# PUBLICATIONS

W. G. Berl, "What Basic Fire Research Can Learn From Forest Fires," *Proc. Soc. Am. Foresters,* **196,** 1964, 145–151.

E. Shotland, "Information—Theoretical Methods Applied to Telemetering," *Electronic Methods* (ed. E. Bleuler and R. O. Haxby), pp. 686–704, Vol. II of *Methods of Experimental Physics* (ed. L. Marton), New York, Academic Press, 1964.

S. D. Raezer, E. A. Bunt, and H. L. Olsen, "Application of d.c. Plasma Arc Heating to Hypersonic Propulsion Testing," *J. Spacecraft and Rockets,* **1,** Mar.–Apr. 1964, 155–160.

D. Abraham and T. O. Poehler, Jr., "A Modified Representation for Thin-Film Triodes," *Proc. I.E.E.E.,* **52,** Apr. 1964, 416–417.

R. H. Cantrell and R. W. Hart, "Interaction Between Sound and Flow in Acoustic Cavities: Mass, Momentum, and Energy Considerations," *J. Acoust. Soc. Am.,* **36,** Apr. 1964, 697–706.

W. Liben, "Microelectronics—Unlocking the Treasure Chest," *Astronautics and Aerospace Engineering,* **2,** Apr. 1964, 20–28.

J. Mayersak, S. D. Raezer, and E. A. Bunt, "Confirmation of Gambrill-Greene Straight-Flow Burnout Heat Flux Equation at Higher Flow Velocities," *J. Heat Transfer,* **86,** May 1964, 297–298.

R. W. Hart and E. P. Gray, "Determination of Particle Structure from Light-Scattering," *J. Appl. Phys.,* **35,** May 1964, 1408–1415.

R. R. Newton, "Geodesy by Satellite," *Science,* **144,** May 15, 1964, 803–808.

A. A. Westenberg and N. deHaas, "Quantitative Measurements of Gas Phase O and N Atom Concentrations by ESR," *J. Chem. Phys.,* **40,** May 15, 1964, 3087–3098.

A. I. Mahan, C. V. Bitterli, and S. M. Cannon, "Far-Field Diffraction Patterns of Single and Multiple Apertures Bounded by Arcs and Radii of Concentric Circles," *J. Opt. Soc. Am.,* **54,** June 1964, 721–732.

# ADDRESSES

The listing below comprises the principal recent addresses made by APL staff members to groups and organizations outside the Laboratory.

R. A. Dickmann, "A Programmer Performance Appraisal Instrument," *SHARE XXII Conference,* San Francisco, Mar. 2, 1964.

G. H. Mowbray, "Studies in Auditor Rate Perception," *The Johns Hopkins University,* Psychology. Colloquium, Mar. 13, 1964.

A. M. Stone, "Beam-Plasma Interaction," *University of Massachusetts,* Colloquium, Mar. 13, 1964.

R. B. Kershner, "Government Activity in the Field of Satellite Communications, with Particular Emphasis on Military Participation," *U.S. House Subcommittee on Military Operations, of the Committee on Government Operations,* Washington, D. C., Mar. 25, 1964.

R. R. Simmons, Lecture-Demonstration: "Use of the Airbrush in Scientific, Commercial, and Fine Art," *The Johns Hopkins University,* Apr. 1 and 15, 1964.

S. D. Bruck, "Thermal Degradation of an Aromatic Polypyromellitimide in Air and in Vacuum: Rates, Activation Energies and Degradation Products," *American Chemical Society, Division of Polymer Chemistry,* Philadelphia, Apr. 5–10, 1964.

D. W. Fox, "Lower Bounds to Eigenvalues Using Operating Decompositions of the Form B*B," *Florida State University,* Mathematics Colloquium, Apr. 10, 1964.

R. B. Kershner, "Design of Electronics in Space," *Conference and Exhibit on Aerospace Electro-Technology,* Phoenix, Ariz., Apr. 20, 1964.

G. H. Albrecht, "A Comparison of RF Energy Absorption Measurements Made Statically and in Rocket Flight on the Exhaust from a Certain Solid Propellant," *AGARD (NATO) Specialists Meeting on "The Fluid Dynamic Aspects of Flight,"* Marseilles, France, Apr. 20–24, 1964.

R. W. Blevins, "Thermal Vacuum Testing of Satellites Without True Solar Simulation," *AGARD (NATO) Specialists Meeting on "The Fluid Dynamic Aspects of Flight,"* Marseilles, France, Apr. 20–24, 1964.

W. E. Buchanan, "The Applied Physics Laboratory and Its Work," *Lions Club,* Sandy Springs, Md., Apr. 27, 1964.

R. E. Fischell and R. B. Kershner, "Gravity Gradient Stabilization of Earth Satellites," *I.E.E.E., Washington Chapter,* Apr. 27, 1964.

