

citing states of matter, the superfluid and the superconductor. I would be more inclined to accept this work for what it is—a partisan view of the theory of matter—and forgive its author for retaining the book's overly ambitious title. This new edition will be warmly welcomed by anyone who has enjoyed the earlier version, and will bear further witness to Slater's qualities as one of our most notable teachers.

* * *

Philip Taylor is associate professor of physics at Case Western Reserve University, and is the author of a forthcoming text on the quantum theory of solids.

Waves and lines

LIGHT AND SOUND FOR ENGINEERS. By R. C. Stanley. 344 pp. Hart Publishing Co., 1968. \$12.00

by ROBERT LINDSAY

This book, by a British author who is lecturer in applied physics at Brighton College of Technology, is an effort to provide a broader and deeper exposition of sound and optics than the typical British engineering student might be expected to obtain from his elementary physics course. The chapters devoted to geometrical optics give considerable attention to such often bypassed topics as thick lenses, aberrations and photometry as well as analyzing in more than usual detail some of the commonly encountered optical instruments.

The chapters on physical optics employ standard approaches to interference, diffraction and resolving power with a theoretical development based almost completely on the principles of superposition and the Huygens tradition. No mention is made of recent work in lasers and holography. The chapters on sound include the description of techniques for measuring the velocity of sound in solids, liquids and gases, a thorough but elementary treatment of the vibrating string and several resonance situations and a survey of architectural acoustics and ultrasonics.

Most US engineering curricula require three or four semesters of elementary physics. Existing texts already treat these subjects at a reasonable depth and it appears unlikely that a book at this relatively low level would be suitable as a regular text. It

does have some attractive features that would make it worthwhile for reference purposes, including a commendable neatness of organization, a clarity of exposition that takes nothing for granted and many meticulously drawn diagrams. To the teacher of elementary physics it would provide a good source of supplementary material, but for the practically minded engineer

and technician, who encounters problems involving light and sound, it has enough useful information that can be obtained quickly to make it a good place to look first.

* * *

Robert Lindsay is a professor of physics at Trinity College and has been teaching physics to science and engineering majors for 15 years.

Two aids for galactic research

STELLAR KINEMATICS. By W. M. Smart. 320 pp. Wiley, New York, 1968. \$12.50

GALACTIC ASTRONOMY. By Dimitri Mihalas, with collaboration of Paul McRae Routly. 257 pp. W. H. Freeman, San Francisco, Calif., 1968. \$10.00

