

*Important New
McGraw-Hill Books*



GERMAN-ENGLISH SCIENCE DICTIONARY

Third Edition

By LOUIS DE VRIES

Iowa State College

592 pages, \$7.00

The only compact yet comprehensive German-English dictionary specifically compiled for students who must read scientific articles and journals in the original German. The *Third Edition* includes over 3,000 new terms, and newly recognized translations of terms that have become important in scientific literature since the end of World War II. These new entries, for the sake of expediency, follow the Appendix. A new section, "Suggestions for Translators," has been added in the front of the book.

INTRODUCTION TO SOLIDS

By LEONID V. AZAROFF

Illinois Institute of Technology

Ready in April

An introductory text for students, advanced undergraduate and graduate, of chemistry, metallurgy, mineralogy, physics, and all engineering fields dealing with solids. The book covers more topics than previously covered in a single volume, but the author has tried to make most discussions complete and authoritative. Primary emphasis is on underlying principles; practical applications and specialized topics are omitted. The book concentrates on the structure, nature, and properties of inorganic crystalline solids.

the first essay there is an admirable discussion of the place of Faraday and Maxwell in the development of field physics, but no word at all of Green, whose fundamental contribution antedated both. It is true that Green in his famous 1828 memoir confined his attention to electrostatics and magnetostatics, but his concentration on the potential function as a solution of a second-order partial differential equation has had enormous influence on the progress of field theory. In fact, of course, the seeds of this point of view go back in time well before the nineteenth century. This sort of thing makes it allowable to look upon revolution in physics as more like evolution, though the dramatic possibilities are not, of course, so great.

The last essay, on elementary particles, will probably be considered the most informative by the general reader and the physicist not already steeped in contemporary nuclear physics. The author has here provided in very brief but remarkably clear fashion an effective review of the leading concepts of modern elementary particle physics, including isotopic spin, parity, time reversal, strangeness, etc.

The most stimulating, as it is the longest, essay is that on causality and its so-called decline and fall. After giving a clear account of the meaning physics has come to place on causality as essentially the existence of laws which describe physical experience with arbitrarily assigned precision, the author then proceeds to equate causality with determinism and emphasizes the indeterministic character of quantum mechanics and hence of all modern physics subsumed by this theory. This is scarcely fair to the point of view which insists that causality in physics does not necessarily imply determinism. Quantum mechanics in terms of its own definition of what constitutes the state of a system can be considered causal, even though in its predictions of the results of experiments it is indeterministic. There are some indeed who cherish the hope that quantum mechanics will ultimately be replaced by a more inclusive theory which is deterministic in character. The author, however, adheres to the Copenhagen school in believing such expectations vain and fruitless. The matter is still controversial and the undogmatic will prefer to maintain an open mind.

The Astronomer's Universe. By Bart J. Bok. 107 pp. Cambridge U. Press, New York, 1958. \$3.75. Reviewed by H. K. Kiess, Washington, D. C.

"A DEEPENED insight into the changes of recent years in our concepts of the universe" is the subject matter of this book. We begin with the solar system; discussions of planetary atmospheres replace those of life on other worlds. A recent theory of the origin of our solar system overcomes objections to older ones, and evidence for extremely high temperatures in the solar corona has led to observations in fields only glimpsed thirty years ago. Measured quantities are treated, such as stellar magnitude and color index indicative of conditions on the surface of a star.

McGraw-Hill Book Co., Inc.

330 West 42nd Street • New York 36, N. Y.

Send for
copies on
approval

*An Important New Book
from Academic Press . . .*

Nuclear Spectroscopy

Edited by **FAY AJZENBERG-SELOVE**
Haverford College

December 1959

CONTRIBUTORS:

D. E. ALBURGER	D. KURATH
M. K. BANERJEE	R. D. LAWSON
H. H. BARSCHALL	C. A. LEVINSON
G. A. BARTHOLOMEW	A. E. LITHERLAND
L. C. BIEDENHARN	W. M. MACDONALD
A. BOHR	B. MOTTELSON
L. M. BOLLINGER	H. T. RICHARDS
T. BONNER	M. E. ROSE
W. W. BUECHNER	L. ROSEN
L. CRANBERG	W. SELOVE
S. DEVONS	R. M. STEFFEN
H. FESHBACH	F. S. STEPHENS, Jr.
H. FRAUENFELDER	W. E. STEPHENS
J. B. FRENCH	D. STROMINGER
C. GEOFFRION	N. S. WALL
H. E. GOVE	W. WHALING
W. F. HORNYAK	D. H. WILKINSON
	C. S. WU

CONTENTS:

Part A, about 630 pp., illus., approx. \$16.00

Introduction

The Spectroscopy of Charged Particles

Interactions of Charged Particles
The Detection of Charged Particles
Measurement of Spectra
Charged Particle Reactions
Radioactive Decay Schemes

Gamma Ray Spectroscopy

The Interactions of Gamma Rays with Matter
The Detection of Gamma Rays and the
Measurement of Gamma Ray Spectra
The Study of Nuclear States

Neutron Spectroscopy

The Interactions of Neutrons with Matter
Slow Neutron Spectroscopy
The Measurement of Fast Neutron Spectra
The Study of Bound Nuclear States
The Study of Unbound Nuclear States
The Neutron Threshold Method

Other Topics

Photonuclear Reactions
The Measurement of Very Short Lifetimes
The Measurement of the Magnetic Moments
of Nuclear States

AUTHOR INDEX—SUBJECT INDEX FOR PART A.

