

## AWARDS

A. A. Westenberg, Supervisor of the Chemical Physics Group in the Research Center, and R. M. Fristrom, a member of that group, were awarded the Silver Medal of the Combustion Institute for their paper entitled "H and O Atom Profiles Measured by ESR in C<sub>2</sub> Hydrocarbon—O<sub>2</sub> Flames" in the Tenth Symposium (International) on Combustion.

## PUBLICATIONS

- S. M. Yionoulis, "Determination of Coefficients Associated with the Geopotential Harmonics of Order Thirteen," *J. Geophys. Res.*, **71**, No. 6, Mar. 15, 1966, 1768.
- N. W. Bazley (Institut Battelle, Geneva) and D. W. Fox (APL), "Error Bounds for Approximations to Expectation Values of Unbounded Operators," *J. Math. Phys.*, No. 3, 7, Mar. 1966, 413-416.
- J. T. Stadter, "Bounds to Eigenvalues of Rhombical Membranes," *J. Soc. Ind. Appl. Math.*, No. 2, **14**, Mar. 1966, 324-341.
- S. E. Grenleski and F. Falk, "An Investigation of Catalytic Ignition of JP-5 and Air Mixtures," *J. Aircraft*, No. 2, **3**, Mar.-Apr. 1966, 141-146.
- A. J. Zmuda, "Ionization Enhancement from Van Allen Electrons in the South Atlantic Magnetic Anomaly," *J. Geophys. Res.*, No. 7, **71**, Apr. 1966, 1911-1917.
- G. Dixon-Lewis (The University of Leeds, England), W. E. Wilson (APL) and A. A. Westenberg (APL), "Studies of Hydroxyl Radical Kinetics by Quantitative ESR," *J. Chem. Phys.*, **44**, Apr. 1966, 2877-2884.
- A. A. Westenberg, "A Critical Survey of the Major Methods for Measuring and Calculating Dilute Gas Transport Properties," *Advances in Heat Transfer*, **3**, 1966, 253-302.
- N. W. Bazley (Institut Battelle, Geneva) and D. W. Fox (APL), "Methods for Lower Bounds to Frequencies of Continuous Elastic

- Systems," *J. App. Math. Phys.*, **17**, Fasc. 1, 1966, 1-37.
- R. P. Rich, "Computing Center Operations," *J. Chronic Diseases*, **19**, 1966, 373-376.
- V. O'Brien, "Stokes Flow About Deformed Spheroids," *Int. J. Eng. Sci.*, **4**, 1966, 203-205.

## COLLOQUIA

- Mar. 30—"The Concept of Time Reversal Invariance in Physics," by R. G. Sachs, Argonne National Laboratory and University of Chicago.
- Apr. 8—"High-Speed Ground Transport through Flight in Nonevacuated Tubes," by W. B. Brower, Rensselaer Polytechnic Institute.
- Apr. 15—"On Numerical Analysis of the Equations of Mathematical Physics," by R. Courant, New York University.
- Apr. 22—"Optical Transmission Systems," by S. E. Miller, Bell Telephone Laboratories.
- Apr. 29—"Meson Factories," by L. Rosen, Los Alamos Scientific Laboratories.

## ADDRESSES

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

- W. E. Wilson, "Special Problems of Air Augmentation," *JANAF Working Group on Thermochemistry*, Kennedy Space Center, Fla., March 16, 1966.
- H. D. Black, Mary W. Jennings, and M. Sturmanis, "Attitude Determination Utilizing Redundant Sensors," *Fourth International Aerospace Instrumentation Symposium*, Cranfield, England, Mar. 21-24, 1966.
- W. Liben, "Microelectronics in Underwater Instrumentation," *IEEE International Convention*, New York, N.Y., Mar. 21-25, 1966.
- Vivian O'Brien, "Stokes Flow Calculation," *Department of Chemical Engineering*, McMaster University, Hamilton, Ontario, Canada, Mar. 28, 1966.
- M. E. Hosea, "Missile and Spacecraft Telemetry," *Denis J. O'Connell High School*, Arlington, Va., Mar. 31, 1966.
- E. A. Bunt, "Heat Transfer Effects Arising from Arc Heaters of the Self-Induced Magnetic Field Type," *Thermodynamics and Fluid Mechanics Groups of Institution of Mechanical Engineers*, Liverpool University, England, Apr. 13-15, 1966.
- J. F. George, "A Study of the Deformation Characteristics of a Titanium Alloy (Ti-13V-11Cr-3Al) When Subjected to Rapidly Varying States of Temperature and Stress," *AIAA/ASME 7th Structures and Materials Conference*, Cocoa Beach, Fla., Apr. 18-20, 1966.
- D. D. Scott and L. M. Snider, "A Report on the Development of the Explosive Lens Flashblindness (ELF) Protection System," *37th Annual Scientific Meeting of the Aerospace Medical Association*, Las Vegas, Nev., Apr. 18-21, 1966.
- A. J. Zmuda, J. H. Martin, and F. T. Heuring, "Transverse Hydro-magnetic Waves at 1100 Km Altitude in the Auroral Region," *International Scientific Radio Union Meeting*, Washington, D.C., Apr. 18-21, 1966.
- R. A. Freiberg and R. L. Hickerson, "An Analysis of the Series Magnetic Amplifier," *Fourth International Conference on Magnetism*, Stuttgart, Germany, Apr. 20-22, 1966.
- R. E. Gibson, "The Role of APL in Space," *The Washington Alumni Association, The Johns Hopkins University*, Washington, D.C., Apr. 21, 1966.
- S. M. Yionoulis, "A Special Perturbation Procedure for Near Earth Satellites," *American Geophysical Union*, Washington, D.C., Apr. 21, 1966.



