

PUBLICATIONS

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

- F. J. Adrian, V. A. Bowers, and E. L. Cochran, "ESR Study of the Photolysis of n-Butyl Iodide: Secondary Photolysis and Structure of the n-Butyl Radical," *J. Chem. Phys.* **63**, No. 2, Jul. 15, 1975, 919-923.
- R. C. Benson, C. B. Barger, and R. E. Walker, "Gain Measurements in a Transverse-Flowing-Na-N₂O + CO Chemical Laser," *Chem. Phys. Letters* **35**, No. 2, Sept. 1, 1975, 161-166.
- A. Brandt, "Acoustic Return from Density Fluctuations in Turbulent Jets," *IEEE Conf. on Engineering in the Ocean Environment (IEEE Ocean '75)*, Sept. 1975, 8-13 (IEEE Pub. No. 75-CHO 995-1 OEC).
- R. E. Fischell (APL), K. B. Lewis (Franklin Square Hospital), J. H. Schulman (Pacesetter Systems, Inc.), and J. W. Love (Santa Barbara), "A Long-Lived, Reliable, Rechargeable Cardiac Pacemaker," *Advances in Technology* (Eds. Schaldach and Furman), Springer-Verlag, New York, 1975.
- S. N. Foner (Ed.), "History of Molecular Beam Research: Personal Reminiscences of the Important Evolutionary Period 1919-1933 by Immanuel Estermann," *Am. J. Phys.* **43**, No. 8, Aug. 1975, 661-671.
- S. K. Ghatak and K. Moorjani, "Structurally Disordered Heisenberg Ferromagnet," *Solid State Commun.* **17**, Sept. 23, 1975, 923-925.
- J. Goldhirsh, "Improved Error Analysis in Estimation of Raindrop Spectra, Rain Rate, and Liquid Water Content Using Multiple Wavelength Radars," *IEEE Trans. Antennas and Prop.* **AP-23**, No. 5, Sept. 1975, 718-720.
- B. M. Halpin, "New Aids for Fire-ground Commanders," *Fire Command*, Aug. 1975, 56-60.
- E. J. Hinman and G. L. Pitts, "Practical Headway Limitations for Personalized Automated-Transit Systems," *Proc. IEE* **122**, No. 7, July 1975, 756-759.
- L. W. Hunter, "Exchange Symmetry and the Quantum Boltzmann Equations," *J. Chem. Phys.* **63**, No. 5, Sept. 1, 1975, 2010-2014.
- L. W. Hunter, "Scalar Equations for Transport Coefficients of a Dilute Gas in an Applied Field," *J. Chem. Phys.* **63**, No. 1, July 1, 1975, 345-352.
- J. E. Kain and D. J. Yost, "Target State Estimation in an ECM Environment," *J. Spacecraft and Rockets* **12**, No. 8, Aug. 1975, 492-498.
- E. A. Mason (Brown Univ.) and L. Monchick (APL), "Hardness of Intermolecular Forces and Thermal Diffusion," *Chem. Phys. Letters* **34**, No. 3, Aug. 1, 1975, 427-429.
- P. H. E. Meijer (The Catholic Univ. of America) and R. A. Farrell (APL), "Padé Approximations and the Critical Exponents in the Two- and Three-Dimensional Ising Models," *Phys. Rev. B* **12**, No. 1, July 1975, 243-252.
- L. Monchick (APL) and S. Green (Columbia Univ.), "Validity of Central Field Approximations in Molecular Scattering: Low Energy CO-He Collisions," *J. Chem. Phys.* **63**, No. 5, Sept. 1, 1975, 2000-2009.
- V. O'Brien, "Pulsatile Fully-Developed Flow in Rectangular Channels," *J. Franklin Institute* **300**, No. 3, Sept. 1975, 225-230.
- V. O'Brien, "Unsteady Cavity Flows: Oscillatory Flat Box Flows," *Appl. Mechanics* **42**, No. 3, Sept. 1975, 557-563.
- R. C. Orth and J. M. Cameron, "Flow Immediately Behind a Step in a Simulated Supersonic Combustor," *AIAA J.* **13**, No. 9, Sept. 1975, 1143-1148.
- R. C. Orth (APL), H. H. Carter (Chesapeake Bay Institute), and M. T. Miyasaki (APL), "A Field Measurement Program to Determine Far Field Plume Dilution Parameters," pp. 219-231, *Progress in Astronautics and Aeronautics, Thermal Pollution Analysis* **36**, M.I.T. Press, Cambridge, MA, 1975.
- E. C. Roelof and S. M. Krimigis, "Low-Energy Solar Cosmic Rays: A Bibliography," *Reviews of Geophys. and Space Phys.* **13**, No. 3 July 1975, 1092-1104.
- G. Rostoker (Univ. of Alberta), and J. C. Armstrong and A. J. Zmuda (APL), "Field-Aligned Current Flow Associated with Intrusion of the Substorm-Intensified Westward Electrojet into the Evening Sector," *J. Geophys. Res.* **80**, No. 25, Sept. 1, 1975, 3571-3579.
- J. T. Stadter and R. O. Weiss, "Thermostructural Analysis of the MHW-RTG Graphite Aeroshell," *Record, 10th Intersociety Energy Conversion Engineering Conf.*, Univ. of Delaware, Aug. 18-22, 1975, 887-893.

