

KLINGER SCIENTIFIC for ELECTRO OPTICS

83-45 Parsons Blvd
Jamaica, NY 11432
(212) 657-0335

Circle No. below for

CATALOG 86

Circle No. 49 on Reader Service Card



NEW SPECTRA® 1980 PRITCHARD™ PHOTOMETER

■ MICRO-(0.001") OR TELE-PHOTOMETRY (to infinity) ■ LIGHT MEASURING VERSATILITY ■ DIRECT READING, AUTO-COMP™ ■ DIGITAL READOUT ■ 2' to 3.2° MEASURING FIELDS ■ LARGE BRIGHT FIELD-OF-VIEW ■ GREATER SENSITIVITY ■ HIGHER ACCURACY

PHOTO  RESEARCH

A Division of KOLLMORGEN Corporation
3000 N. Hollywood Way • Burbank, Calif. 91505

Circle No. 50 on Reader Service Card

for the subject.

Magnetofluidynamic shock waves and detonation-deflagration waves are studied in considerable detail in the third and fourth chapters. Realistic, stable waves are chosen from the plethora of mathematical solutions and their structure is examined in a qualitative but convincing manner. The wedge and piston problems are discussed in some detail with a useful section on necessary conditions for well posed initial-boundary value problems. This includes a proper accounting of converging and diverging characteristics. The study of one-dimensional MFD flows concludes with a discussion of unsteady nozzle flow and a few pages at the end on steady MFD flow in ducts with circular cross-sections.

The last chapters concern flow past a flat plate, with considerable attention devoted to the simplification and solution of the flow equations. Flow past a magnetized sphere and flow past slender, aerodynamic bodies (for example, thin wings in aligned-field and crossed-field flows) for both compressible and incompressible fluids are presented in similar fashion. Unusual magnetofluidynamic effects are found in these otherwise classical aerodynamic problems including special upstream wakes in the subalfvenic regime.

One cannot expect a book of this length to compete as the principal text for a graduate course in magnetofluidynamic theory, when several more complete books, some in excess of 500 pages, have recently been published in this field. References have not been included in the text, which makes the book a little clumsy to use. However, references are mentioned in the preface and listed at the end of the book by chapter. This book is probably most suitable as a supplementary text for a graduate course in magnetofluidynamics because of the several classical flow problems presented in detail by the author.

Robert Taussig
Columbia University

General Physics

By G. J. Aitchison

522 pp. Barnes and Noble, New York
1970. \$9.50

"Why write another textbook for a general first-year, calculus-based physics course?" This is the question that the author raises in his preface. The answer is that there is no text suitable for the one-year terminal course in the Australian system. A quick look at the table of contents reveals that only 43 pages are devoted to the entire subject of particle kinematics and dynamics. All of electricity and magnetism including some nonstandard topics takes less

Laser Power Measurement by SCIENTECH

The Scientech Disc Calorimeter is derived from original work on laser power measurement at the National Bureau of Standards. All Scientech Disc Calorimeters feature integral heating elements for substitution power calibration, high thermoelectric output, and insensitivity to nonuniform illumination.



The model 3600 with a 1 inch Disc diameter offers rugged, reliable, laser power measurement with flat response from 0.3 to 30 microns. Power from 10 microwatts to 3 watts can be measured to 3% accuracy

3600 \$375



The model 3604 with a 4 inch Disc diameter offers the same rugged, reliable design as the 3600 and permits accurate power measurement of large diameter or highly divergent laser beams. Power levels up to 50 watts can be measured directly on a D'Arsonval meter for self powered operation

3604 \$785



The model 3701 Mirror Disc Calorimeter permits "on line" power measurement of one inch diameter laser beams up to 1,000 watts. Spectral response is 0.4 to over 100 microns with gold surfaced mirrors. A novel calibration procedure permits absolute calibration at any operating wavelength

