



$$\lambda = 1,650-8,500 + \text{\AA}$$

$$\text{EMI} = 2 \times 10^{-13} \text{ Im.}$$



...the nuisance of multiple detectors! One EMI photomultiplier type 9558Q covers UV, visible and infra red. The 9558Q is a two inch diameter end window tube with eleven venetian blind dynodes having highly stable CsSb secondary emitting surfaces. The Spectrasil window gives better transmission of UV than natural quartz. The photocathode is the S-20 (tri-alkali) type employing unique EMI geometry. The results are high quantum efficiency (23-25% at peak) and exceedingly low dark current, (typically .002uA. at 200 A/L). Where the exact wavelength is unknown, or the entire spectrum is under investigation, the 9558Q enables the work to proceed without changing detectors.

Where the red sensitivity of the tri-alkali photocathode is most important, and the UV region is not, the 9558B, with a pyrex window (but all the other desirable characteristics of the 9558Q) may be substituted at much lower cost. Tubes can be specially selected for difficult astronomical tasks, laser range finders, red channels of flying spot scanners, etc.

Write for details on S-20 tubes in a complete range of sizes.



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

Circle No. 89 on Readers' Service Card

Calendar of Events

National Meetings

November

11-15. Society of the **Plastics Industry**, Inc., Chicago, Ill. (The Society, 250 Park Ave., New York 10017)

11-15. American College of **Preventive Medicine**, Detroit, Mich. (E. A. Piszcek, 6410 N. Leona Ave., Chicago, Ill. 60646)

11-15. American **Public Health Assoc.**, 96th, Detroit, Mich. (Executive Director, 1790 Broadway, New York, N.Y.)

13-16. National Easter Seal Soc. for **Crippled Children and Adults**, Boston, Mass. (Natl. Easter Seal Soc., 2023 W. Ogden Ave., Chicago, Ill. 60612)

15-16. American **Psychiatric Assoc.**, Chicago, Ill. (L. Rudy, Illinois Psychiatric Inst., 1601 W. Taylor St., Chicago 60612)

17-20. Academy of **Pharmaceutical Sciences**, 5th, Washington, D.C. (S. W. Goldstein, 2215 Constitution Ave., NW, Washington, D.C. 20037)

18-20. Institute of **Electrical and Electronics Engineers**, 7th, Cocoa Beach, Fla. (L. E. Williams Aerospace Corp., P.O. Box 4007, Patrick Air Force Base, Fla. 32925)

18-20. American **Petroleum Inst.**, Chicago, Ill. (Secretary, Program Commission, 1271 Avenue of the Americas, New York 10020)

18-21. Symposium on **Basic Mechanisms of the Epilepsies**, Colorado Springs, Colo. (J. K. Penry, Section on Epilepsy, Room 8A-03, Bldg. 31, National Inst. of Neurological Diseases and Blindness, National Institutes of Health, Bethesda, Md. 20014)

18-21. Conference on **Engineering in Medicine and Biology**, Houston, Tex. (W. T. Maloney, Suite 620, 6 Beacon St., Boston, Mass. 02108)

18-21. Conference on **Magnetism and Magnetic Materials**, 14th, New York, N.Y. (D. T. Teaney, IBM Thomas J. Watson Research Center, Box 218, Yorktown Heights, N.Y. 10598)

18-22. American **Water Resources Conf.**, 4th, New York, N.Y. (P. Cohen, U.S. Geological Survey, 1505 Kellum Place, Mineola, N.Y. 11501)

19. **Air Pollution Control**, Columbia, Mo. (Extension Div., Whitten Hall, Univ. of Missouri, Columbia)

19-20. Council on **Arteriosclerosis** of the American Heart Assoc., Bal Harbour, Fla. (Dept. of Councils and International Program, American Heart Assoc. Natl. Office, 44 E. 23 St., New York 10010)

19-20. **Systems Symp.**, 4th, Cleveland, Ohio. (P. Schneider, Systems Research Center, Case Western Reserve Univ., Cleveland)

19-21. **Photovoltaic Specialists Conf.**, 7th, Pasadena, Calif. (R. E. Fischell, Applied Physics Lab., Johns Hopkins Univ., 8621 Georgia Ave., Silver Spring, Md. 20910)

19-22. **Acoustical Soc. of America**, Cleveland, Ohio. (The Society, 133 E. 45 St., New York 10017)

20-22. **Microelectronic Packaging and Interconnection Conf.**, Palo Alto, Calif. (D. H. O'Neill, Soc. of Automotive Engineers, 485 Lexington Ave., New York 10017)

FRACTURE

AN ADVANCED TREATISE in seven volumes

edited by **HAROLD LIEBOWITZ**, *School of Engineering and Applied Science, The George Washington University, Washington, D.C.*

A comprehensive treatise presenting a detailed interdisciplinary treatment of the problems of brittle and other types of fracture from both the microscopic and macroscopic viewpoints.