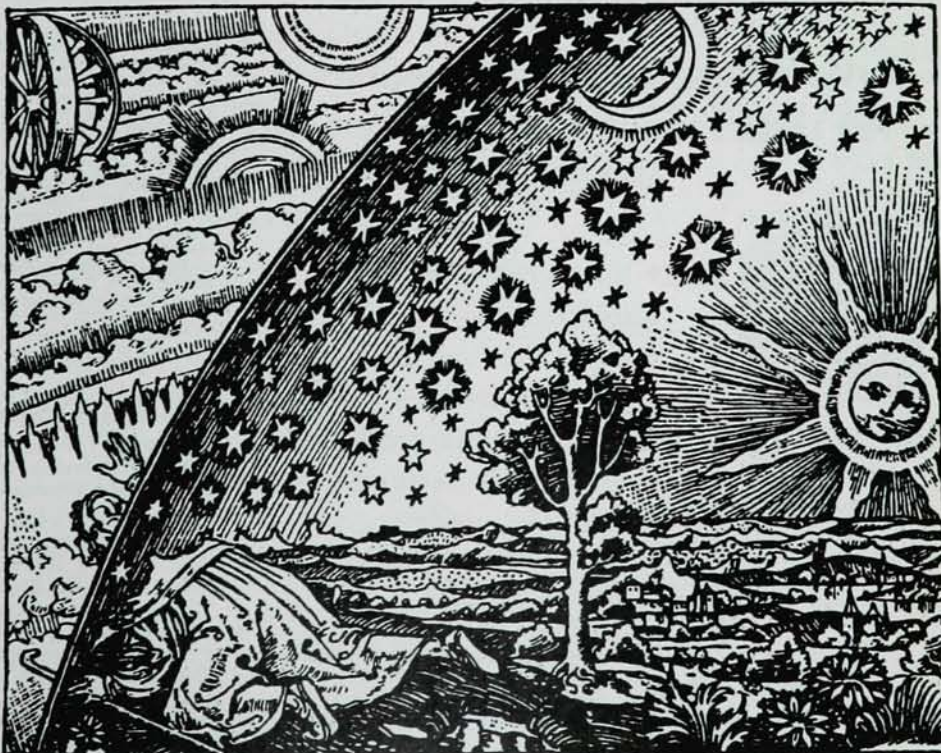
by KENNETH YOSS

These two books are useful additions to the sparse list in galactic research, which is receiving more attention with the recent availability of a new generation of modern observational equipment. Proper appreciation and analysis of the resulting data is essential, and these two books should aid in this increased activity.

Despite the first-glance similarity (six of eight chapters in one are on

the same topics as six of 14 in the other), the purposes are totally different, as are the levels of usefulness. One is a textbook for a first course in galactic structure, the other a detailed mathematical explanation of well known classical problems in stellar kinematics.

W. M. Smart is well known for his precise mathematical developments concerning problems in galactic structure. His *Spherical Astronomy* and *Stellar Dynamics* are classics, familiar to and often used by researchers in galactic structure. *Stellar Kinematics* is limited to basic problems concerning stellar motions, and many sections are modifications from *Stellar Dynamics*, which does not lessen its usefulness. Smart's attention to detail is



MEDIEVAL COSMOLOGY. Woodcut depicts traveler putting his head through the vault of the sky to discover the complexities that move the stars. (Photo taken from *Knowledge and Wonder* by Victor F. Weisskopf, Doubleday, 1966.)

Big
ones
or...

... little ones ...

... in the
discharge capacitor field
MAXWELL carries them!

Series C Energy Discharge Capacitors 5 kV to 75 kV

- High voltage
- Low inductance
- High voltage reversal
- Long life expectancy
- Low cost/joule
- Immediate delivery



1.85 μ F - 60kV
11" x 14" x 25"

Series M Pulse Discharge Capacitors

FOR LASER SYSTEMS —

AND OTHER APPLICATIONS



15 μ F - 5kV
3 3/8" DIA.
3 1/2" LG.

- Up to 125 J/lb
- to 7.8 J/in.³
- to 12 kV
- Low inductance
- High repetition rates
- Long life expectancy
- Over 150 models
- Immediate delivery

For details
contact:

MAXWELL

MAXWELL LABORATORIES, INC.
9244 Balboa Avenue
San Diego, Calif. 92123
(714) 279-5100

plenum
PUBLISHING CORPORATION

THE MANY-BODY PROBLEM

MALLORCA INTERNATIONAL SCHOOL OF PHYSICS, AUGUST 1969

Director, **L. M. Garrido**, *Professor of Theoretical Physics, University of Barcelona*

Edited by **A. Cruz**, *University of Zaragoza*
and **T. W. Preist**, *University of Exeter*

In an attempt to encourage new research and to consolidate progress made, eminent physicists discuss numerous aspects of the many-body problem. Invaluable as a state-of-the-art report on this vital topic, the book features papers by L. J. Boya, E. R. C. Caianiello, C. B. Dover, C. P. Enz, I. Fujiwara, L. van Hove, N. J. Horing, P. C. Martin, W. Thirring, and E. J. Verboven.

333 PAGES

NOVEMBER 1969

\$15.00

ELEMENTARY EXCITATIONS IN SOLIDS

PROCEEDINGS OF THE CORTINA LECTURES AND 4 LECTURES FROM THE CONFERENCES ON LOCALIZED EXCITATION, BOTH HELD IN MILAN

Edited by **A. A. Maradudin**, *Department of Physics, University of California at Irvine*

and **G. F. Nardelli**, *Gruppo Nazionale Struttura della Materia, C.N.R. and Physics Institute, University of Milan, Italy*

Reporting the latest advances in the field, this volume will be of great value to solid state physicists and crystallographers.

CONTRIBUTORS: A. A. Maradudin, G. F. Nardelli, W. Ludwig, M. Balkanski, M. F. Collins, A. J. Sievers, R. O. Pohl, R. J. Elliott, J. Callaway, P. Resibois, E. Burstein, J. J. Hopfield, G. Baldini, I. P. Ipatova, A. A. Klovichin, R. F. Wallis, G. Chiarotti.

