

FOR SALE

Norelco X-Ray Spectrograph

- 1—#12045 X-Ray Generator & Control
- 1—#42267 X-Ray Diffractometer attachment prepared for Spectrographic work
- 1—#52360 Vacuum Spectrograph
- 1—#12096/3 Electronic Circuit Panel less clock
- 1—#52090 Brown Electronic Recorder
- 1—#42232 Overall Voltage Stabilizer
- 1—#52204 Current Stabilizer
- 1—#52333 Linear Amplifier Less Pulse Height Analyzer
- 1—#52241 EDDT Analyzing Crystal
- 1—#32005 FA-60 X-Ray Tube with Tungsten Target

Please send your order to:

**Box No. 667,
PHYSICS TODAY
335 E. 45th St.,
New York, N.Y. 10017**

A Corcoran Brief:

How to select a personnel consultant

Select one who recognizes that the ultimate decision is yours. And one who—knowledgeably, personally, and with intellectual integrity—focuses your attention on situations compatible with your professional and personal objectives.

Select one who can see beyond the obvious and can perhaps suggest objectives you've not considered.

Last, select one, only one.

Here at Corcoran, we serve the BS, MS and PhD degree-holders individually. Nationwide, we work with large and small industrial and research clients on a fee-paid basis. Your call or correspondence is invited.

JOSEPH P. CORCORAN

Personnel Consultants

505E Germantown Pike
Lafayette Hill, Pa. 19444
(215) 825-0848

NEW BOOKS

NUCLEI

Methods in Computational Physics. Vol. 6, Nuclear Physics. Berni Adler, Sidney Fernbach, Manuel Rotenberg, eds. 303 pp. Academic Press, New York, 1966. \$13.50

The Theory of Slowing Down in Nuclear Reactors. By Joel H. Ferziger, P. F. Zweifel. 310 pp. MIT Press, Cambridge, Mass., 1966. \$13.50

ATOMS & MOLECULES

Molekülstruktur: Physikalische Methoden zur Bestimmung der Struktur von Molekülen und ihre wichtigsten Ergebnisse. (Third edition) by H. A. Stuart. 562 pp. Springer-Verlag, Berlin, 1967. \$17.00

FLUIDS & PLASMAS

Dynamics of Fluids and Plasmas. Conf. proc. (Maryland, Oct. 1965) S. I. Pai et al, eds. 511 pp. Academic Press, New York, 1966. \$24.00

SOLIDS

Quantum Theory of Molecules and Solids. Vol. 3, Insulators, Semiconductors and Metals. By John C. Slater. 549 pp. McGraw-Hill, New York, 1967. \$15.50

Solid State Physics, Vol. 19. Frederick Seitz, David Turnbull, eds. 381 pp. Academic Press, New York, 1967. \$16.00

Magnetism in Solids. By D. H. Martin. 452 pp. MIT Press, Cambridge, Mass., 1967. \$19.95

Magnetism, A Treatise on Modern Theory and Materials. Vol. 2B, Interactions and Metals. George T. Rado, Harry Suhl, eds. 428 pp. Academic Press, New York, 1966. \$16.00

Körperschall: Physikalische Grundlagen und Technische Anwendungen. By L. Cremer, M. Heckl. 498 pp. Springer-Verlag, Berlin, 1967. \$22.00

Elektronentheorie der Metalle. (Reprint from Handbuch der Physik) By Arnold Sommerfeld, Hans Bethe. 290 pp. Springer-Verlag, Berlin, 1967. Paper \$2.70

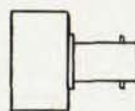
Crystal Growth. Conf. proc. (Boston, June 1966) H. Steffen Peiser, ed. Pergamon Press, Oxford, 1967. \$45.00

Gallium Arsenide. Conf. proc. (Reading, England, Sept. 1966) A. C. Stickland, M. E. Hilton, eds. 247 pp. The Institute of Physics and The Physical Society, London, 1967. \$12.00

X-Ray Methods in the Study of Defects in Single Crystals. By J. Auleytnier. 264 pp. Trans. from Polish by J. Leciejewicz.