VOLUME 1 MICROSCOPIC AND MACROSCOPIC FUNDAMENTALS

Contents:

Structure of Solids. Dislocations and the Theory of Fracture. Experimental Observations of Dislocations. Microscopic Fracture Processes. Metallographic Aspects of Fracture. Structural Modes of Fracture. Some Physical Aspects of Fracture. Macroscopic Fundamentals in Brittle Fracture. Stress Waves and Fracture. Author Index. Subject Index.

1968, 597 pp., \$29.60, \$26.15*

VOLUME 2 MATHEMATICAL FUNDAMENTALS

Contents:

Mathematical Theory of Equilibrium Cracks. Mathematical Theories of Brittle Fracture. Mathematical Analysis in The Mechanics of Fracture. Macroscopic Criteria for Plastic Flow and Brittle Fracture. Crack-Propagation Theories. Statistical Approach to Brittle Fracture. Theory of Micropolar Elasticity. Author Index. Subject Index.

1968, 759 pp., \$35.00, \$29.75*

VOLUME 3 ENGINEERING FUNDAMENTALS AND ENVIRONMENTAL EFFECTS

in preparation

VOLUME 4 ENGINEERING FRACTURE DESIGN

January 1969, about 450 pp., \$23.00, \$19.55*

VOLUME 5 FRACTURE DESIGN OF STRUCTURES

February 1969, about 510 pp., \$25.00, \$21.25*

VOLUME 6 FRACTURE OF METALS

March 1969, about 520 pp., \$26.00, \$22.10*

VOLUME 7 FRACTURE OF NONMETALS AND COMPOSITES

in preparation

* Subscription price valid only on orders for the complete set received before publication of the last volume.



Circle No. 80 on Readers' Service Card

20-22. National Soc. for the **Prevention of Blindness, Inc.**, New York, N.Y. (J. W. Ferree, 79 Madison Ave., New York 10016)

20-24. Society for **Clinical and Experimental Hypnosis**, 20th, Chicago, Ill. (The Society, 353 W. 57 St., New York 10019)

21-22. **Chemical Kinetics Symp.**, Chapel Hill, N.C. (L. Pedersen, Dept. of Chemistry, Univ. of North Carolina, Chapel Hill 27514)

21-24. American **Anthropological Assoc.**, Seattle, Wash. (Executive Secretary, The Association, 1530 P St., NW, Washington, D.C. 20005)

25-27. International Symp. on the **Metabolic Function of Vitamin A**, Cambridge, Mass. (G. Wolf, Room 56-235, Massachusetts Inst. of Technology, Cambridge 02139)

25-27. American **Physical Soc.**, Miami, Fla. (Executive Secretary, 538 W. 120 St., New York 10027)

29-30. **Membrane Proteins Symp.**, New York, N.Y. (J. Newkirk, New York Heart Assoc., 2 E. 64 St., New York 10021)

29-30. National Federation of Catholic **Physicians' Guild**, Miami Beach, Fla. (R. H. Herzog, 2825 N. Mayfair Rd., Milwaukee, Wis. 53222)

December

1. **Medical Aspects of Sports**, 10th, Miami Beach, Fla. (F. Hein, American Medical Assoc., Dept. of Health Education, 535 N. Dearborn St., Chicago, Ill. 60610)

1. American Acad. of **Oral Medicine**, New York, N.Y. (S. Conrad, 133-28 228th St., Laurelton, N.Y. 11413)

1-4. American **Medical Assoc.**, Miami Beach, Fla. (F. J. L. Blasingame, 535 N. Dearborn St., Chicago, Ill. 60610)

1-4. **Reticuloendothelial Soc.**, 5th, New York, N.Y. (F. J. DiCarlo, Warner-Lambert Research Inst., Morris Plains, N.J. 07950)

1-5. American Inst. of **Chemical Engineers**, 61st, Los Angeles, Calif. (Secretary, 345 E. 47 St., New York 10017)

1-6. **Radiological Soc.** of North America, Chicago, Ill. (M. D. Frazer, 1744 S. 58 St., Lincoln, Neb. 68506)

2. **Quantum Chemistry**, 9th winter inst., Gainesville, Fla. (Winter Institute, 525 Nuclear Sciences Bldg., Univ. of Florida, Gainesville 32601)