C. J. Swet, "Some Applications of Passive Spacecraft Orientation Techniques," *Joint S.A.E.–A.S.M.E. National Transport and Space Meeting,* New York, Apr. 27–30, 1964.

T. O. Poehler, Jr. and D. Abraham, "Electric Field Excitation of Electrons from Shallow Traps in Some Thin-Film CdSe Triodes," *American Physical Society,* Washington, D. C., Apr. 29, 1964.

R. B. Kershner, "Navigation Satellites," *National Conference on the Peaceful Uses of Space,* Boston, Apr. 30, 1964.

S. D. Bruck, "Thermally Stable Polymers," *American Chemical Society, Maryland-Washington Sections,* College Park, Md., May 1, 1964.

J. B. Oakes and W. J. Billerbeck, "A New Charge Control System for Satellite Batteries," *I.E.E.E., Florida West Coast Section,* St. Petersburg, May 4–6, 1964.

F. W. Schenkel, "Thin Film Capacitor Parameter Studies," *I.E.E.E., 1964 Electronic Components Conference,* Washington, D.C., May 5–7, 1964.

G. C. Weiffenbach, "Some Scientific Uses of Earth Satellites," *U.S. Army Chemical Center and Aberdeen Proving Ground, Military Reserve Research and Development Units,* Aberdeen Proving Ground, Md., May 6, 1964.

L. N. McClung, "Multiple Station Display System," *Society for Information Display,* Washington, D.C., May 7, 1964.

W. G. Spohn, Jr., "$(1+\sqrt{5})/2$," *Towson State College,* Towson, Md., May 7, 1964.

## ADDRESSES
*(continued)*

S. D. Bruck, "Thermogravimetric Studies on an Aromatic Polyimide in Air and in the Vacuum Region of $10^{-2}$ to $10^{-3}$ Torr Using the Cahn RG Electrobalance," *Mellon Institute, Fourth Conference on Vacuum Microbalance Techniques,* Pittsburgh, May 7–8, 1964.

F. Falk, "Ramjets," *U.S. Naval Academy,* Engineering Department, Annapolis, May 11, 1964.

Ione D. V. Faro, "Wind Tunnels—Design and Use," *A.I.A.A., Student Branch,* University of Maryland, May 13, 1964.

W. A. Good, "Twenty-Five Years with Radio Controlled Model Planes," *I.E.E.E., Baltimore Chapter,* May 13, 1964.

F. F. Hiltz, "Computer Recognition and Analysis of Intracellularly Recorded Events," *Second Annual Symposium for Biomathematic and Computer Sciences,* Houston, May 14, 1964.

N. H. Choksy, "Feedback in Men and Machines," *Baltimore Polytechnic Institute, Future Scientists of America,* May 15, 1964.

W. G. Berl, "Fire Research," *Chemical Engineers Club,* Washington, D. C., May 18, 1964.

W. E. Buchanan, "The APL Story," *Lions Club,* Ellicott City, Md., May 18, 1964.

C. J. O'Brien, "The Applied Physics Laboratory," *Soroptimist Club of Montgomery County,* Chevy Chase, Md., May 20, 1964.

R. E. Gibson, "What Has Become of Galileo's Ideas Today?" *Washington Academy of Sciences,* The Applied Physics Laboratory, May 21, 1964.

R. B. Kershner, "Navigation by Satellites," *Washington Academy of Sciences,* The Applied Physics Laboratory, May 21, 1964.

S. D. Bruck, "Mechanism of Thermal Degradation of an Aromatic Polypyromellitimide," *Twelfth Canadian High Polymer Forum,* Ste-Marguerite, Province of Quebec, Canada, May 27–29, 1964.

R. E. Walker, "Preliminary Study of Air Augmentation of Rocket Thrust," and "Preliminary Study of Air Augmentation of a Solid Rocket," *University of Illinois,* Symposium on Ejectors and Thrust Augmentation, May 27–28, 1964.

R. B. Kershner, "Satellite Geodesy," *The Johns Hopkins University School of International Studies,* Washington, D. C., May 28, 1964.

W. J. Billerbeck and I. B. Irving, "Thermal Problems Involved in Space Simulation," *First International Congress on Vacuum Techniques in Space Research,* Paris, France, June 29–July 3, 1964.

## APPOINTMENTS

*F. T. McClure,* Chairman of the Research Center, has been named to the Space Technology Panel of the President's Science Advisory Committee. Dr. McClure has served the President's committee in similar capacities for over three years.