## WITH THE AUTHORS

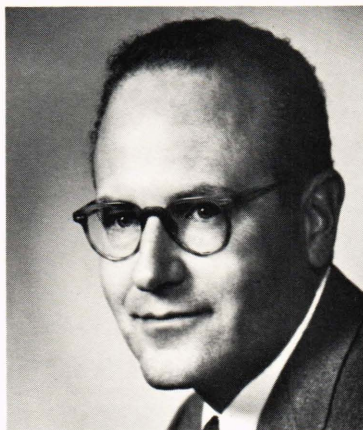


*W. G. Fastie*, author of "Rockets and the Aurora Borealis," was born in Baltimore, Maryland, in 1916, and has spent almost his entire professional career at The Johns Hopkins University. After three years in The Johns Hopkins University Night School (1934-1937) and four years in the Graduate School in Physics (1937-1941), he spent the four war years as Research Assistant to the late Professor A. H. Pfund, former Chairman of the Department of Physics. In 1946 Mr. Fastie went with the Leeds and Northrup Company in Philadelphia, where he was head of the Physics Research Laboratory, and in 1951 he returned to Baltimore to work with the Institute for Cooperative Research at The Johns Hopkins University. Mr. Fastie's work has been in physical optics and spectroscopy. He is presently Research Contract Director of a NASA grant to study upper atmospheric optical phenomena.

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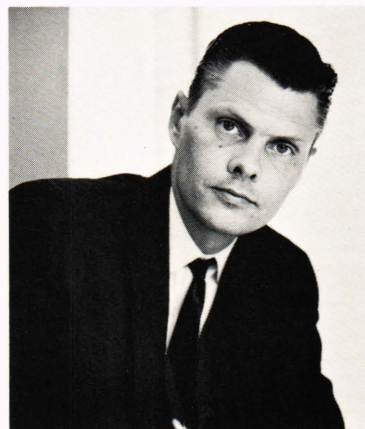
*W. H. Huggins*, author of "Computer Pantomimes," was born in Rupert, Idaho, in 1919. He received B.S. and M.S. degrees in electrical engineering from Oregon State College where he

subsequently served as a research associate, studying precipitation-static radio interference, and as an instructor in electrical engineering. In 1944 he joined the Radio Research Laboratory, Harvard University. From 1946 to 1954, Dr. Huggins served as a civilian engineer with the Air Force Cambridge Research Center. In 1953 he received his Sc.D. Degree from Massachusetts Institute of Technology. In 1954 he joined the faculty of The Johns Hopkins University and is now Westinghouse Professor of Elec-



trical Engineering. Dr. Huggins is a consultant with the RAND Corporation and a Consulting Editor with Blaisdell Publishing Company. He is recipient of the Browder J. Thompson Memorial Award for 1948; the 1955 Annual Award of the National Electronics Conference; the Air Force Decoration for Exceptional Civilian Service in 1954; the Christian R. and Mary F. Lindback Award for Distinguished Teaching in 1961; the Western Electric Fund Award for Excellence of Instruction of Engineering Students, Middle Atlantic Section, ASEE, 1965; and the IEEE Education Award, 1966. Dr. Huggins is a mem-

ber of the National Committee on Electrical Engineering Films.



*J. G. Chubbuck*, author of "Small-Motion Biological Stimulator," was born in San Francisco, California. He received a B.S. degree in electrical engineering from the University of Oklahoma in 1948 and an M.S. degree in physics from Kansas State College in 1951. Concurrent with earning his Master's, Mr. Chubbuck was an instructor of electrical engineering at Kansas State College. A specialist in feedback control system design, he joined APL in 1951 as an engineer in the Bumblebee Controls Group and was concerned with the development of acceleration switching servos. In that group, Mr. Chubbuck became Supervisor of the Triton Control System Project, and later was Supervisor of the Surface-to-Surface Guided Missile Control Studies Project in the Bumblebee Navigation Electronics Group. Subsequent to these assignments, he became a member of the Adaptive Machines Group where he pursued the development of adaptive control devices. Presently, as Assistant Group Supervisor, Mr. Chubbuck is active in developing mobile automata. Mr. Chubbuck is a member of the Washington Academy of Sciences.