2-3. **Applications of Simulation**, 2nd conf., New York, N.Y. (A. Ockene, IBM Corporation, 112 E. Post Road, White Plains, N.Y. 10601)

2-4. New England Conf. on **Air Pollution**, Waterville, Maine. (Director, Colby News Bureau, Colby College, Waterville 04901)

2-4. Western National **Geophysical Union**, San Francisco, Calif. (J. C. Harrison, Dept. of Geophysical Sciences, Univ. of Colorado, Boulder 80302)

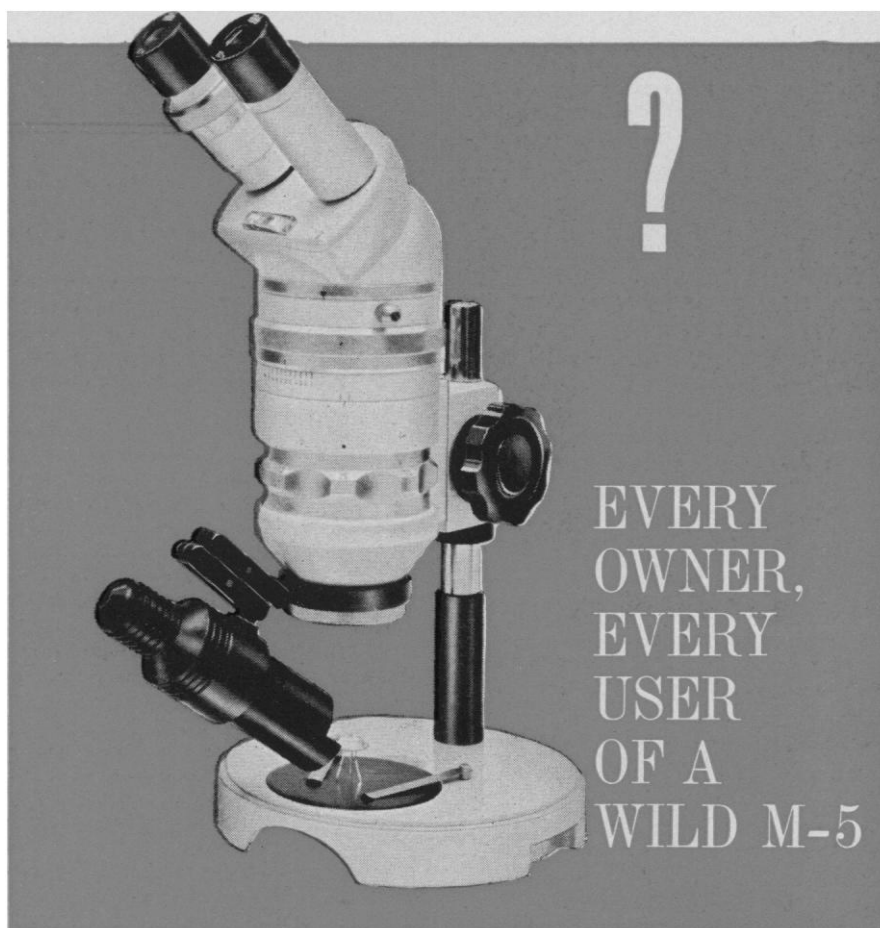
2-6. Greater New York **Dental Mtg.**, 44th, New York, N.Y. (M. Purdy, Room 106A, Statler Hilton, New York 10001)

3. American Soc. of **Therapeutic Radiologists**, Chicago, Ill. (J. A. del Regato, Penrose Cancer Hospital, 2215 N. Cascade, Colorado Springs, Colo. 80907)

3-4. **Vehicular Technology Conf.**, San Francisco, Calif. (W. G. Chaney, Lenkurt

1 NOVEMBER 1968

who ever heard of a customer designed stereomicroscope



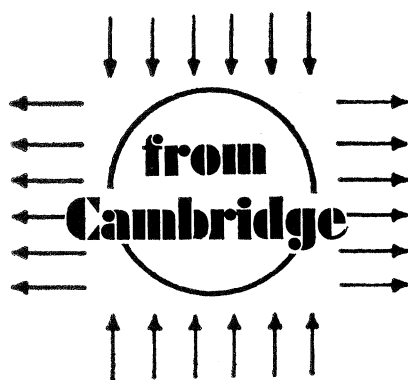
Customer designed power? With easily interchangeable eyepieces and attachment objectives, you can choose the power range you need, from 2x to 200x.