PATENTS

- B. F. Hochheimer, R. W. Flower—*Simultaneous Angiography of the Separate Retinal and Choroidal Circulations*, No. 3,893,447
- J. F. Gulick, Jr., J. E. Hanson—*Interferometric Rolling Missile Body Decoupling Guidance System*, No. 3,897,918
- T. A. Moore, F. R. Castella—*Single Composite Pulse Moving Target Indicator Radar System*, No. 3,905,033
- W. W. Goss, H. H. Porter, R. B. Roberts, M. A. Tuve, J. W. Beams, H. Selvidge—*Guided Missile*, No. 3,908,933

ADDRESSES

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

- C. B. Barger, F. F. Mark, and M. H. Friedman, "Pulsatile Flow in a Rectangular Cross-Section Bifurcation," *Annual Conference on Engineering in Medicine and Biology*, New Orleans, September 24, 1975.
- N. J. Brown and D. M. Silver, "Reactive and Inelastic Scattering of $H_2 + D_2$ on Four Semi-Empirical Potential Energy Surfaces," *IX International Conference on the Physics of Electronic and Atomic Collisions*, Seattle, July 25, 1975.
- L. W. Ehrlich, "Solving the Biharmonic in Irregular Regions," *Argonne National Laboratory Symposium on Sparse Matrices*, Argonne, IL, September 9-11, 1975.
- C. Feldman, H. K. Charles, Jr., F. G. Satkiewicz, and J. Bohandy, "Electrical Properties of Carbon-Doped Amorphous Boron Films," *5th International Symposium on Boron and Borides*, Bordeaux, September 8-11, 1975.
- D. W. Fox, "An Initial Value Problem for Buoyant Flow," *Partial Differential Equations Seminar, Mathematics Department*, University of Maryland, College Park, MD, September 24, 1975.
- D. W. Fox, "Methods for Lower Bounds for Eigenvalues of Self-Adjoint Operators," *J. M. Jauch Memorial Summer Workshop in Mathematical Physics*, Geneva, Switzerland, July 23-24, 1975.
- D. W. Fox, "Transient Solutions for Stratified Fluid Flow," *American Mathematical Society Summer Meeting*, Kalamazoo, MI, August 18-22, 1975.
- D. W. Fox, "Transient Solutions for Stratified Fluid Flow," *Applied Mathematics Seminar*, Naval Surface Weapons Center, White Oak, MD, September 19, 1975.
- I. Katz, "Possible Uses of Radar for Satellite Meteorology," *IEEE EASCON '75*, Washington, DC, September 30, 1975.
- S. H. Koeppen and R. E. Walker, "Effective Radiance Attenuation Coefficients for Underwater Imaging," *19th Annual Technical Symposium—Ocean Optics*, San Diego, August 19-20, 1975.
- S. J. Kowal (APL) and W. J. Guman (Fairchild Republic Co.), "Pulsed Plasma Propulsion System for TIP-II Satellite," *JANNAF Propulsion Conference*, Anaheim, CA, September 30-October 2, 1975.
- V. O'Brien, "Smoke Rings and Other Vortices," *Columbian (Science Fiction Writers' Conference)*, Columbia, MD, August 9, 1975.
- F. G. Satkiewicz, "The Sputter-Ion Mass Spectrometer and Its Use in Examining Cu_2/CdS Solar Cells," *Engineering Seminar*, University of Delaware, Newark, DE, October 17, 1975.
- D. M. Silver, "Calculation of Potential Energy Surfaces Using Many-Body Perturbation Theory," *International Workshop on Collisions on Excited State Potential Energy Surfaces*, Orsay, France, August 7, 1975.
- D. M. Silver, "Many-Body Perturbation Theory Applied to Diatomic Molecules," *XXV Congress of the International Union of Pure and Applied Chemistry*, Jerusalem, July 8, 1975.
- R. Turner, "Far Infrared Helium Laser," *International Conference on Infrared Physics*, Zurich, August 11-15, 1975.
- R. E. Walker, "Imaging Optical Radar Threat Analysis," *JASON Winter Study*, Naval Electronics Lab Center, San Diego, CA, December 15-19, 1975.

