

PUBLICATIONS

Compilation of principal recently published books and technical articles written by APL staff members.

- T. P. Armstrong (Univ. of Kansas), S. M. Krimigis (APL), and L. J. Lanzerotti (Bell Labs.), "A Re-interpretation of the Reported Energetic Particle Fluxes in the Vicinity of Mercury," *J. Geophys. Res.* **80**, No. 28, Oct. 1, 1975, 4015-4017.
- J. F. Bird, "An Elemental Phenomenon of Vision-Suprafusion Transients: General Theory, Retinal-Cortical Manifestations, Potential Application," *J. Theor. Biol.* **55**, No. 2, Dec. 1975, 553-557.
- J. F. Bird, G. H. Mowbray, and R. W. Flower, "Visual Cortex Responses to Abrupt Changes in the Periodicity of Rapidly Intermittent Light," *Electroenceph. & Clin. Neurophys.* **39**, No. 4, Oct. 1975, 305-312.
- H. K. Charles, Jr. (APL) and R. I. Joseph (The Johns Hopkins Univ.), "Exchange Model of Antiferromagnetism," *Phys. Rev. B* **12**, No. 9, Nov. 1, 1975, 3918-3932.
- G. L. Dugger, H. L. Olsen, W. B. Shippen, E. J. Francis, and W. H. Avery, "Floating Ocean Thermal Power Plants and Potential Products," *J. Hydronautics* **9**, No. 4, Oct. 1975, 129-141.
- L. W. Ehrlich (APL) and M. M. Gupta (Univ. of Western Australia), "Some Difference Schemes for the Biharmonic Equation," *SIAM J. Numer. Anal.* **12**, No. 5, Oct. 1975, 773-790.
- M. H. Friedman and L. W. Ehrlich, "Effect of Spatial Variations in Shear on Diffusion at the Wall of an Arterial Branch," *Circulation Res.* **37**, Oct. 1975, 446-454.
- J. Goldhirsh, "Prediction Methods for Rain Attenuation Statistics at Variable Path Angles and Carrier Frequencies between 13 and 100 GHz," *IEEE Trans. on Antennas and Prop.* **AP-23**, No. 6, Nov. 1975, 786-791.
- S. Greene (Goddard Inst. for Space Studies) and L. Monchick (APL) "Validity of Approximate Methods in Molecular Scattering: Thermal HCl-He Collisions," *J. Chem. Phys.* **63**, No. 10, Nov. 15, 1975, 4198-4205.
- L. W. Hunter, C. Grunfelder, and R. M. Fristrom, "The Effect of CF₃Br on a CO-H₂-O₂-Ar Diffusion Flame," *Halogenated Fire Suppressants*, ACS Symp. Series, No. 16.
- E. P. Irzinski, "The Input Admittance of a TEM Excited Annular Slot Antenna," *IEEE Trans. Antennas and Prop.* **AP-23**, No. 6, Nov. 1975, 829-834.
- S. M. Krimigis and J. W. Kohl (APL), and T. P. Armstrong (Univ. of Kansas), "The Magnetospheric contribution to the Quiet-Time Low Energy Nucleon Spectrum in the Vicinity of Earth," *Geophys. Res. Letters* **2**, No. 10, Oct. 1975, 457-460.
- S. M. Krimigis and E. T. Sarris (APL), and T. P. Armstrong (Univ. of Kansas), "Observations of Jovian Electronic Events in the Vicinity of Earth," *Geophys. Res. Letters* **2**, No. 12, Dec. 1975, 561-564.
- J. W. Love (Santa Barbara), K. B. Lewis (Franklin Square Hospital), and R. E. Fischell (APL), "The Johns Hopkins Rechargeable Pacemaker, Historical Aspects," *J. AMA* **234**, No. 1, Oct. 6, 1975, 64-66.
- R. A. Meyer (APL), V. B. Mountcastle (The Johns Hopkins Univ.), and R. E. Walker (APL), "A Laser Stimulator for the Study of Cutaneous Thermal and Pain Sensations," *IEEE Trans. Biomed. Eng.* **23**, No. 1, Dec. 1975, 54-60.
- F. F. Mobley, G. H. Fountain, and A. C. Sadilek (APL), and P. W. Worden and R. Van Patten (Stanford Univ.), "Electromagnetic Suspension for the TIP-II Satellite," *IEEE Trans. Magnetics* **MAG-11**, No. 6, Nov. 1975, 1712-1716.
- J. B. Oakes, "Clinical Engineering—The Problems and the Promise," *Science* **190**, Oct. 17, 1975, 239-242.
- E. T. Sarris and S. M. Krimigis (APL), and T. P. Armstrong (Univ. of Kansas), "Observations of a High-Energy Ion Shock Spike in Interplanetary Space," *Geophys. Res. Letters* **2**, No. 12, Dec. 1975, 133-136.
- A. A. Westenberg and N. deHaas, "Rate of the Reaction O + SO₂ + M → SO₃ + M*," *J. Chem. Phys.* **63**, No. 12, Dec. 15, 1975, 5411-5415.

