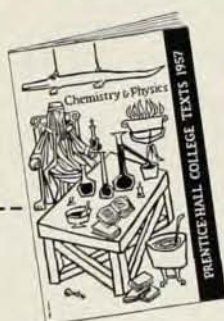
640 pp. • Pub. 1958 • Text price \$6.95

INTRODUCTION TO PHOTOGRAPHIC PRINCIPLES

by LEWIS LARMORE, Senior Scientific Advisor to the Lockheed Aircraft Corp.

IN PLAIN, FORTHRIGHT TERMS THIS NEW BOOK states the basic principles of physics, optics, and chemistry which make it possible to reproduce a scene on film; it then goes on to show you how to apply these principles to create photographs of excellent quality. The author assumes no previous knowledge of the subject on the reader's part. He begins by explaining the various types of cameras, and what they can and cannot do. Then he reviews elementary optical problems, including that of image intensity. Woven into the discussion is a large fund of practical data on processing formulas, optical formulas, and the like.

approx. 256 pp. • Pub. April 1958 • Text price \$6.95



Send for FREE 28 page
textbook Catalog

Box 903
PRENTICE-HALL, INC.
Englewood Cliffs, N. J.

Please send me a free copy of your latest
CHEMISTRY & PHYSICS textbook Catalog

Name
Address
Affiliation

ing contribution to physics and should be put in a more permanent form. However, in spite of this great improvement the detailed work of some of the other publishing houses is lacking, such as legibility of some subscripts or superscripts, and, in some cases, proof-reading errors are quite obvious.

In spite of these objections, this reviewer feels that the author has made a definite contribution, and that those whose interests lie in this field will find the book helpful.

Nuclear Stripping Reactions. By S. T. Butler in association with O. H. Hittmair. 130 pp. (Horwitz Publications Inc., Australia) John Wiley & Sons, Inc., New York, 1957. \$8.75. Reviewed by E. M. Henley, University of Washington.

The field of nuclear physics has reached the stage of revising and refining many general and long-held concepts. For example, the belief that all reactions proceed through a well-defined compound nucleus has had to be considerably modified, since it has become clear during the past few years that many nuclear collisions take place without such an intermediate state. These processes are often called "direct reactions".

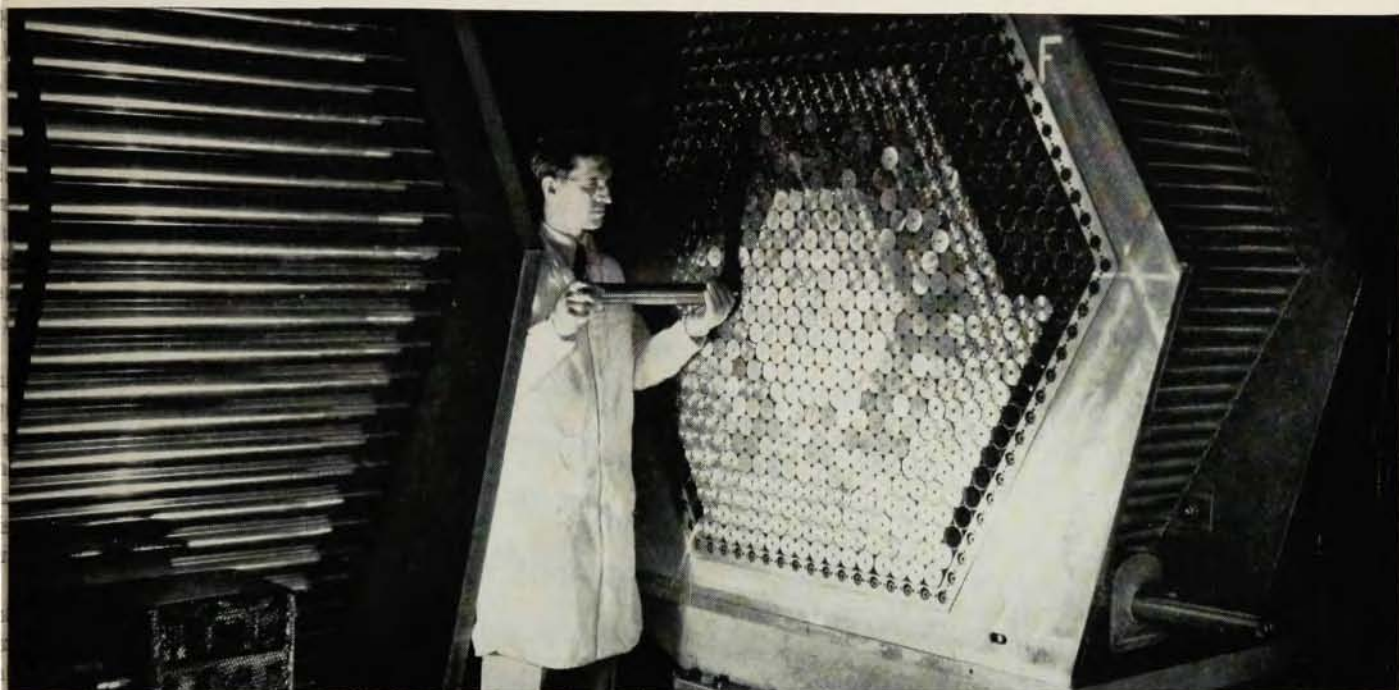
This book, for the specialist in nuclear physics, discusses direct processes in general, but is primarily concerned with the deuteron stripping reaction, in which a deuteron incident on a nucleus loses a proton or neutron to a definite bound state. The chief application of these reactions to date has been made in the field of nuclear spectroscopy, and particularly in the study of spins and parities of nuclear states.

