

AVAILABLE WITHOUT CHARGE

USEFUL CATALOG of OPTICAL PARTS



SCIENCE AND MATH ITEMS.

- LENSES, PRISMS, WEDGES, RETICLES
- RAW OPTICAL GLASS, GROUND GLASS
- MIRRORS, BEAM SPLITTERS, MAGNIFIERS
- INFRA-RED FILTERS, LIGHT SOURCES
- SPECTROSCOPE PARTS
- SUN BATTERIES
- ULTRA-VIOLET ITEMS

Over 1000 Unusual Bargains

AMERICA'S GREATEST SOURCE for PHYSICISTS

Write for this amazing catalog. 164 pages—hundreds of illustrations, charts, diagrams. A treasure-house of optical information. Huge selection of instruments, parts, components—accessories of all descriptions. Countless war surplus bargains. Dozens of hard-to-get items. Shop the catalog of America's greatest optical mart.

REQUEST FREE CATALOG K

EDMUND SCIENTIFIC COMPANY
BARRINGTON, NEW JERSEY

Polymer Physics and Physical Chemistry

Immediate openings exist at our Washington Research Center for Ph.D. physicists and physical chemists to engage in basic research in the field of high polymers. Specific areas of interest include:

- Solid state properties
- Rheology
- Characterization and structure
- Kinetics and mechanisms of polymerization

The Washington Research Center is the central research facility of W. R. Grace & Co., and is located in rural Maryland midway between Washington and Baltimore.

Send resume in confidence to: Dr. David M. Clark



W. R. GRACE & CO., RESEARCH DIVISION
WASHINGTON RESEARCH CENTER, CLARKSVILLE, MD.

An equal opportunity employer

or axisymmetric equations, inclusion of the effects of suction, or the comparison with experiment (which are all left out here), the reader must go to one of these or other texts. On the other hand, if he wants to start with the Navier-Stokes equations and work through the reduction to the boundary-layer equations and the mathematics of the transformations and solutions of the latter, this book is recommended as an introduction to the theory. In addition, solutions which have been published since 1953, when Howarth's two volumes appeared, up to 1961, and associated with the names of Cohen and Reshotko, Curle, Davies and Bourne, Gadd, Görtler, Liepmann, Lighthill, Lilley, Meksyn and Merk, Monaghan, Poots, Spalding, Tani, and others, are summarized.

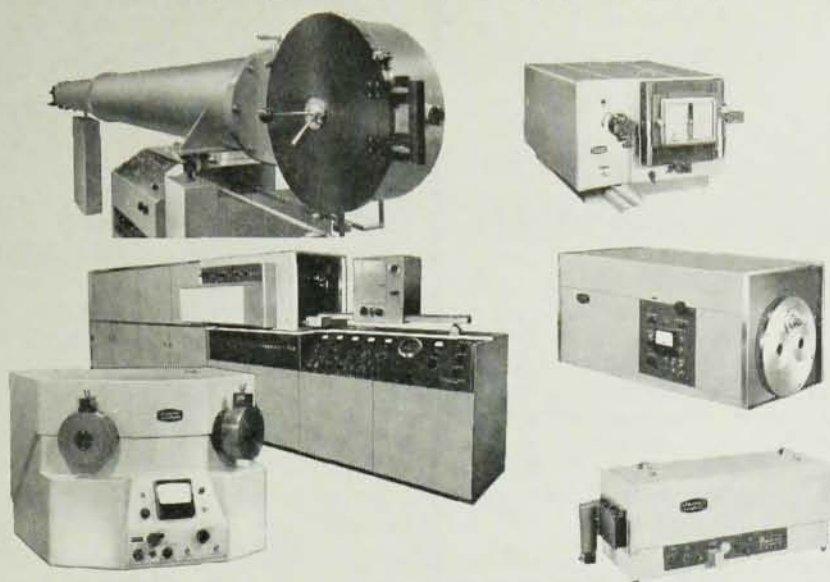
Some functions are tabulated and a few curves are shown but for most of the results the reader must go to the original papers. Considering the brevity of the book there is a lot of interesting mathematical theory contained within it, but it remains essentially a brief review of part of a much larger field.

Technical Aspects of Sound. Vol. 3, Recent Developments in Acoustics. E. G. Richardson and E. Meyer, eds. 346 pp. American Elsevier Publishing Co., Inc., New York, 1962. \$14.00. Reviewed by Walter G. Mayer, Michigan State University.

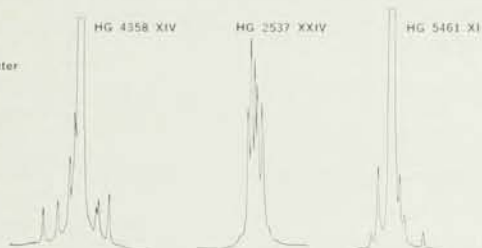
AFTER Professor Richardson's untimely death, the publishers of the two previous volumes of *Technical Aspects of Sound* asked Professor Erwin Meyer to take his place as editor and to complete the third volume of this handbook. According to the general plan proposed by Richardson, each chapter of the book was to present a survey of a well-established branch of acoustics. Dr. Meyer followed these original plans very closely.

The first chapter (by D. B. Fry and P. Denes) deals with the role of acoustics in phonetic studies. The principles involved in the generation and analysis of speech are given, forming the basis for descriptions of automatic speech recognizers and vocoders. The second chapter (T. S. Littler) is concerned with the mechanism of hearing, audiometry, hearing loss, and hearing aids. The third section (E. G. Richardson) is entitled Flow Noise. It treats fundamentals and various technical aspects of jet noise, shock waves, and acoustic phenomena related to turbulence, boundary layers, and cavitation. The fourth chapter (B. L. Clarkson) is a study of the effects of noise on structures and people. Special attention is given to the vibration of an aircraft-type structure due to noise. The last chapter (E. Meyer and H. Kuttruff) is devoted to architectural acoustics. A number of old and new measuring techniques are discussed together with electro-acoustic problems. The second half of this chapter considers design problems. The acoustic properties of some recently built concert halls are examined. The chapter also contains discussions of model investigations, anechoic and reverberation chambers.