APL COLLOQUIA

- Oct. 3—"What We Can Learn About Very Short Time Intervals (~10⁻¹⁸ s) by the Crystal Blocking Technique," by G. M. Temmer, Rutgers Univ.
- Oct. 10—"Vehicle Management in Automatic Rapid Transit," by M. C. Waddell, Applied Physics Laboratory.
- Oct. 17—"Artificial Upwelling: Power, Fresh Water and Food from Deep Water and Sunshine," by Oswald Roels, Columbia Univ.
- Oct. 24—"Cosmology—Man's Place in the Universe," by Virginia L. Trimble, Univ. of Maryland.
- Oct. 31—"X-Rays from Gravitationally Collapsed Bodies Observed by SAS-C," by G. W. Clark, Massachusetts Inst. of Tech.
- Nov. 7—"Studies of Macromolecular Structure with the Scanning Electron Microscope," by Michael Beer, The Johns Hopkins Univ.
- Nov. 21—"Coping with the Secondary Consequences of New Technology," by E. B. Wilson, Harvard Univ.
- Dec. 12—"Social Security—Past, Present and Future," A. E. Hess, Consultant, Social Security Administration.
- Dec. 18—"Intense Electron and Ion Beams," Shyke A. Goldstein, Univ. of Maryland and Naval Research Laboratory.

ADDRESSES

Principal recent addresses made by APL staff members to groups and organizations outside the Laboratory.

- F. J. Adrian, "Photoexcited Triplet Mechanisms of Chemically Induced Magnetic Polarization in Photolytic Reactions of Carbonyl Compounds," *Bell Laboratories Colloquium*, Murray Hill, NJ, November 7, 1975.
- L. W. Ehrlich, "On Some Experience Using Matrix Splitting and Conjugate Gradient," *SIAM-SIGNUM Fall Meeting*, San Francisco, December 3, 1975.
- D. W. Fox, "Steady State Oscillations in a Buoyant Fluid," *SIAM-SIGNUM Fall Meeting*, San Francisco, December 3, 1975.
- D. W. Fox, "Transient Solutions for Stratified Fluid Flows," *Expository Seminar Series*, NBS Applied Mathematics Division, Gaithersburg, MD, October 23, 1975.
- M. H. Friedman, "The Role of Corneal Structure in the Maintenance of Corneal Thickness," *National Eye Institute Seminar*, National Institutes of Health, Bethesda, MD, December 15, 1975.
- E. P. Gray, "Magnetic and RF Fields for Which the Equations of Motion are Integrable," *Annual Plasma Physics Meeting*, American Physical Society, St. Petersburg, FL, November 11, 1975.
- F. Muccino, "A Unique Hybrid Packaging Concept for Military Applications," *Eighth Annual Connector Symposium*, Cherry Hill, NJ, October 22, 1975.
- V. O'Brien, "Steady Viscous Flow at the Boundary of Porous Media," *Fluid Dynamics Meeting*, American Physical Society, College Park, MD, November 23-26, 1975.
- V. O'Brien, "Unsteady Cavity Flows: Oscillatory Flat Box Flows," *ASME 96th Winter Annual Meeting*, Houston, December 3, 1975.
- T. O. Poehler, "Organic Conductors," *Materials Science Colloquium*, The Johns Hopkins University, Baltimore, November 12, 1975.

HONORS AND AWARDS

The Applied Physics Laboratory and its Assistant Director, *R. B. Kershner*, were presented NASA public service awards in November for contributions to the nation's space effort. APL was presented the NASA Public Service Group Achievement Award for outstanding service in designing, developing, and fabricating nine earth satellites for geophysical and astronomical studies and for designing and constructing experiments and instrumentation for twelve other NASA spacecraft. Dr. Kershner was presented the Distinguished Public Service Medal for outstanding direction of APL's Space Development Department.

F. R. Muccino, Technical Staff Member of the Fleet Systems Department, was awarded a cash prize and a trophy for the best paper presented at the Eighth Annual Connector Symposium held at Cherry Hill, NJ, in October. The organizers of the meeting of communications, computer, and electronics specialists

presented the award to Muccino for his talk on hybrid packaging for military applications.

D. D. Zimmerman, Technical Staff Member of the Engineering Facilities Division, has been named President of the International Society for Hybrid Microelectronics, a 3000-member organization. In his new position, Mr. Zimmerman will work toward standardizing microelectronics specifications and cultivating greater worldwide exchange of technical information.