SILICON SURFACE BARRIER PARTICLE DETECTORS

**A Complete Line To Meet
All Your Requirements**



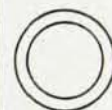
Partially
Depleted
Detectors
To 2mm
Thick



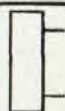
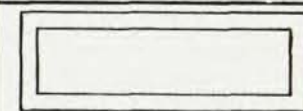
Ceramic
Mounted
Detectors
For LN
Temperature
Use



Annular
Detectors
Up To 24
mm Active
Diameter



Totally
Depleted
Detectors
In Trans-
mission
Mountings



Rectangular Detectors Up
To 50mm long and 15mm wide

Nuclear Diodes now offers a new and improved production capability with most detectors available from stock or short delivery.

Call us with your special requirements for any of our products including position sensitive silicon detectors, germanium detectors, cryostats, vacuum chambers and F. E. T. preamplifiers.
Phone: 312-634-3870

**nuclear
diodes inc.**
box 135, prairie view, illinois 60069

plasma, gas discharge and physical electronics research

Interesting and challenging openings now exist for Scientists and Engineers with demonstrated competence in one of the following areas:

- Gas discharge and plasma physics, including applications to GAS DISCHARGE DEVICES and ION PROPULSION.
- Electron and Ion Beam Interaction with Surfaces, including ION IMPLANTATION, SEMI-CONDUCTOR DEVICES, SPUTTERING of SURFACES by IONS and focusing electron and ion beams to sub-micron sized diameters.

Candidates' background should include advanced degree in Physics or Electrical Engineering with recent laboratory experience in PLASMA & GAS DISCHARGE PHYSICS, SURFACE PHYSICS, ELECTRON/ION EMISSION, SPUTTERING, PARTICLE INTER-ACTION AT SURFACES, SOLID STATE PHYSICS or ION PROPULSION TECHNOLOGY.

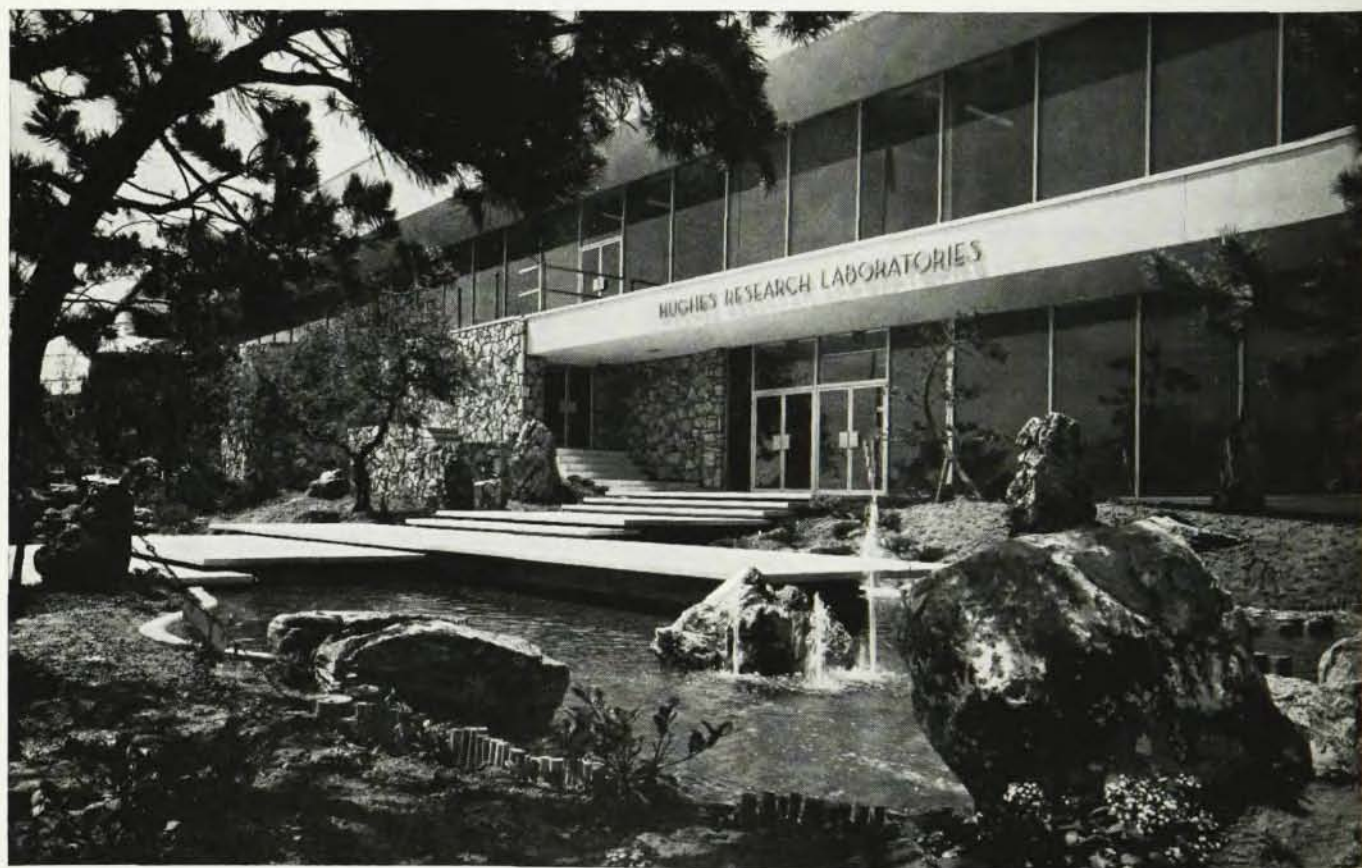
The Hughes Research Laboratories are located in Malibu, California—overlooking the Pacific Ocean. In this unique environment, interchange of information and intellectual stimulation are provided through close contact with the whole scientific community including frequent symposia and consultations by eminent scientists and major local universities. Hughes scientists, working in this favorable creative environment, are continually adding to a record of accomplishment in electronics and physics research.