After an introductory chapter in which a semi-classical exposition is used to give a clear physical picture of deuteron stripping and other direct reactions, the theoretical derivation of the cross section is developed quantitatively and systematically by successive stages. It is first given for a hypothetical deuteron of spin zero, stripped by a nuclear potential, with neglect of Coulomb forces, and for incident and final plane waves. These approximations are dealt with in successive chapters, and are followed by a discussion of the additional information obtainable from measurements of coincidence gamma rays and polarization of the outgoing particle. The development up to this point follows the method of Butler. Subsequently, alternative derivations of the theoretical expectation for the stripping process are briefly described. This reviewer found one of these, the "matrix formulation", not only more elegant, but also physically simpler than all other derivations. He thus could not help but wish that the development had been carried out with this formulation. In the final few chapters the authors develop the relationship of other direct processes to the deuteron stripping reaction.

The book should prove useful to both experimental and theoretical nuclear physicists. The latter will appreciate the formal development of the stripping cross section. The accompanying quantitative and qualitative discussions of the validity of various theoretical ap-

furthering
creative technology at
**The KNOLLS
ATOMIC POWER
LABORATORY**

To men concerned with pushing back the frontiers of reactor technology, the many facilities for fundamental and applied research at KAPL hold a special interest. Among the unique critical assemblies for experimental purposes is the PPA, *pictured below*. This Preliminary Pile Assembly can be shut down and restarted in 15 minutes in order to rearrange fuel elements to simulate different reactor designs. Only last year two new buildings were completed to house two additional experimental reactors, a 704 computer, and to provide modern office facilities for an enlarged mathematical staff.



Preliminary Pile Assembly has been started and shut down more than 10,000 times in the past 10 years.

**NEW SCIENTIFIC AND ENGINEERING
POSITIONS ARE NOW OPEN IN ADVANCED
NUCLEAR DEVELOPMENT AND DESIGN
OF NAVAL PROPULSION SYSTEMS**

If you want the stimulation of working toward the solution of increasingly complex nuclear power plant problems in a laboratory atmosphere, The Knolls Atomic Power Laboratory welcomes your inquiries. Current openings are listed below. Degree required; advanced degree and/or related experience preferred.

**EXPERIMENTAL PHYSICS, CRITICAL ASSEMBLIES
THEORETICAL PHYSICS, NUCLEAR ANALYSIS
MATHEMATICAL ANALYSIS, REACTOR PHYSICS
DIGITAL COMPUTER PROGRAMMING
SOLID STATE PHYSICS, CORE MATERIALS**

U. S. CITIZENSHIP REQUIRED.

*If you can qualify, send letter giving details
in confidence to: Mr. A. J. Scipione, Dept. 46-MP*



Knolls Atomic Power Laboratory

OPERATED FOR A. E. C. BY

GENERAL  ELECTRIC

SCHENECTADY, NEW YORK

SOVIET PHYSICS TRANSLATIONS

Published with the cooperation and support of the
National Science Foundation.