Part B, about 500 pp., illus.

Theoretical Analysis of the Data

The Compound Nucleus
Direct Interactions
Angular Correlations in Nuclear Spectroscopy
Analysis of Beta Decay Data
Analysis of Internal Conversion Data
Analysis of Gamma Decay Data
The Analysis of Reduced Widths
Isotopic Spin Selection Rules

Nuclear Models

The Nuclear Shell Model
Nuclear Coupling Schemes
Collective Motion and Nuclear Spectra
The Complex Potential Model

APPENDICES—AUTHOR INDEX

SUBJECT INDEX FOR PARTS A AND B.



Academic Press, New York and London

111 Fifth Avenue, New York 3, New York

40 Pall Mall, London, S.W.1

PHYSICISTS

Expanding programs at PHILIPS have created new opportunities for Physicists and Engineers who are capable of participating in Applied Research Programs.

M.S. or Ph.D. in Physics or Electronics.
A minimum of 2 to 5 years' experience in one or more of the following fields:

**MICROWAVE PROBES
X-RAY FLUORESCENCE
ANALYSIS
X-RAY DIFFRACTIONS
ELECTRON OPTICS
LIGHT OPTICS
VACUUM SYSTEMS
INSTRUMENTATION**

Many opportunities for advancement, employee benefits, salary promotions and many other forms of recognition are, of course, available to all willing to progress with us.

Our plant is located in beautiful Westchester County, offering the advantages of suburban living, yet near metropolitan New York area.

We welcome and will treat as confidential all inquiries concerning these positions.

*Send your resume,
including salary requirements to:*

MARTIN G. WOLFERT
100 East 42nd Street—Room 802
New York 17, N.Y.

NORTH AMERICAN PHILIPS COMPANY, Inc.

NORELCO

Improved but indirect methods of determining distances increase the volume of observable space by a factor of 1000. The Hertzsprung-Russell diagram, originally plotted to show the relation between spectral type and absolute magnitude, now becomes a reference scale for intrinsic brightness and hence for the distances of remote stars.

A wealth of information comes from binary stars, visual, spectroscopic, and eclipsing. The mass-luminosity relation in which binaries play a critical role leads to ideas of stellar evolution. Variable stars suggest to the astrophysicist the problem of energy production, while to the cosmographer the cluster varieties map positions of the groups to which they belong. The distance of our sun from the center of the Milky Way has thus been estimated.

Then follows a delightful description of the Milky Way, most beautifully delineated in the Southern Hemisphere. The role of giant O and B stars in mapping its spiral form is confirmed by radio observations of hydrogen revealing its temperature, cloud structure, and density at various distances in the line of sight.

The universe is our goal. Clusters of galaxies embracing spirals, irregulars, and ellipsoids are described, but for the universe of galaxies, no superstructure has as yet been noted. Interpretation of the red shift as a Doppler effect leads to the theory of an expanding universe in contrast to the theory of continuous creation. Estimates of time, earthly and stellar, appear to corroborate expansion, said to have started 20 to 25 cosmic years ago. The cosmic year, equal to 200 million years, is a convenient time unit; it is the period of revolution of the sun about the center of our galaxy, 27 000 light years away.

We are now in the realm of theory. The lifetime of a star depends on the rate at which it spends its energy. Its demise and descent into the stellar graveyard is postulated by samples in the Hertzsprung-Russell diagram. Apologies for theories and hypotheses are expressed but justified to spur investigators towards newer knowledge. This book is excellent reading; it fully justifies its announced purpose.

Statistical Physics. Vol. 5 of Course of Theoretical Physics. By L. D. Landau and E. M. Lifshitz. Translated from Russian by E. Peierls and R. F. Peierls. 484 pp. (Pergamon Press, England) Addison-Wesley Publishing Co., Inc., Reading, Mass., 1958. \$12.50. *Reviewed by R. T. Beyer, Brown University.*

THE fame of this series of physics texts has already been heralded by the previous publication of a translation of the authors' nonrelativistic *Quantum Mechanics*. The appearance of this volume establishes even more firmly the reputation of the authors in the textbook field. The completed series will represent the best comprehensive instructional treatment of physics since that of Sommerfeld, and is, of course, thirty years more up to date.

The text attacks the problem of statistics from the