3701 \$1,950



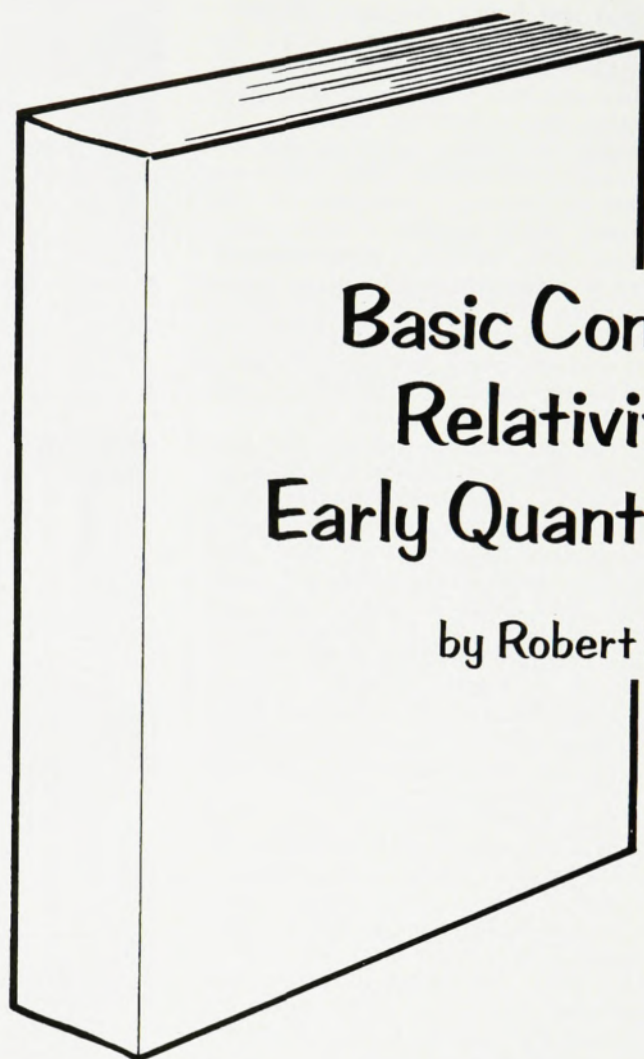
Convenient electronic readouts are available for many Scientech Disc Calorimeters. A unique input circuit increases thermal conductance of the thermopile sensor greatly reducing the Disc Calorimeter response time. All readouts are solid state, have 100 mv recorder output, and operate from 120 or 240 volt 50/60 Herz power.

3610 0.01 - 3 watts \$335
S-3610 0.001 - 3 watts \$535
3620 0.01 - 3 watts and joules \$430
S-3620 0.001 - 3 watts and joules \$630

SCIENTECH

1724 14th Street • Boulder, Colo. 80302
Telephone (303) 444-1361

Circle No. 51 on Reader Service Card



Basic Concepts in Relativity and Early Quantum Theory

by Robert Resnick

The text to end all introductory
calculus physics texts.

(Or to begin all modern physics texts.)

Resnick's *Basic Concepts in Relativity and Early Quantum Theory*. It's the perfect ending when you want to add more modern physics to your introductory calculus physics course.

There's no problem going to Resnick from Halliday & Resnick's *Physics* or any other text you're using. Because it's on the same level. And it logically follows the section on optics in *Physics* and other texts.

Resnick goes into special relativity in depth, but briefly and simply enough to cover in a short time. It highlights physical interpretation and experimental aspects and contains optional material and self-study aids.

And because it also has an expanded treatment

of early quantum theory, Resnick lays the foundation for modern physics courses.

Resnick. It's the end. (And the beginning.)

Basic Concepts in Relativity and Early Quantum Theory

By Robert Resnick, Rensselaer Polytechnic Institute
1972 Approx. 320 pp. \$5.95 paper (tent.)

For more information contact your Wiley representative or write T. R. Poston, Dept. 834-B, N.Y. office. Please include course title, enrollment, and present text.

Prices subject to change without notice

wiley

JOHN WILEY & SONS, Inc.

605 Third Avenue, New York, N.Y. 10016

In Canada: 22 Worcester Road, Rexdale, Ontario

Circle No. 52 on Reader Service Card

Superconductive Magnets your problem?

- **High Homogeneity?**

Just delivered: a 6.4 T magnet with the highest resolution ever recorded: 4 in 10^{10} in 5mm diameter samples.

- **High fields?**

Guaranteed: more than 10 T with Nb-Ti and up to 14 T with Nb₃Sn superconductor. We are currently designing a hybrid superconductive-high power magnet producing 16 T in a 50 mm bore.

- **Selection?**

Widest range available from any source: Nb₃Sn and Nb-ti sole-noids, split pairs and hybrid magnets.

- **Complete research facility?**

Cryomagnetic systems for: Magnetic susceptibility measurements, Mössbauer, High resolution NMR, IR, UV, etc. Systems engineering: magnets, cryostats, electronics and accessories all built and fully tested to your specifications.

- **Reliability?**

You can be certain of our performance specifications: we have the experience to guarantee them.



Field 50G, homogeneity to 1 part in 10^9 over 1cm d.i.v.
Axial bore 5.2cm - 2 radial apertures of 2.5cm

Please write to:

Oxford Instruments -
100 Cathedral St.
Annapolis, Maryland 21401
Tel. (301) 268-2350
Telex 87 876

for our new brochure (no. M36):
**Superconductive Magnets
and Systems**
OXFORD INSTRUMENTS

Circle No. 53 on Reader Service Card

than 100 pages, while relativity and atomic and nuclear physics receive a more extensive coverage than one finds in the usual introductory book. One can only envy Gordon Aitchison for the preparation of the Australian students.