Your inquiry may be directed in strict confidence and with immediate response to: Mr. W. K. Walker, Hughes Research Laboratories, Malibu, California 90265. An equal opportunity employer.

Creating a new world with electronics

HUGHES

HUGHES AIRCRAFT COMPANY
RESEARCH LABORATORIES
MALIBU, CALIFORNIA





EMI

Measuring low light levels

...requires extremely low dark currents coupled with maximum useful sensitivity. The EMI 6256, a 13-stage venetian blind 2" photomultiplier tube has the essential characteristics that are necessary for low light level applications. The unique 10mm cathode-DI geometry, together with the ultra-stable EMI venetian blind design, has resulted in its widely successful use in astronomy, biology and spectrophotometry. The EMI 6256B has a quartz window and the S-11 cathode (S-13) which has a peak quantum efficiency of 17% at 4,200 Å. The EMI type 6256S has 5 to 10 times lower dark current than the 6256B, and should be used when system performance is dark current limited. This type is also available for visible light applications as 9502B/9502S, or with 11 dynodes as 6094B/6094S. Many other EMI photomultiplier tubes are available for special applications from stock in sizes from 1" to 12". EMI photomultiplier tubes are available through qualified engineering representatives located in major marketing areas throughout the United States. A request on your company letterhead will bring you the name of your nearest representative as well as a copy of our latest catalog.



Whittaker
CORPORATION
GENCOM DIVISION

80 Express St., Plainview, L.I., N.Y.
516-433-5900 TWX 516-433-8790
*EMI ELECTRONICS, LTD.

Pergamon Press, Oxford, 1967. \$10.00
Intermetallic Compounds. J. H. Westbrook, ed. 663 pp. Wiley, New York, 1967. \$29.75

CLASSICAL PHYSICS

Principles of Statistical Mechanics: The Information Theory Approach. By Amnon Katz. 188 pp. W. H. Freeman, San Francisco, 1967. \$8.00

Color Science: Concepts and Methods, Quantitative Data and Formulas. By Günter Wyszecki, W. S. Stiles. 628 pp. Wiley, New York, 1967. \$27.50

Four Lectures on Relativity and Space. (Reprint of 1923 edition) By Charles Proteus Steinmetz. 142 pp. Dover, New York, 1967. Paper \$1.35

Modern Developments in the Mechanics of Continua. Conf. proc. (Syracuse, N. Y., Aug. 1965) Salamon Eskinazi, ed. 203 pp. Academic Press, New York, 1966. \$10.00

MATHEMATICS & MATHEMATICAL PHYSICS

The Theory of Spinors. (Trans. from 1937 French edition) By Elie Cartan. 157 pp. MIT Press, Cambridge, Mass., 1966. \$8.00

Analysis of Straight-Line Data. (Reprint of 1965 edition) By Forman S. Acton. 275 pp. Dover, New York, 1966. Paper \$2.00

Optimization of Stochastic Systems. By Masanao Aoki. 354 pp. Academic Press, New York, 1967. \$14.50