536 PAGES

NOVEMBER 1969

\$35.00

MÖSSBAUER EFFECT METHODOLOGY

Series edited by **Irwin J. Gruverman**, *Head, Special Sources Department, New England Nuclear Corporation, Boston, Massachusetts*

Volume 5

PROCEEDINGS OF THE FIFTH SYMPOSIUM ON MÖSSBAUER EFFECT METHODOLOGY, HELD IN NEW YORK, FEBRUARY, 1969

Presenting outstanding contributions on current developments, the latest volume in this invaluable series includes reports on environmental control, new applications and methodology, and techniques for measurements in radioactive materials. Interdisciplinary in approach, this book discusses Mössbauer applications in such fields as metallurgy, mineralogy, and biology.

CONTENTS: Spectroscopy: Mössbauer effect studies of lattice dynamic anisotropy and line asymmetry in semiconductor and organometallic tin compounds, H. A. Stockler and H. Sano • Mössbauer spectroscopy of inorganic antimony compounds, J. G. Stevens and L. H. Bowen • Mössbauer spectroscopy of organometallic compounds in noncrystalline matrices, S. Chandra and R. H. Herber • Mössbauer effect studies on Eu¹⁵¹ in mixed oxide structures, G. W. Dulaney and A. F. Clifford • Systematic interpretation of the isomer shifts in tin, antimony, tellurium, iodine, and xenon, G. K. Shenoy and S. L. Ruby • Mössbauer studies of vitamin B₁₂ and some related cobalamins, R. T. Mullen • Applications: Polarization effects in Mössbauer absorption by single crystals, R. M. Housley • Determination of zero point phonon parameters: Calibration of the second order Doppler shift, T. A. Kitchens, P. P. Craig, and R. D. Taylor • The Mössbauer effect in microcrystals, D. Schroeder • After-effects of Auger ionization following electron capture in cobalt complexes, Amar Nath, M. E. Vin, P. Klein, W. Kundig, and D. Lichtenstein • Methodology: Mössbauer effect in radioactive materials, A. J. F. Boyle and G. J. Perlow • The Mössbauer effect: A new method for measuring diffusion, J. G. Mullen and R. C. Knauer • Mössbauer spectrometry as an instrumental technique for determinative mineralogy, C. L. Herzenberg • Mössbauer experiments with a He³/He⁴ dilution refrigerator, G. M. Kalvius, T. E. Katila, and O. V. Lounasmaa.

APPROX. 267 PAGES

JANUARY 1970

\$19.50

RADAR CROSS SECTION HANDBOOK

By **George T. Ruck**, *Senior Research Scientist*

Donald E. Barrick, **William D. Stuart**, and **Clarence K. Krichbaum**, *Battelle Memorial Institute, Columbus, Ohio*

In two volumes this extensive work is the first which attempts to give radar cross section data and analytical techniques for all radar targets for which information is available. With results presented through curves, tables, and engineering equations, the Handbook features a special chapter devoted to detailed description of theoretical techniques, and is invaluable as a reference for both scientists and students.

APPROX. 935 PAGES

JANUARY 1970

2 VOLUMES, \$75.00

consultants bureau/plenum press

Divisions of Plenum Publishing Corporation

114 FIFTH AVE., NEW YORK, NEW YORK 10011

again evident, and this book should prove invaluable to a worker concerned with proper procedure, the effect of observational errors and incomplete sampling on the results.

This concern for detail is in vivid contrast to his virtual omission of modern interpretation of the observations. For example, solar motion is treated in a classical manner; the cause of variation in solar apex for different stellar groups and the distinction between standard and basic solar motion are not mentioned. Chapters 3 and 4 are concerned with star streaming, which has historical and mathematical interest but little immediate practical use. The next chapter introduces the concept of ellipsoidal distribution of stellar-velocity vectors, but his discussion of its fundamental cause, found in the final chapter on galactic rotation, is very brief. He avoids such interwoven topics as stellar-density distribution and galactic dynamics so limiting the book to kinematic problems, as the title indicates.

Dimitri Mihalas is known for his fine work in stellar atmospheres, and he is to be admired for his motivation in writing *Galactic Astronomy*. A first text in galactic structure is needed, and this book goes far in filling the vacancy. It is regrettable that the first modern text has not been written by an experienced researcher in the field, however, because so much of its value depends on the proper evaluation of available observational data. Unlike *Stellar Kinematics*, discussion and interpretation of observations are included but at times should be more extensive.