In November three members of the Applied Physics Laboratory were presented the Navy Distinguished Public Service Award, highest such honor the Navy Department can bestow on a civilian. *A. R. Eaton*, Assistant Director for Tactical Systems, was cited for exceptionally meritorious service in conceiving and implementing technology to defend ships and aircraft in hostile anti-air weapon environments. *T. W. Shep-*

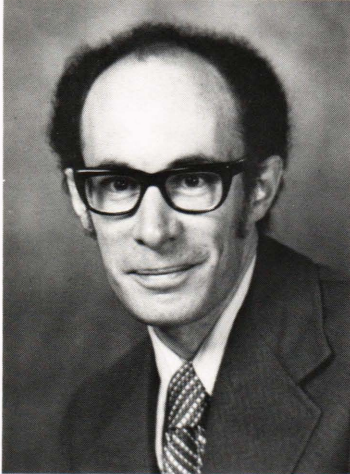
pard, Associate Supervisor of the Fleet Systems Department, was honored for outstanding leadership in developing automated data-collection techniques and establishing a data base for measuring missile system performance in Fleet exercises. *S. Kongelbeck*, APL Chief Engineering Consultant, was recognized for outstanding contributions to the advancement of ordnance engineering and enhancement of the operational capabilities of the U.S. Fleet.

PATENTS

- C. F. Owen—*Antenna Erection Mechanism*, No. 3,913,109
- R. G. Roll, H. H. Elliott—*Loran Receiver Signal Canceller*, No. 3,916,320
- S. Kongelbeck—*Fin Clip and Connector Mount*, No. 3,921,498
- M. L. Hill—*Method and Apparatus for Sensing Rate of Angular Displacement*, No. 3,928,801

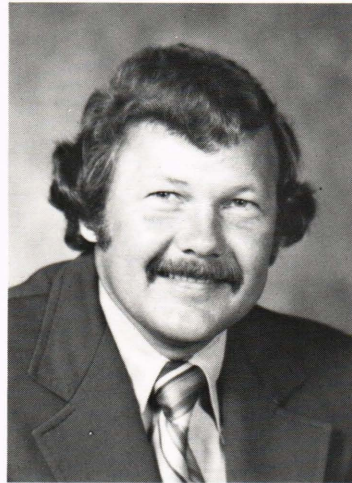
WITH THE AUTHORS

E. J. Hoffman published previously in the *Digest* (March–June 1971) as co-author of “A Fully Redundant Command System for the SAS-A



Satellite.” A native of Baltimore, he received the B.S. and M.S. degrees in electrical engineering, the former from the Massachusetts Institute of Technology, and the latter from Rice University. In 1964 he joined APL, where he is a specialist in space communication and command, circuit design, digital communications, and computer-aided design. Mr. Hoffman was problem leader for the SAS-C and GEOS-C command systems. He has been involved in designing the TIP-II, SEASAT, EGRETS and CCE/IRM satellites and a magnetic bubble satellite tape recorder. As Supervisor of the Data Systems Design Section of the Space Telecommunications Group, he is presently active in the design and analysis of the GPSPAC spaceborne navigation set.

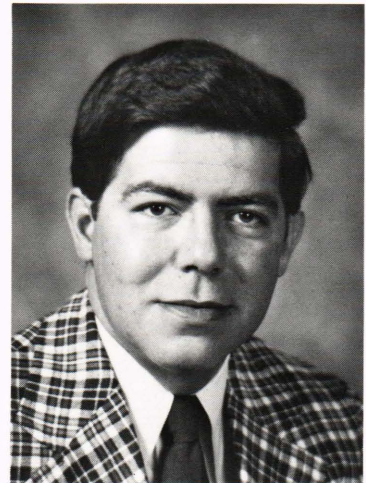
M. R. Peterson, previously represented in the *Digest* (March–June 1971) as co-author of “The SAS-A Telemetry System,” was born in Kansas, and received the B.S.E.E. degree from Kansas State in 1961 and the M.S.E. degree from The Johns Hopkins University in 1969. He joined APL in 1961 but left to work as an engineer for Texas Instruments. Reemployed by APL in 1964, he is a specialist in PCM and analog telemetry system design,



computer programming, digital logic and circuit design, and analog circuit design. Mr. Peterson was Supervisor of the Data Systems Design Section of the Space Telecommunications Group from 1969 until 1975. He is a member of Sigma Tau, Eta Kappa Nu, and the Institute of Electrical and Electronics Engineers.

W. F. Mayer obtained the B.S. degree in physics from Boston College in 1964 and the Ph.D. in physics from the Massachusetts Institute of

Technology in 1970. As a graduate student at M.I.T., he participated in the experiment that led to the optical identification of Scorpius X-1 and determined the size of the X-ray source in the Crab Nebula. In 1969, Dr. Mayer began work as scientific coordinator on SAS-3. He was responsible for ensuring that the engineering design would allow the SAS-3 experiment to meet its scientific goals. In 1973, he was appointed Project Scientist on SAS-3. His responsibilities included the scientific testing and calibration of the experiment. He also participated in the environmental testing and spacecraft integration that were done to ensure that the scientific capabilities were not compromised. Since the launch of SAS-3 in May 1975, Dr. Mayer



has been acting as observatory director at M.I.T. He is in charge of coordinating the satellite operations between M.I.T., SAS control, and SAS attitude at NASA's Goddard Space Flight Center.