

## ADDRESSES

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

- G. C. Weiffenbach, "S-66 Ionospheric Beacon Satellite," *International Conference on the Ionosphere*, London, July 2-6, 1962.
- E. A. Bunt, "Large APL Plasma Arc-Driven Tunnel Installation," Royal Aircraft Establishment, Farnborough, England, Aug. 9, 1962.
- E. A. Bunt, "Large APL Plasma Arc-Driven Tunnel Installation," Svenska Flygmotor, Trollhattan, Sweden, Aug. 20, 1962.
- F. T. McClure, "Sound Inside Rockets," *Ninth International Symposium on Combustion*, Cornell University, Aug. 27-Sept. 1, 1962.
- R. M. Fristrom, "Radical Concentrations and Reactions in a Methane-Oxygen Flame," *Ninth International Symposium on Combustion*, Cornell University, Aug. 27-Sept. 1, 1962.
- R. W. Hart and J. F. Bird, "Scaling Problems Associated with Unstable Burning in Solid Propellant Rockets," *Ninth International Symposium on Combustion*, Cornell University, Aug. 27-Sept. 1, 1962.
- L. Monchick, "Theory of Transport Properties of Gases," *Ninth International Symposium on Combustion*, Cornell University, Aug. 27-Sept. 1, 1962.
- A. A. Westenberg and S. Favin, "Complex Chemical Kinetics in Supersonic Nozzle Flow," *Ninth International Symposium on Combustion*, Cornell University, Aug. 27-Sept. 1, 1962.
- F. J. Adrian, "Helium Pressure Shift of the Atomic Nitrogen Hyperfine Splitting," *American Physical Society*, Seattle, Aug. 27-29, 1962.
- E. L. Cochran and F. J. Adrian, "Electron Spin Resonance of H Atoms in the Gas Phase," *American Physical Society*, Seattle, Aug. 27-29, 1962.
- R. E. Fischell, "Radiation Effects on Transit 4B and TRAAC," *Symposium on the Artificial Radiation Belt*, Goddard Space Flight Center, Greenbelt, Md., Sept. 10, 1962.

G. F. Pieper, "Report on TRAAC Satellite Observations on the Artificial Radiation Belt," *Symposium on the Artificial Radiation Belt*, Goddard Space Flight Center, Greenbelt, Md., Sept. 10, 1962.

- F. J. Adrian, E. L. Cochran, and V. A. Bowers, "ESR Studies of Inorganic Free Radicals in Photolytic Systems," *American Chemical Society*, Atlantic City, Sept. 10-12, 1962.
- S. N. Foner and R. L. Hudson, "Mass Spectrometry of Inorganic Free Radicals," *American Chemical Society*, Atlantic City, Sept. 10-12, 1962.
- W. Liben, "Microelectronics Facility at the Applied Physics Laboratory," *Navy Microelectronics Symposium*, Naval Research Laboratory, Washington, D. C., Sept. 24, 1962.
- R. E. Fischell, "Solar Cell Performance in the Artificial Radiation Belt," *Space Power Systems Conference*, the American Rocket Society, Santa Monica, Calif., Sept. 25, 1962.
- D. W. Fox, "A General Procedure for the Estimation of Eigenvalues," *Quantum Chemistry Symposium*, Rättvik, Sweden, Aug. 27-Sept. 1, 1962.
- M. A. Schreiber, "Transit Program," *Technical Management Meeting*, Naval Avionics Industrial Facility, Indianapolis, Sept. 26, 1962.

R. E. Walker, A. R. Stone, and M. Shandor, "Interaction between Laterally-Injected Gas Jets and Supersonic Duct Flow," *Symposium on Fluid Amplification*, Diamond Ordnance Fuze Laboratories, Washington, D. C., Oct. 4, 1962.

## PATENTS

- E. A. Bunt and H. L. Olsen—*Supersonic Wind Tunnel*, Patent No. 3,045,481.
- T. C. Cheston—*Five-Aperture Direction Finding Antenna*, Patent No. 3,045,238.
- F. H. Esch—*Tension Cord Support Arrangement for Satellite Internal Structure*, Patent No. 3,043,644.
- L. F. Welanetz, H. S. Morton, and R. B. Johnston—*Simulator*, Patent No. 3,034,351.
- R. H. Lapp—*Mechanically Operated Fire Detector*, Patent No. 3,052,303.
- R. S. Rae—*Guided Missile*, Patent No. 3,045,596.
- S. D. Raezer—*Method for the Measurement of Extreme Temperatures and Means Therefor*, Patent No. 3,045,487.
- D. H. Sloan—*Ramjet Device*, Patent No. 3,049,883.
- T. Wyatt—*Tether Station*, Patent No. 3,053,481.

## JOURNAL PUBLICATIONS

The following list is a compilation of recently published books and technical articles written by APL staff members.