HONORS AND AWARDS

I. Katz and T. G. Konrad, Supervisor and Assistant Supervisor, respectively, of the Radar Atmospheric Physics Group of the Fleet Systems Department, were appointed U.S. Delegates to the International Scientific Radio Union meeting in Lima, Peru, in August.

L. G. Knowles, Technical Staff Member of the Fleet Systems Department, served as chairman of the opening session of the IVth International Conference on Information Processing in Scintigraphy held in Orsay, France in July.

M. D. Lasky, Technical Staff Member of the Data Processing Center, was elected Vice-President of SHARE, an organization of IBM computing equipment users, at a summer meeting in New York City where more than a thousand members met to exchange information and to learn about future directions in the computer industry.

M. M. Schaefer, senior editor in the Space Development Department, was elected Vice-President of the

International Council for Technical Communications (ICTC) at its meeting in September in Malmo, Sweden.

The XVI General Assembly of the International Union of Geodesy and Geophysics (IUGG), held in Grenoble, France, in August, conducted sessions on Birkeland Current and Magnetic Field-Aligned Electric Fields that were dedicated to the memory of A. J. Zmuda and J. C. Armstrong, APL staff members who collaborated on unique studies of the earth's field-aligned currents. Both died in 1974.

Managing Editor Retires



Dr. Paul E. Clark, Managing Editor of the APL *Technical Digest*

since its inception and publication of its first issue in September 1961, has retired.

A native of Ohio, Dr. Clark obtained a B.A. degree in chemistry and mathematics from Muskingum College, New Concord, OH, and M.Sc. and Ph.D. degrees in physical chemistry from Ohio State University. Prior to joining APL in 1949, Dr. Clark had successively held the positions of Instructor, Assistant Professor, Associate Professor, Professor of chemistry, and Chairman, Division of Natural Sciences, Muskingum College, and then Professor of chemistry and Head of the Chemistry Department, Washington and Jefferson College, Washington, PA, 1943-49.

A specialist in physical chemistry, chemical education, and documentation, he was involved in many facets of the publications activities of the Laboratory. He edited and supervised

the preparation of the monthly *Bumblebee Survey*, 1950-53, and the *Semiannual Summary of Bumblebee Project*, 1952-56. As Supervisor of the Editorial Section of the Technical Publications Group, 1952-75, he was responsible for preparation of formal Laboratory reports and supervision of editorial personnel. Dr. Clark was appointed Assistant Group Supervisor of the Technical Publications Group in 1965.

Dr. Clark is a member of the American Chemical Society, the Chemical Society of Washington, and a Fellow of the American Institute of Chemists.