Soviet Physics—Technical Physics

A translation of the "Journal of Technical Physics" of the Academy of Sciences of the U.S.S.R. 12 issues per year, Vol. 2 begins July 1957, approximately 3,000 Russian pages. Annually, \$90.00 domestic, \$95.00 foreign. Single copy—\$8.00.

Soviet Physics—Acoustics

A translation of the "Journal of Acoustics" of the Academy of Sciences of the U.S.S.R. Four issues per year, approximately 400 Russian pages. Annually, \$12.00 domestic, \$14.00 foreign. Single copies \$4.00. Vol. 3 begins July 1957.

Soviet Physics—Doklady

A translation of the "Physics Section" of the Proceedings of the Academy of Sciences of the U.S.S.R. Six issues per year, approximately 800 Russian pages. Vol. 2 begins July 1957. Annually, \$25.00 domestic, \$27.50 foreign. Single copies \$5.00.

Soviet Physics—JETP

A translation of the "Journal of Experimental and Theoretical Physics" of the Academy of Sciences of the U.S.S.R. Twelve issues per year, approximately 3,700 Russian pages. Vol. 5 begins August 1957. Annually \$75.00 domestic, \$79.00 foreign. Single copies \$7.00.

Back issues are available, either in complete sets or single copies.

All journals are complete translations of their Russian counterparts. The number of pages to be published (as stated above) represents the best estimate based on all available information now at hand.

Translated by competent, qualified scientists, the publications provide all research laboratories and libraries with accurate and up-to-date information of the results of research in the U.S.S.R.

Subscriptions will be accepted on a July 1 to June 30 basis only, and should be addressed to the

AMERICAN INSTITUTE OF PHYSICS
335 East 45 Street New York 17, N. Y.

proximations should prove helpful to the experimental physicist, even though the arguments are sometimes rather tenuous. The importance of the stripping reaction in nuclear spectroscopy is clearly delineated, as is the relation of nuclear stripping radii to those found by other measurements. The experimental physicist will undoubtedly miss comparisons between theoretical predictions and experimental results; these are given for illustrative purposes in only a few instances. It is not clear, for example, that the simple theory ("stripping approximation") agrees with experiment even when the conditions for its applicability are met.

The book in general is somewhat marred by too many errors that should have been caught in editing or proof-reading, as well as by the absence of an index. Nevertheless it is a valuable reference for a thorough discussion of the deuteron stripping reaction in nuclear physics.

Experimental Crystal Physics. By W. A. Wooster. 115 pp. Oxford U. Press, New York, 1957. \$2.90. *Reviewed by R. Smoluchowski, Carnegie Institute of Technology.*

The book is a brief but complete description of numerous interesting basic experiments any of which could be performed in about two hours in a college course on practical crystal physics. It is not a survey of the field, as indicated in the title which is somewhat misleading. The book will be of great value in undergraduate physics teaching.

La Création Scientifique. By Abraham A. Moles. 237 pp. Editions René Kister, Geneva, Switzerland, 1957. Paperbound. *Reviewed by R. Bruce Lindsay, Brown University.*

This interesting book is a study of the psychology of scientific discovery in the spirit of two other fairly recent French works which have already been translated into English, viz., Jacques Hadamard's *The Psychology of Invention in the Mathematical Field* (Princeton University Press, 1945) and R. Taton's *Reason and Chance in Scientific Discovery* (Hutchinson, London, 1957). The author is a well-known French acoustical physicist (incidentally a member of the Acoustical Society of America) and Chargé de Recherches au Centre National de la Recherche Scientifique in Paris. This contemporary concern in France with the fundamental nature of the process of scientific creation is not surprising in view of the celebrated earlier work in this same field by such noted authorities as H. Poincaré, P. Duhem, and C. Nicolle. It is the aim of M. Moles to present a systematic as well as a comprehensive survey of the present status of thinking on this subject. In the reviewer's opinion he has succeeded admirably within the limits of the space at his disposal.

What is meant by the psychology of scientific creation? It is not a logical study of the concepts and methods exhibited by science as we find it set forth in