Topics in Optimization. George Leitman, ed. 469 pp. Academic Press, New York, 1967. \$18.00

INSTRUMENTATION & TECHNIQUES

Radiation Dosimetry. Vol. 2, Instrumentation. (Second edition) Frank H. Attix, William C. Roesch, eds. 462 pp. Academic Press, New York, 1966. \$20.00

Radiation Measurements in Nuclear Power. Conf. proc. (Gloucestershire, Sept. 1966) A. C. Stickland, M. E. Hilton, eds. 455 pp. The Institute of Physics and The Physical Society, London, 1966. \$15.00

Radioastronomical Methods of Antenna Measurements. By A. D. Kuz'min, A. E. Salomonovich. 182 pp. Trans. by K. N. Trirgoff. Academic Press, New York, 1967. \$8.50

Elektronenmikroskopische Untersuchungen—und Präparationsmethoden. (Second edition) By Ludwig Reimer. 598 pp. Springer-Verlag, Berlin, 1967. \$24.50

COMPILATIONS

Tables of Folded-Sin x/x Interpolation

Oxford



Ultrasonic Absorption

AN INTRODUCTION TO THE THEORY OF SOUND ABSORPTION AND DISPERSION IN GASES, LIQUIDS, AND SOLIDS

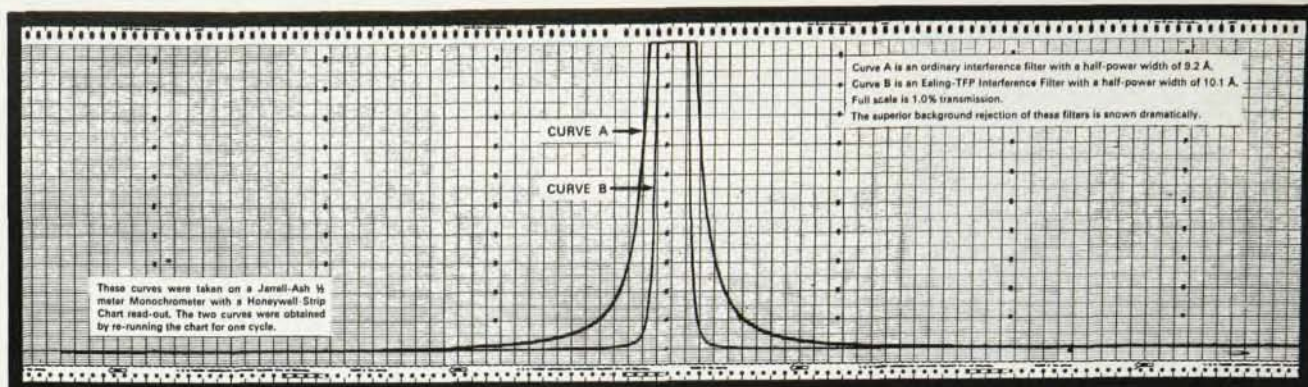
By A. B. BHATIA, *University of Alberta*. This book provides a systematic account of the theory of absorption and dispersion of ultrasonic waves in gases, liquids, and solids. After the introductory chapters on sound propagation in an ideal fluid and in an ideal elastic solid, the author successively deals with the various physical mechanisms responsible for sound absorption in monatomic and polyatomic gases, in normal and associated liquids, and in solids. The thermodynamic theory of relaxation processes, which is essential to the discussion of absorption in polyatomic liquids, is also included. (*Oxford Monographs on the Physics and Chemistry of Materials*.) \$13.60

Contact and Frictional Electrification

By W. R. HARPER. How two solids become charged by being rubbed together has puzzled natural philosophers since ancient times, and a convincing explanation of charge carriers has proved remarkably elusive. Dr. Harper shows that the circumstances in which electrification appears provide clues relevant to the solid state theory. Metals and semiconductors are seen to behave differently from the two kinds of insulators—one reluctant to charge but retentive of any charge it may possess, the other charging freely. (*Oxford Monographs on the Physics and Chemistry of Materials*.) \$11.20

OXFORD
UNIVERSITY
PRESS

200 Madison Avenue,
New York, N.Y. 10016



.0005% Transmission Outside the Bandpass

The extraordinarily low transmission of these filters outside of the bandpass assures a better operational Signal/Noise level in virtually all emission studies. Forty-seven filters, centered on every emission line of interest from 2500 Å to 2.5 μ, are carried in stock.