On the other hand, the mathematical sophistication is not great enough for this book to be used for a "second time through" course as sometimes occurs in the sophomore year. While calculus is used, its use is minimal. Where, then, does it fit in the American system? I feel that this book complements the standard American text. It could be used as a supplement for a section of honors students, where the instructor wants to have some extra topics available for the students.

An example of some of the discussions that could be used as supplements is Aitchison's discussion of the properties of solids and liquids, including the connection between thermal expansion and the elastic properties of solids, and non-Newtonian liquids. Other interesting topics are the behavior of electrical discharges in gases, the extensive section on hearing, acoustics of rooms, and the eye. Unfortunately, at a list price of \$9.50 it is a little on the expensive side for a supplementary text. Perhaps this book could be used as a third-semester text since there is considerable emphasis on "modern physics," including some of solid state, but the coverage is not as complete as in many of the existing modern physics texts.

General Physics covers the usual topics (and then some) but arranged in a somewhat different manner. For example, all of wave phenomena is found together, whether it be sound waves or electromagnetic waves. The interesting chapter entitled "Systems of Particles" on the solid, liquid and gaseous states of matter also covers rigid-body dynamics. The book gets off to a slow start with its first chapter on measurement, which does include a section on statistics and data handling, subjects not often found in a general text. The author uses dimensional analysis in several places to derive the basic dependence of certain laws, which I feel is good. His discussion of waves includes coherence, but is weak in the treatment of diffraction. In his second chapter on electricity and magnetism he gets into some electronics, including transistors.

The author's style of writing is generally good. In a few places there is an uneven coverage of detail: sometimes he leaves many steps for the reader, and other times he goes through a rather tedious amount of detail. In places it reads like a cookbook. The author's long experience in teaching shows up in that he frequently anticipates and answers questions that are being formed in the reader's mind. There were many cases where I felt that something needed

Optical Benches

by
SCIENTECH



Scientech proudly offers the first Quality Optical Bench at an economy price. Extruded from magnesium alloy, light weight, rigid lengths up to 12 feet are available from stock. The precision dove-tail cross-section is compatible with a variety of commercial optical bench accessories as well as our own. The magnesium alloy is strong and rigid but easily machined for experimental systems. Carrier stock is also available for system development.

Optical Bench

Available in any length up to 12 feet.
Weight, 5 pounds per foot. \$28.50 per foot

Carrier

81 millimeters wide with toggle clamp, \$18

Carrier Stock

Weight, 3 pounds per foot. \$15.50 per foot

SCIENTECH

1724 14th Street • Boulder, Colo. 80302
Telephone (303) 444-1361

Circle No. 54 on Reader Service Card



**IT TOOK THE COOPERATION
OF THREE ORGANIZATIONS
TO PRODUCE THIS
UNIQUE NEW PUBLICATION...
THE JOURNAL OF PHYSICAL
AND CHEMICAL REFERENCE DATA**

Appearing early in 1972, it will be published quarterly by the American Chemical Society and the American Institute of Physics for the National Bureau of Standards. The journal itself will consist of the output of the National Standard Reference Data System.

Up until now the vital data released by NSRDS have been distributed largely through government channels. This new publication will reach a much wider audience and will mean an avoidance of a great deal of duplication of effort!

Be sure you start your subscription to this valuable publication with the first volume of THE JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA. The coupon is for your convenience. Just complete and return it today.

**JOURNAL OF PHYSICAL AND
CHEMICAL REFERENCE DATA
AMERICAN CHEMICAL SOCIETY
1155 Sixteenth Street, N.W.
Washington, D. C. 20036**

Yes, I would like to receive the JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA at the one-year rate checked below:

ACS and AIP Members: Domestic \$20 ☐ Foreign \$23 ☐
Non-members: U.S. and Canada \$60 ☐ Foreign \$63 ☐
Payment enclosed ☐ Bill me ☐ Bill company ☐

Name _____ Home ☐
Street _____ Business ☐
City _____
State _____ Zip _____
JPCE

Circle No. 55 on Reader Service Card

NORTON



**Based on the Physics course that nonscience majors
have been choosing as an elective**

REVOLUTIONS IN PHYSICS

By **BARRY M. CASPER** and **RICHARD J. NOER**
both of Carleton College

While teaching introductory physics, Professors Casper and Noer learned that the average student who finds the usual survey of physics both dull and confusing will often become fascinated by a more penetrating view of selected topics presented in relevant perspective. This book, therefore, is limited to two related topics that revolutionized the science—Newton's theory of motion and Einstein's conception of space and time.