Customer designed versatility? Specify your requirements in light sources, stages, stands, polarizing, measuring and photographic attachments.

Customer designed flexibility? Change your field of investigation, research, or observation method tomorrow. The M-5 can quickly change, and grow, with your needs. Just one example as illustrated: Your work takes you to dissection. You need adjustable depth of focus to keep specimen, scalpel or forceps in clear focus. You add the new double iris diaphragm, get greatly increased depth of focus, and retain maximum resolving power with a turn of the control ring.

Want to design your own stereomicroscope? Write for Booklet M-5, or for a demonstration.

WILD® HEERBRUGG	WILD HEERBRUGG INSTRUMENTS, INC. FARMINODALE, NEW YORK 11735 WILD OF CANADA, LTD., 881 LADY ELLEN PLACE, OTTAWA 3, ONTARIO WILD DE MEXICO, SA, LONDRES 256, MEXICO 6, D.F.
----------------------------------	---



The Theory of Rotating Fluids

H. P. GREENSPAN

Professor Greenspan of M.I.T. has designed this book primarily to support and facilitate research.

The disciplined mathematical development focuses on fundamental principles as revealed through the systematic study of simple experiments, many of them new. The laboratory simulation of large-scale oceanic circulations is given special attention. Discussion of basic concepts allows for a wide range of engineering applications. (*Cambridge Monographs on Mechanics and Applied Mathematics*) \$15.00

An Introduction to Fluid Dynamics

G. K. BATCHELOR

"Highly recommended to both teacher and student."—*Bulletin, American Meteorological Society*
 "No instructor of an elementary course in fluid dynamics will be able to prepare his lectures without first seeing what Batchelor has to say about it, lest his students repair the omission for him."—*Nature* \$13.50

Principles of the Theory of Solids

J. M. ZIMAN

"Considered as an introductory text in the basic applications of wave-mechanical theory to problems of the solid state, this book should be found exceptionally useful by both teachers and students."—*Mathematical Reviews* \$8.50

Paperbacks

Statistics for Biologists

R. C. CAMPBELL \$2.45

Scientific Explanation

R. B. BRAITHWAITE \$2.45

Cambridge University Press

32 East 57th Street, New York, N.Y. 10022
 Circle No. 76 on Readers' Service Card

Electric, 1105 Country Rd., San Carlos, Calif. 94070)

3-5. **Entry Vehicle Systems and Technology Conf.**, Williamsburg, Va. (M. H. Bloom, Polytechnic Inst. of Brooklyn, Graduate Center, Route 110, Farmingdale, N.Y. 11735)

4-6. **Optical Character Recognition in Computerized Management of Information in the Next Decade**, Hollywood, Fla. (International Business Forms Industries, 20 Chevy Chase Circle, NW, Washington, D.C. 20015)

4-6. **Academy of Psychosomatic Medicine**, Miami Beach, Fla. (E. Dunlop, 150 Emory St., Attleboro, Mass. 02703)

4-7. **American Assoc. of Physicists in Medicine**, Chicago, Ill. (R. O. Gorsop, Stein Research Center, Jefferson Medical College, 920 Chancellor St., Philadelphia, Pa. 19107)

5-6. **American Rheumatism Assoc.**, Tucson, Ariz. (M. M. Walsh, 1212 Avenue of the Americas, New York 10036)

6-7. **American Federation for Clinical Research**, Boston, Mass. (H. J. Levine, New England Medical Center Hospitals, 171 Harrison Ave., Boston 02111)

7-12. **American Acad. of Dermatology and Syphilology**, 27th, Chicago, Ill. (S. E. Huff, 1636 Church St., Evanston, Ill.)

8-13. **American Soc. of Agricultural Engineers**, Chicago, Ill. (P. L. Bellinger, Technical Coordinator, 420 Main St., St. Joseph, Mich. 49085)

8-15. **Symposium of Analogue and Digital Computers in Hydrology**, Tucson, Ariz. (American Federation of Information Processing Societies, 211 E. 43 St., New York 10017)

9-11. **Computer Conf.**, San Francisco, Calif. (R. H. Glaser, 1968 Joint Computer Conf., P.O. Box 2309, Stanford, Calif. 94305)

9-12. **Electrical Insulation Conf.**, Los Angeles, Calif. (Secretary, 3600 Wilshire Blvd., Los Angeles 90005)

9-12. **National Electronics Conf. and Exhibition**, 24th, Chicago, Ill. (E. C. Jones, Electrical Engineering Dept., Iowa State Univ., Ames)