We of the Staff and Editorial Board of the APL *Technical Digest* wish to express our appreciation to Dr. Clark for his distinguished and dedicated service as Managing Editor and to extend best wishes to him for a happy retirement.

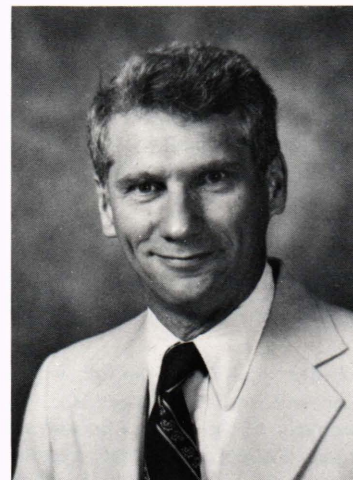
WITH THE AUTHORS



H. B. Riblet has published twice before in the *Digest*, most recently in the March-June 1971 issue ("The Small Astronomy Satellite Program—An Overview"). A native of New Mexico, Mr. Riblet received the B.A. degree in physics from Friends University in Kansas and has done graduate work at The Johns Hopkins University. Prior to joining APL in

1949, he was a radio broadcasting engineer, a radio engineering consultant to Glenn D. Gillette and Associates, and an electronic engineer with Columbia University's O.S.R.D. Laboratories. Soon after joining APL, Mr. Riblet was appointed Supervisor of the Telemetry and Instrumentation Group and was in charge of telemetry systems used in the development of the Terrier and Talos missiles. In 1958 this Group became directly involved in space development and designed antennas and telemetry systems for the early Transit and Navigation Satellites. Since 1964 Mr. Riblet has been Supervisor of the Space Data and Control Branch of the Space Development Department, and was the Project Engineer for the Small Astronomy Satellite Program. He is a Fellow of the Institute of Electrical and Electronics Engineers.

R. M. Sullivan, a Boston native, received the B.S. in physics from Boston College in 1957 and the M.S. in applied sciences from George

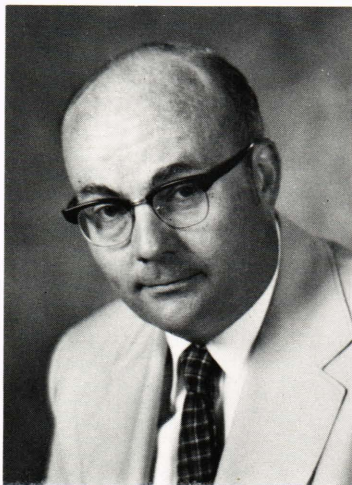


Washington University in 1970. During 1958 to 1966 he was successively an engineer at the Naval Ordnance Laboratory, the Goddard Space Flight Center, and the Martin Co. He joined APL in 1966 as a physicist specializing in aerospace power conversion. Mr. Sullivan assumed responsibility for designing and testing the SAS-A power system

WITH THE AUTHORS (continued)

in 1967. Since 1970, he has been in charge of the SAS-C power system. He has analyzed many APL solar arrays to determine their temperature, orbital performance, and radiation degradation. Mr. Sullivan is a member of the American Institute of Aeronautics and Astronautics.

A. F. Hogrefe was born in Ft. Monmouth and received the B.S.E.E. degree from Pennsylvania State University in 1955. Since joining APL in 1957, he has specialized in semiconductor circuitry and the design of spacecraft instrumentation and sub-systems. While in the Space Physics and Instrumentation Group, Mr. Hogrefe designed experiments for

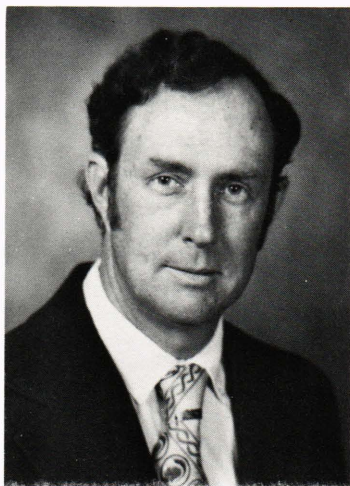


the IMP F, G, H, and J payloads. Subsequently, as Assistant Group Supervisor, he designed the instrumentation for the SAS and GEOS power systems. His present efforts as Supervisor of the Electronics Section of the Engineering Facilities Division include designing part of the Low Energy Experiment of the Mariner Jupiter Saturn 1977 mission.