The improved curve shape in the wings, as illustrated, does not degrade the peak transmission. Excellent centration and peak trans-

mission are the rule.

The filters are mounted in 2" diameter plastic rings for protection and identification. Transmission curves, laminated in plastic, are supplied with every filter.

Available singly or in packaged sets.

For further information concerning the Ealing-TFP Filters, contact Mr. Frank Ferguson (617, 491-1515) of The Ealing Corporation.



THE EALING CORPORATION

2225 MASSACHUSETTS AVE., CAMBRIDGE, MASS. 02140 • TEL. (617) 491-1515 CABLE: EALING, TELEX: 94-6378

PHYSICISTS-SCIENTISTS

KEY PERSONNEL is a National organization devoted exclusively to the selective search for competent careerists among the technical disciplines.

Working closely with clients Coast to Coast, it is our policy to provide a professional service to scientists and engineers, that is ethical, knowledgeable and confidential. Our service is designed to provide YOU with a convenient focal point from which to explore, easily and efficiently, the numerous career opportunities existing anywhere in the U. S.

Our service to you—the individual scientist or engineer—is WITHOUT COST since our search fees are assumed by our organizational clients, who are Industrial, Defense and nonprofit organizations engaged in the advancement of the state-of-the-art.

We are currently searching to fill a broad spectrum of positions from semi-junior to General Manager across the entire continent.

If you would like to explore for yourself, our unique approach, write for our confidential summary form or forward a copy of your current résumé as soon as possible:

John F. Wallace
Executive Vice President



KEY PERSONNEL CORP.

218 Tower Bldg.

Baltimore, Md. 21202

RESEARCH DIRECTOR

To lead a wide diversification of scientific endeavors within a rapidly growing, multidisciplinary organization. Current programs in the physical sciences cover areas of materials research, laser and infrared technology, plasma diagnostics, cryogenics and thin films.

Opportunities are presented to pursue research in a chosen field and to establish a close relationship with the local academic community. Interested persons at the Ph.D. level with management capabilities are invited to explore mutual interests by contacting:

Kenneth J. Langhout
Vice-President, General Manager
or by writing



Systems Research Laboratories, Inc.
500 Woods Drive, Dayton, Ohio 45432 (513) 426-4051
AN EQUAL OPPORTUNITY EMPLOYER

Coefficients. 161 pp. By Leslie F. Bailey. 161 pp. US Gov't. Printing Office, Washington, D. C., 1966. \$2.75

HISTORY & PHILOSOPHY

Science and Culture. Gerald Holton, ed. 348 pp. Beacon Press, Boston, 1967. Paper \$2.45

Methods of Natural Science: An Introduction. By H. A. Nielsen. 70 pp. Prentice-Hall, Englewood Cliffs, N. J., 1967. Paper \$1.75

Sources of Quantum Mechanics. (Reprint collection) Edited with historical introduction by B. L. van der Waerden. 430 pp. North-Holland, Amsterdam, 1967. \$14.00

ASTRONOMY, SPACE, GEOPHYSICS

Der neue Kosmos. By Albrecht Unsöld. 356 pp. Springer-Verlag, Berlin, 1967. Paper \$4.50

Some Problems in Geodynamics. (Reprint of 1911 edition) By A. E. H. Love. 185 pp. Dover, New York, 1967. Paper \$2.25

Space Research 7. Conf. proc. (Vienna, May 1966) R. L. Smith-Rose, ed. 1479 pp. in two volumes. North-Holland, Amsterdam, 1967. \$50.00

BIOLOGY

Health Physics: Principles of Radiation Detection. By D. J. Rees. 242 pp. MIT Press, Cambridge, Mass., 1967. \$12.95

CHEMISTRY & CHEMICAL PHYSICS

Advances in Magnetic Resonance, Vol. 2. John S. Waugh, ed. 267 pp. Academic Press, New York, 1966. \$12.00

Pulse Radiolysis of Water and Aqueous Solutions. By A. K. Pikaev. 295 pp. Trans. by Scripta Technica. Indiana U. Press, Bloomington, 1967. \$10.00

TEXTBOOKS

Principles of Relativity Physics. By James L. Anderson. 484 pp. Academic Press, New York, 1967. \$14.75

The Theory of the Scattering Matrix: For the Interactions of Fundamental Particles. By A. O. Barut. 350 pp. Macmillan, New York, 1967. \$13.95