11-13. **National Oceanography Conf.**, Portland, Ore. (J. H. Jorgenson, National Security Industrial Assoc., Suite 800, 1030 15th St., NW, Washington, D.C. 20005, or K. R. Cannon, Governor's Committee on Natural Resources, State Capitol, Salem, Ore. 97310)

15-17. **New York State Soc. of Anesthesiologists**, New York, N.Y. (E. C. Sinisi, 30 E. 42 St., New York, 10017)

16-18. **Symposium on Adaptive Processes**, 7th, Univ. of California, Los Angeles. (J. M. Mendel, Advance Flight Mechanics, Douglas Aircraft Co., Inc. 3000 Ocean Park Blvd., Santa Monica, Calif. 90406)

16-20. **Texas Symp. of Relativistic Astrophysics**, 4th, Dallas. (I. Robinson, South West Center for Advanced Studies, P.O. Box 30365, Dallas 75230)

18-20. **American Physical Soc.**, San Diego, Calif. (W. Whaling, California Inst. of Technology, 1201 East California St., Pasadena 91109)

20-22. **American Psychoanalytic Assoc.**, New York, N.Y. (American Psychoanalytic Assoc., 1 E. 57 St., New York 10022)

23-25. **International Electron Devices Mtg.**, Washington, D.C. (D. A. Chisholm, Bell Telephone Labs., Murray Hill, N.J. 07974)

26-31. **American Assoc. for the Advancement of Science**, 135th, Dallas, Texas. (Secretary, 1515 Massachusetts Ave., NW, Washington, D.C. 20005)

26-31. **Society for General Systems Research**, Dallas, Texas. (M. D. Rubin, Mitre Corp., Bedford, Mass. 01730)

27-30. **Institute of Mathematical Statistics**, Washington, D.C. (J. R. Rosenblatt, 337 Administration Bldg., Gaithersburg, National Bureau of Standards, Washington, D.C. 20234)

28-30. **History of Science Soc.**, Dallas, Texas. (J. C. Greene, Dept. of History, Univ. of Connecticut, Storrs 06268)

January

9-11. **Society for Historical Archaeology**, 2nd, Tucson, Ariz. (B. L. Fontana, Arizona State Museum, Arizona Univ., Tucson 85721)

12-17. **Brain Research**, Snowmass-at-Aspen, Colo. (J. E. Swett, Dept. of Anatomy, Univ. of Colorado Medical Center, Denver 80220)

13-14. **Applications of Sea-Going Computers**, La Jolla, Calif. (C. B. Jackson, MTS Data Engineering Committee, P.O. Box 2158, La Jolla 92037)

13-15. **Agricultural Waste Management Conf.**, Syracuse, N.Y. (Agricultural Waste Management Conf., 400 Roberts Hall, Cornell Univ., Ithaca, N.Y. 14850)

13-15. **Animal Waste Management**, Syracuse, N.Y. (R. C. Loehr, 208 Riley-Robb Hall, Cornell Univ., Ithaca, N.Y.)

13-17. **Society of Automotive Engineers, Inc.**, Detroit, Mich. (Manager, Meetings Div., 485 Lexington Ave., New York 10017)

15-18. **National Soc. of Professional Engineers**, Las Vegas, Nev. (K. E. Trombley, Natl. Soc. of Professional Engineers, 2029 K St., NW, Washington, D.C. 20006)

17-18. **Symposium on Blood**, Detroit, Mich. (E. F. Mammen, Dept. of Physiology and Pharmacology, Wayne State Univ., 1400 Chrysler Freeway, Detroit 48207)

17-18. **American Soc. for Surgery of the Hand**, New York, N.Y. (L. Milford, 869 Madison Ave., Memphis, Tenn. 38104)

18-23. **American Acad. of Orthopaedic Surgeons**, New York, N.Y. (J. K. Hart, 29 E. Madison, Chicago, Ill. 60602)

19-21. **American Soc. for Engineering Education**, Flint, Mich. (E. H. Wright, American Soc. for Engineering Education, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

20-22. **American Inst. of Aeronautics and Astronautics**, New York, N.Y. (AIAA, 1290 Sixth Avenue, New York 10019)

20-22. **Society of Thoracic Surgeons**, San Diego, Calif. (F. C. Byron, City of Hope Medical Center, 1500 E. Duarte Rd., Duarte, Calif. 91010)

21-24. **Physiological Aspects of Crop Yield**, Lincoln, Neb. (F. A. Haskins, Dept. of Agronomy, Univ. of Nebraska, Lincoln)

23-25. **American Soc. for Engineering Education**, Baton Rouge, La. (E. H. Wright, American Soc. for Engineering Education, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)