- N. W. Bazley (National Bureau of Standards) and D. W. Fox (APL), "A Procedure for Estimating Eigenvalues," *J. Math. Phys.* **3**, May-June, 1962, 469-471.
- R. E. Gibson, "A Systems Approach to Research Management—Part 1. Scientific Research," *Research Management*, **V**, July 1962, 215-228.
- F. J. Adrian, "The Effect of Matrix Interactions and Buffer Gases on the Atomic Nitrogen Hyperfine Splitting," *Phys. Rev.*, **127**, Aug. 1962, 837-843.
- F. J. Adrian, E. L. Cochran, and V. A. Bowers, "ESR Studies of Inorganic Free Radicals in Photolytic Systems," *Advances in Chem. Ser.*, No. 36, "Free Radicals in Inorganic Chemistry," 1962, 50-67.
- S. N. Foner and R. L. Hudson, "Mass Spectrometry of Inorganic Free Radicals," *Advances in Chem. Ser.*, No. 36, "Free Radicals in Inorganic Chemistry," 1962, 34-49.
- A. J. Cote, Jr., "Machine Interpretation of Radar Displays," in "Biological Prototypes and Synthetic Systems," Vol. I, ed. by E. E. Bernard and M. R. Kare, Plenum Press, New York, 1962, 278-290.
- S. A. Elder, "A Servo-Attenuated Ratio Pyrometer" (pp. 859-864) and "A Completely Transistorized Recording Pyrometer" (pp. 873-877), in "Temperature, Its Measurement and Control in Science and Industry," Vol. 3, Part 2, Reinhold Publishing Co., New York, 1962.
- R. B. Kershner, "Progress Report on Transit," *Marine Sciences Instrumentation*, Vol. 1, Plenum Press, New York, 1962, 91-118.

A. A. Westenberg and N. deHaas, "High Temperature Gas Thermal Diffusivity Measurement with the Line Source Technique," in "Progress in International Research on Thermodynamic and Transport Properties," American Society of Mechanical Engineers, 1962, 412-417.

N. W. Bazley (National Bureau of Standards) and D. W. Fox (APL), "Lower Bounds to Eigenvalues Using Operator Decompositions of the Form B\*B," *Archive for Rational Mechanics and Analyses*, 10, 1962, 352-360.

## WITH THE AUTHORS

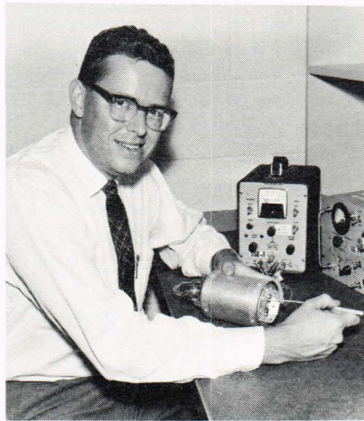
A. C. Schultheis, author of "Experimental 3-D Radar Display," was born in Chicago, Ill., and received his B.S. degree in electrical engineering from the Fournier Institute of Technology, Lemont, Ill. He was employed at APL in 1953 and was on military leave from 1955-1958, during which time he was assigned to the Research and Development Project Management Staff at Redstone Arsenal. Mr. Schultheis is a specialist in surface-to-air missile defense systems, radar, and missile guidance



portions of air defense systems, and in analysis, design, test, and evaluation of pulse, CW, and pulse doppler radar systems. He is presently Supervisor of the Performance Evaluation Project in the Typhon Weapon Con-

trol Division and of the Typhon Instrumentation and Test Project in the Typhon Weapon Test Group. Mr. Schultheis is also in charge of detailed design, fabrication, test, and evaluation of the 3-D display system. He is a member of the American Rocket Society.

J. B. Oakes, a co-author of "Design of an Ultrastable Oscillator for Satellites," was born in Lyndonville, N.Y. He received his B.S. degree in physics from Rensselaer Polytechnic Institute and, in 1950, his M.S. degree in physics from the University of Michigan. After employment as associate physicist at Brookhaven National Laboratory, he came to APL in 1951 as a specialist in vacuum



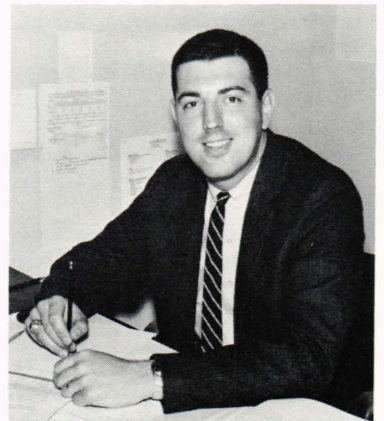
tubes and transistor circuitry. He has worked on CW homing system circuitry, phased array tracking systems, and circuit design for the Transit satellite program. Mr. Oakes is now Supervisor of the Electronic Circuit Development Project of the Satellite System Engineering Group. He is a member of the Institute of Radio Engineers.

W. J. Billerbeck, a co-author of "Design of an Ultrastable Oscillator for Satellites," was born in Waynesboro, Va., and received his B.A.E. degree in aeronautical engineering from Catholic University in 1952. He was employed by the Vitro Corp. and, later, by Flight Refueling, Inc. as an aerodynamicist and project engineer. He was then employed as a specialist in fluid mechanics and heat transfer by Litton Industries. Mr. Billerbeck came to APL in 1961 as a heat transfer specialist on Project



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K. F. Read, a co-author of "Design of an Ultrastable Oscillator for Satellites," is a native of Philadelphia, Pa. He received his B.M.E. degree in heat transfer from the Georgia Institute of Technology in 1955, and is currently working toward his M.M.E. degree in heat transfer from the Catholic University of America. Mr. Read was an instructor in marine engineering at the U.S. Naval Academy before coming to APL in 1960. He is a specialist in satellite thermal analysis and design, and is presently a member of the Thermal Design Project of the Satel-



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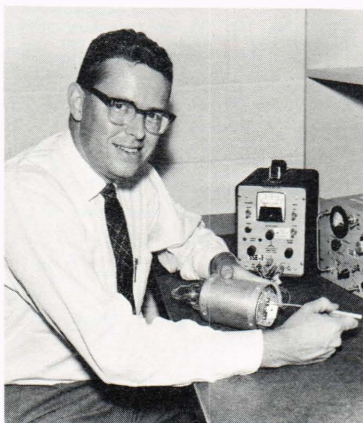
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