*A. R. Stone,* an engineer on the staff of the Rockets Project of the Hypersonic Propulsion Group, has been named to a special committee of the President's Committee on Employment of the Handicapped to select a winning design for a stair-climbing wheelchair.

*W. G. Berl,* supervisor of the Chemical Research Group of the Research Center, has accepted an invitation to serve a four-year term as a member of the Combustion Institute Committee of The Combustion Institute. Dr. Berl was a member of the Editorial Board of the *Digest* during the first two years of its publication.

## PATENTS

G. E. Hagedorn, L. J. Rueger, W. H. Guier, and G. C. Weiffenbach—*Ionospheric Refraction Correction System,* Patent No. 3,124,799.

S. Kongelbeck—*Foldable Fin,* Patent No. 3,125,956.

H. E. Ober, W. C. Parkinson, and R. B. Roberts—*Airborne Vehicle Remote Control Device,* Patent No. 3,126,172.

J. H. Kuck—*Means for Tracking Multiple Target Formations by Radar,* Patent No. 3,130,402.

## WITH THE AUTHORS

*J. R. Apel,* a co-author of "Beam-Plasma Interaction," was born in Absecon, New Jersey. He received his B.S. and M.S. degrees in physics from the University of Maryland, and expects to receive his Ph.D. degree in plasma physics within a year. He was employed as a design engineer by the Ventnor Boat Corporation and as a physical sciences aide by the National Bureau of Standards before joining APL in

1957. Mr. Apel has worked in upper atmosphere physics, plasma physics, and operations analysis. Prior to joining the staff of the Plasma Dynamics Research Group, he was a mathematician performing analysis in the fields of antisubmarine warfare, effects of high-altitude nuclear explosions, and re-entry physics and ballistic missile defense. He is a member of the American Physical Society and the Philosophical Society of Washington.

*E. P. Gray,* a native of Vienna, Austria, is a co-author of "Beam-Plasma Interaction." He received his B.S. degree in physics and mathematics from Cornell University and, in 1952, his Ph.D. degree in theoretical physics from Cornell. He has held AEC Predoctoral and William S. Parsons Fellowships. Dr. Gray was a teaching and research assistant at Cornell and held summer

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# WITH THE AUTHORS

*(continued)*

positions as a scientist or mathematician at Los Alamos Research Laboratory, the National Bureau of Standards, and APL. He came to APL as a full-time member of the professional staff in 1951, as a specialist in statistical mechanics, atomic physics, plasma physics, and electromagnetic theory. He was then a member of the Research Center

Task Study Group. Dr. Gray is now on the staff of the Plasma Dynamics Research Group, working on the study of theoretical confinement of highly ionized plasmas. He has been teaching courses at APL for McCoy College of The Johns Hopkins University for six years, and is now on the faultly for the newly instituted APL program leading to the M.S.E.E. degree at The Johns Hopkins University. Dr. Gray is a member of the American Physical Society and the Philosophical Society of Washington.

*A. M. Stone,* a co-author of "Beam-Plasma Interaction," is represented in this publication in a new role. Dr. Stone, in 1961, helped to found the *APL Technical Digest* and then served as Chairman of its Editorial Board during the first two years of publication. He was born in Boston, Massachusetts, and received his A.B. degree in physics from Harvard University and, in 1938, his Ph.D. degree in physics from the Massachusetts Institute of Technology. He was a research physicist at the U.S. Naval Torpedo Station, associate professor of physics at Montana State College, a staff member of the M.I.T. Radiation Laboratory, and Scientific Liaison Officer at the U.S. Embassy in London. Dr. Stone is Technical Assistant to the Director of the Laboratory, supervisor of the Plasma Dynamics Research Group, and has overall cognizance of the Technical Reports Group, the APL Library Group, the External Relations Group, and the Presentations Office. He is a Fellow of the American Physical Society, a Fellow Member of the Hudson Institute, and a member of the American Association for the Advancement of Science, the Philosophical Society of Washington, and the National Planning Association Special Committee on Arms Control.

*R. E. Fischell,* author of "Gravity Gradient Stabilization of Earth Satellites," is the first member of the APL staff to have published three papers in the pages of this publication. His earlier papers appeared in the Jan.–Feb. 1962 and Nov.–Dec. 1962 numbers. Mr. Fischell received

his M.S. degree in physics from the University of Maryland in 1953, and came to APL from Emerson Research Laboratory in 1954. A specialist in magnetics, satellite power systems, and measurement and instrumentation, Mr. Fischell is supervisor of the Power System and Attitude Control Project in the Satellite System Engineering Group. He is a member of the American Society of Mechanical Engineers, the Institute of Electrical and Electronic Engineers, and the American Institute of Aeronautics and Astronautics.