SPECTROMETERS FOR EVERY APPLICATION



Typical traces from the One Meter Ebert Scanning Spectrometer showing ultra-high resolution with this type of instrument.



Jarrell-Ash manufactures 11 types of spectrometers for handling almost any conceivable analysis problem.

HIGH APERTURE SPECTROGRAPHS (f/6.3)
Analyses of faint or short duration light sources. Available with photo-electric attachment, framing, and streaking cameras.

0.5 & 1M SEYA-NAMIOKA VACUUM SPECTROMETERS
For absorption and emission studies. Available with optional camera, light sources, and detectors.

0.5M EBERT SCANNING SPECTROMETER
For combustion and reaction studies, flame temperature measurements,

atomic absorption, and flame spectroscopy.

1.0M EVACUABLE EBERT SCANNING SPECTROMETER
For direct measurement of relative line intensities . . . ultra high resolutions.

3.4 and 2.25M EBERT SPECTROGRAPHS
For plasma sources, laser research, crystal studies, high temperature measurements, combustion studies, precise scanning work.

OTHER JARRELL-ASH SPECTROMETERS

1.5M Wadsworth Stigmatic Spectrograph
1M and 2M Normal Incidence Vacuum Spectrographs
6.65M Vacuum Eagle Spectrograph

1.8M Evacuatable Ebert Scanning Spectrometer
5.0M Evacuatable Ebert Spectrograph
1.0M and 3.0M Vacuum Grazing Incidence Spectrographs

**Jarrell
—Ash**

Dedicated to excellence in the research, development and manufacture of precision analytical instrumentation.

For further information . . . clip the coupon, attach to your company letterhead and mail.

JARRELL-ASH COMPANY

26 Farwell Street, Newtonville 60, Mass.

Name _____

S. S. _____



RUTHERFORD AT MANCHESTER

J. B. Birks, Editor

Prepared to commemorate the years that Lord Rutherford spent at the University of Manchester, this volume contains lectures by Sir Ernest Marsden, Sir Charles Darwin, E. N. da C. Andrade, Niels Bohr, H. R. Robinson, A. S. Russell, and P. M. S. Blackett, which are interspersed with biographical and historical material.

Nine important papers published from 1909 to 1919 by Rutherford and his colleagues, Bohr, Geiger, Marsden, Moseley, and Roysds are reprinted. The volume concludes with a song about one of Rutherford's "jolly little beggars," an alpha ray.

Clothbound \$12.50

365 Pages

W. A. BENJAMIN, INC.

APPLIED PHYSICIST Instrumentation Specialty

San Francisco Bay Area Instrument Company, well-established, commercially oriented, and strong in Engineering and Production, has requirement for RESEARCH SUPPORT. If you are well-grounded in electronic and mechanical understanding, have one or more degrees in Physics or Electrical Engineering, and are ingenious and creative in recording and data display, this should represent an exceptional opportunity. In joining this aggressive group of proven technical competence, you, as a key member, would see your ideas become products.

Please submit resume or letter of inquiry to:

Box 563

Physics Today

335 E. 45 St., New York 17, N. Y.

An Equal Opportunity Employer

The book is well illustrated and indexed. The references are generally up to date although the writers did not attempt to emphasize the very latest findings in their fields; instead, they have presented a well-balanced and comprehensive survey of five important branches of acoustics.

Statistical Strength Theory. By S. D. Volkov. Vol. 11 of Russian Monographs and Texts on Advanced Mathematics and Physics. Transl. from Russian by Royer and Roger. 267 pp. Gordon & Breach, New York, 1962. \$11.50. *Reviewed by George H. Weiss, University of Maryland.*

A SUCCESSFUL theory of the weakening and failure of metals would have too many applications to bear detailed listing. The present monograph presents a theory of material strength which may indeed be applicable to many situations; however, the theory is ad hoc, and one cannot be completely convinced that Volkov's approach is a valid one on the evidence of this book alone. No attempt is made in it to indicate the possible limitations of the theory although their existence is certain.

The problem to which the author addresses himself is the elucidation of the properties of metals with microscopic inhomogeneities. The assumption made is that the inhomogeneities can be described statistically. If one then writes down the stress-strain equations, relations between moments may be obtained in a straightforward manner. The author then goes on to study media which have normally distributed stresses and elastic deformations. With this approximation, various averages can be taken and different physical properties calculated. It is at this point that the reader would require a more detailed idea of the limitations of Volkov's methods. But such information is not to be found. Some of the topics which are treated in detail are limiting surfaces of plasticity, fracture, and fatigue under cyclic load. There are many sample calculations, and there are references to detailed comparison with experimental data. Although I could not check this literature, I would presume that the theory is successful in many specific situations. A convincing exposition of a new theory does require a careful discussion of its boundaries. It is tempting to compare the statistical theory of elasticity with the statistical theory of turbulence. But the evidence for the validity of the former theory is not as well delineated as that for the latter, so that a final verdict will have to wait upon further work.

Basic Concepts of Physics. By Arthur Beiser. 341 pp. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1961. \$7.75. *Reviewed by Horace M. Trent, US Naval Research Laboratory.*

WE have here not a philosophical discussion of the foundations of physics but rather a simple and readable textbook for a one-semester college survey course intended for students not majoring in a natural