Concepts of Modern Physics. (Revised edition) By Arthur Beiser. 405 pp. McGraw-Hill, New York, 1967. \$8.95

Theory of Physics: An Introductory Course. By Richard Stevenson, R. B. Moore. 795 pp. W. B. Saunders, Philadelphia, 1967. \$9.75

Problems and Solutions in Mathematical Physics. By Y. Choquet-Bruhat. 314 pp. Trans. by C. Peltzer. Holden-Day, San Francisco, 1967. \$9.00

Fundamentals of Electronics, Vols. 2 and

3. By George E. Owen, P. W. Keaton. 295 pp. and 350 pp. Harper & Row, New York, 1967. \$14.00 and \$16.50

Experiments in Modern Physics. By Hans Mark, N. Thomas Olsen. 300 pp. McGraw-Hill, New York, 1966. \$9.50

Finite Deformation of an Elastic Solid. (Reprint of 1951 edition) By Francis D. Murnaghan. 144 pp. Dover, New York, 1967. Paper \$1.85

Electric and Magnetic Fields. (Reprint of 1956 edition) By Stephen S. Attwood. 474 pp. Dover, New York, 1967. Paper \$3.00

Electric Conduction in Solids. By Arthur C. Smith, James F. Janak, Richard B. Adler. 342 pp. McGraw-Hill, New York, 1967. \$13.50

Fortran for Physics. By Alfred M. Bork. 85 pp. Addison-Wesley, Reading, Mass., 1967. Paper \$1.95

Physical Geodesy. By Weikko A. Heiskanen, Helmut Moritz. 364 pp. W. H. Freeman, San Francisco, 1967. \$12.50

Applied Differential Equations. (Second edition) By Murray R. Spiegel. 412 pp. Prentice-Hall, Englewood Cliffs, N. J., 1967. \$8.50

Elementary Topology. By Donald W. Blackett. 224 pp. Academic Press, New York, 1967. \$9.50

Calculus: An Intuitive and Physical Approach, Part 2. By Morris Kline. 415 pp. Wiley, New York, 1967. \$8.75

Lectures on Algebraic Topology. By Marvin J. Greenberg. 235 pp. W. A. Benjamin, New York, 1967. Cloth \$10.00, paper \$5.95

Programmed Physics. Part 4: Kinetic Theory and Thermodynamics. By Alexander Joseph, Daniel J. Leahy. 208 pp. Wiley, New York, 1967. Paper \$4.95

Programmed Physics. Part 5: Topics in Modern Physics. By Alexander Joseph, Daniel J. Leahy. 269 pp. Wiley, New York, 1967. Paper \$4.95

The Physics of Modern Electronics. By W. A. Günther. 345 pp. Trans. from German by David Antin. Dover, New York, 1967. Paper \$2.25

Electromagnetics. By Robert S. Elliott. 631 pp. McGraw-Hill, New York, 1966. \$15.50

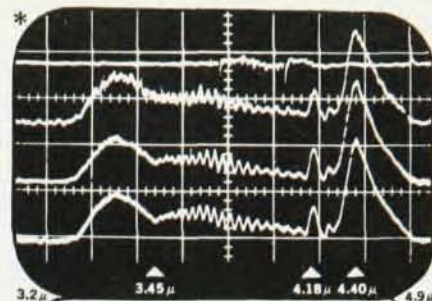
POPULARIZATIONS

L'Optique: Science de la Vision. By Vasco Ronchi. 158 pp. Masson, Paris, 1966. Paper 32 F.

MISCELLANEOUS

Reflections on Big Science. By Alvin Weinberg. 182 pp. MIT Press, Cambridge, Mass., 1967. \$5.95

Niels Bohr: His Life and Work as Seen by His Friends. Stefan Rozental, ed. 355 pp. North-Holland, Amsterdam (Interscience, New York), 1967. \$9.00 □



PROPELLANT COMBUSTION

ABLATION STUDIES

PHOTOCHROMIC REACTIONS

These are a few of the many applications for the

Model 501

Rapid Scanning Spectrometer

Scans 30A/μsec. with Excellent Stability & Resolution; Covers Broad Wavelength Region in One Scan.

*Time varying IR emission spectra of a solid propellant rocket motor (as described in Application Bulletin #2)



Write for Bulletin 10866 or Call (212) 461-4200

THE WARNER & SWASEY CO.
CONTROL INSTRUMENT DIVISION
32-16 Downing Street • Flushing, New York 11354