P. T. Brenza, a native of Pennsylvania, received the B.S.E.E. from the University of Pittsburgh in 1955. He joined APL in 1965 after 10 years as Lead Engineer in thermal analysis efforts of the McDonnell Aircraft Corp. and the North American Space and Information System Division.



Mr. Brenza, a member of the Payload Systems Group of the Space Development Department, is a specialist in thermodynamics and heat transfer associated with missile and space vehicle design. During the past 11 years he has been the responsible engineer for thermal design and thermal-vacuum testing of the DME-A SAS, and NAVPAC satellites. He is currently performing those functions for SEASAT-A.



F. F. Mobley is co-author of "The Attitude Control and Determination Systems of the SAS-A Satellite," which appeared in the March-June 1971 issue of the *Digest*. A native of Atlanta, he received the B.S. and

M.S. degrees in aeronautical engineering, the former from the University of Illinois, and the latter from the Massachusetts Institute of Technology. A specialist in aerodynamics, aeroelasticity, configuration design, and wind-tunnel testing and data analysis, Mr. Mobley joined APL in 1955. For several years he worked in the Preliminary Design Group on such tasks as the aerodynamic development of long-range missile boost configurations, anti-ICBM studies, and the use of infrared and acoustic techniques for submarine air defense. In 1962 he transferred to the Space Development Department where he worked on gravity and magnetic stabilization of satellites. From 1964 until 1974 he was a Section Supervisor in the Attitude Control Systems Group. Since then he has been Assistant Group Supervisor. Mr. Mobley is a member of the Institute of Electrical and Electronics Engineers.

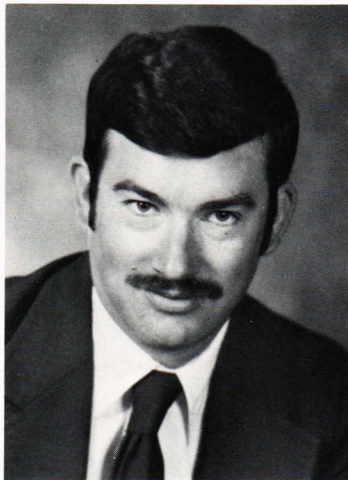
R. L. Konigsberg was born in New York City where he received the B.E.E. degree from Cooper Union Institute of Technology, and the M.Ad.E. from New York University. Following nine years as engineer with Western Electric, Fairchild Engine and Aircraft, De Mornay Budd, and Glenn L. Martin, he received the M.S.E. degree from The Johns Hopkins University. He



WITH THE AUTHORS *(continued)*

was employed by APL in 1956 as a specialist in electronics for control systems and building block design and analysis. Since that time Mr. Konigsberg has been engaged in a broad spectrum of design and instrumentation activities including autopilots, analog computers, submarine sonar and depth control, servos, active filters, and gyro electronics. He is a member of Tau Beta Pi, Sigma Xi, and The Institute of Electrical and Electronics Engineers.

G. H. Fountain is co-author of "The Attitude Control and Determination Systems of the SAS-A Satellite," which appeared in the March-June 1971 issue of the *Digest*. He is a native of Kansas, and received both the B.S. and M.S.



degrees in electrical engineering from Kansas State University. He joined APL in June 1966 and worked

briefly on digital simulation of control systems in the Missile Control Systems Group. Since December 1966 he has been a member of the Space Power and Attitude Control Systems Group. A specialist in spacecraft electronics, Mr. Fountain has worked on various facets of spacecraft attitude control and detection problems, including development of the momentum wheel for SAS-A, evaluation of star sensors for SAS-B, and design of the spin rate control system for SAS-C. He is presently engaged in the preliminary design of the MAGSAT satellite.