They examine how different men in different times, viewing the same phenomena, have seen different things and have explained what they saw in vastly different ways—from early star myths to the theory of relativity. They pay particular attention to the conceptual revolutions when one world view was overthrown by another. And, their final topic is that of elementary particle physics, where another revolution may be in progress today.

x + 479 pages Ready March 1972 \$8.95 cloth

W·W·NORTON & COMPANY·INC·
55 Fifth Avenue, New York, N.Y. 10003

Circle No. 56 on Reader Service Card

WHAT'S BEHIND THEM?



Answer: An unsurpassed technical team called Cryogenic Associates, which continues to attract the attention of the chemist, the physicist, the biologist, the aerospace engineer . . . among others. Why?

Because Cryogenic Associates is solving cryogenic problems with an effective combination of:

- **TECHNICAL ABILITY** which brings you the finest in engineering and original design.
- **FABRICATION KNOW-HOW** that turns your ideas into reliable hardware.
- **FLEXIBILITY** which allows you to select from existing designs, modified designs or custom designs to answer your needs.
- **BREADTH** that stretches from the design and production of simple LN_2 Dewars to the highly sophisticated $^3\text{He}/^4\text{He}$ Dilution Refrigerator.

If you haven't checked into Cryogenic Associates' talents and systems, you've missed something! They've earned the confidence of the most critical buyers.



**CRYOGENIC
ASSOCIATES INC.**

1718 North Luett Avenue
Indianapolis, Indiana 46222
Phone: (317) 632-2515

"... for the finest
in Cryogenic Systems".

Catalog Available On Request

qualifying or further explanation, and I would find in the next sentence or paragraph that in fact the needed details were supplied. The book is in paperback form with unusually wide margins, which are useful for making notes.

There are places where I disagree with his pedagogical style, and other places where I find myself in most warm agreement. I do not care for his treatment of kinetic theory of gases, but I like his fluid dynamics. Two of the areas to which I am most sensitive as to how they are treated are rotational dynamics and the Bohr atom. Aitchison unfortunately handles both of these in the conventional manner. I am convinced that it is quite possible to treat these subjects correctly and still not get beyond the students. Some of his historical treatments are not correct, whereas in other places he has proper history on subjects often incorrectly handled in general texts. There are a few places where I feel that there are erroneous statements made or, at best, they must be considered misleading. However, these last few remarks are in the nature of nit-picking, which appears to be a disease of reviewers. The book really is better than many I have seen.

In summary, then, I feel that this book on the whole is quite good as a supplement for general introductory courses in the US. However, I can not imagine many places where it could fit into the standard system as a text.

JOHN I. SHONLE
University of Colorado,
Denver

new books

CONFERENCE PROCEEDINGS

Concepts in Hadron Physics. P. Urban, ed. 424 pp. Springer-Verlag, New York, 1971.

Economic Integration of Nuclear Power Stations in Electric Power Systems (Conf. proc. International Atomic Energy Agency, Economic Commission for Europe of the United Nations, Vienna, Austria, 5-9 Oct. 1970). \$20.00

Instrumentation for Neutron Inelastic Scattering Research (Conf. proc. Vienna, Austria, 1-5 Dec. 1969). 290 pp. Unipub, New York, 1970. \$7.00

The Magellanic Clouds: A European Southern Observatory Presentation: Principles, Prospects, Current Observational and Theoretical Approaches, and Prospects for Future Research (Conf. proc. Santiago, Chile, March 1969). A. B. Muller, ed. 189 pp. Springer-Verlag, New York, 1971. \$14.70

The Physics of Semimetals and Narrow-Gap Semiconductors (Conf. proc. Dallas, Tex., 20, 21 March 1970). D. L. Carter,



No deposit, no return.

(the Bendix UV Photon Counter Tube)

No input, no output. Or thereabouts. Frequently less than 1 count every 10 seconds. Without cooling.

And very low dark noise is just one of the nice things about the Bendix Channeltron® UV Photon Counter Tube. Another is narrow pulse height distribution. And another: high gain. Then there's simplicity of coupling to associated electronics (only four active terminals), insensitivity to voltage changes when used in a pulse counting mode, solar blind, relative insensitivity to magnetic and electrostatic fields.

And range!

Model BX 7600-6413 — 1450 Å to beyond 1900 Å.

Model BX 7600-4413 extends that to wave lengths shorter than 1200 Å.

Right now, while it's on your mind, send for complete details. We promise immediate returns.

The Bendix Corporation
Electro-Optics Division
Galileo Park
Sturbridge, MA 01518
(617) 347-9191



Circle No. 58 on Reader Service Card

Circle No. 57 on Reader Service Card