The first three chapters in Mihalas's book are devoted to brief descriptive topics found in elementary texts, but these 45 pages should either have been omitted entirely or significantly expanded. The weakness of this section is exemplified in the discussion of errors in trigonometric parallaxes. His explanation for negative parallaxes is actually incorrect. It is regrettable that he did not reference more authoritative sources, such as Peter van de Kamp's *Principles of Astrometry* (W. H. Freeman), which deals in detail with problems of this type. From chapter 4 on, where he is concerned with specific details of stellar motions, galactic rotation and galactic dynamics, there is little to criticize. Mihalas writes well, and the book contains sufficient detail to introduce

the student to the concepts. Unlike Smart, he effectively discusses the currently important problems of galactic structure, such as interstellar absorption and the relation between stellar populations (ages) and motions (velocity ellipsoids). In many cases diagrams would have better conveyed the concepts than the extensive tables, most of which are unnecessary in a book of this type.

The difference in detail in the two books, which illustrates the basic difference in their purposes, is vividly depicted in the respective chapters on statistical parallax; Mihalas devotes six pages to it (a good length for a textbook), and Smart takes 36 pages.

Both books will remain useful for some time: *Stellar Kinematics* because it represents a rigorous mathematical approach to standard problems in the subject, quite independent of the constant, but slow, improvement and increase in observational data; *Galactic Astronomy* because it is presented in a readable form and includes most major topics of interest in the subject at a useful level for a first text in the field.

* * *

Kenneth Yoss is an astronomy professor at the University of Illinois Observatory, Urbana, Ill.

Beauty in the eye of the beholder

LAGRANGIAN DYNAMICS: AN INTRODUCTION FOR STUDENTS. By C. W. Kilmister. 136 pp. Plenum, New York, 1968. \$7.50

by GARRISON SPOSITO

In 1834, while in the process of delivering his own name onto the list of the immortals in physics, Sir William Rowan Hamilton wrote in celebration of the men who had created analytical mechanics. He singled out with obvious gratitude Comte Joseph Louis Lagrange as one who had "perhaps done more than any other analyst to give extent and harmony to such deductive researches, by showing that the most varied consequences respecting the motions of systems of bodies may be derived from one radical formula; the beauty of the method so suiting the dignity of the results, as to make his great work a kind of scientific poem."

Hamilton's elegant praise has in no sense become hyperbole with the pas-

G | B Technological Injury:

THE EFFECT OF TECHNOLOGICAL ADVANCES ON ENVIRONMENT, LIFE AND SOCIETY

Edited by J. Rose

Technological advances in this century have been of immense benefit to mankind; they have also resulted in grave dangers, affecting the very fabric of life and society. Thus, the higher standard of living is accompanied by the catastrophic pollution of our environment, cities in distress, populations under stress and an economy based on waste. But man has a choice of keeping this planet healthy or of dying with it.

This book is a collection of 15 chapters contributed by experts in various fields relating to the effect of technology on environment, life and society. The aim of this work is to present to an intelligent public a sober and fair account of the potential and actual dangers of technological advances. *Technological Injury* points out these dangers, impartially discusses their implications, and shows what steps should be taken to counteract the existing and potential effects. The contents of this book are divided into 2 sections: POLLUTION OF THE ENVIRONMENT and EFFECTS ON SOCIETY AND LIFE. All who care about the world they live in will welcome this book.

-----ORDER FORM----- GORDON AND BREACH, SCIENCE PUBLISHERS, INC.

150 Fifth Avenue, New York, N. Y. 10011

Please send copy(ies) of TECHNOLOGICAL INJURY: The Effect of Technological Advances on Environment, Life, and Society edited by J. Rose.

.....Reference Edition
\$19.50/Prepaid \$15.60
.....*Professional Edition
\$10.00/Prepaid \$8.00

.....TOTAL PAYMENT ENCLOSED

*Professional Editions are available only to individuals who warrant the volumes are for their own personal use and who order directly from the publisher.

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

Prepaid Orders: All orders from individuals must be prepaid. Prepaid orders average 20% discount and we pay all handling and postage charges. USA residents add applicable sales tax.