

PUBLICATIONS

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

- W. Seamone and C. H. Hoshall, "A Single Site Myoelectric Control System for Prostheses," *Proc. 3rd Internatl. Symp. External Control of Human Extremities*, Dubrovnik, Yugoslavia, Aug. 25–30, 1969.
- Y. Kitazawa (Chiba Univ., Japan) and L. J. Viernstein, "On Some Factors Affecting the Precision of Tonometry and Tonography," *Acta Soc. Opthal. Japan* **73**, No. 7, 1969, 908–912.
- V. W. Pidgeon, "Radar, a Research Tool for Oceanography," *Annals N. Y. Acad. Sci.* **163**, Art. 1, Sept. 4, 1969, 187–193.
- J. L. Queen and T. C. Cheston, "Generation of Multiple Simultaneous Beams by Aperture Phase Control," *Electronics Letters* **5**, No. 20, Oct. 2, 1969, 494–495.
- F. R. Haselton, "Tandem Propeller in Review," *J. Hydronautics* **3**, No. 4, Oct. 1969, 161–167.
- A. N. Jette and T. P. Das (Univ. of Calif.), "Theory of the Self-Trapped Hole in CaF_2 ," *Phys. Rev.* **186**, No. 3, Oct. 15, 1969, 919–925.
- R. R. Newton, "Secular Accelerations of the Earth and Moon," *Science* **166**, No. 3907, Nov. 14, 1969, 825–831.
- L. A. Jacobs, E. H. Klopp (JHU School of Medicine), W. Seamone (APL), S. R. Topaz, and V. L. Gott (JHU School of Medicine), "Improved Organ Function during Cardiac Bypass with a Roller Pump Modified to Deliver Pulsatile Flow," *J. Thoracic and Cardiovascular Surg.* **58**, No. 5, Nov. 1969, 703–712.
- J. M. Whisnant and V. L. Pisacane, "Transient Damping of a Three-Body Gravity-Gradient Satellite," *Astronautica Acta* **15**, No. 1, Nov. 1969, 17–23.
- T. A. Potemra, A. J. Zmuda, C. R. Haave, and B. W. Shaw, "VLF Phase Disturbances, HF Absorption, and Solar Protons in the Events of August 28 and September 2, 1966," *J. Geophys. Res.* **74**, No. 26, Dec. 1, 1969, 6444–6458.
- R. A. Farrell and R. W. Hart, "On the Theory of the Spatial Organization of Macromolecules in Connective Tissue," *Bull. Math. Biophys.* **31**, No. 4, Dec. 1969, 727–760.
- D. K. Anand, J. M. Whisnant, V. L. Pisacane, and M. Sturmanis, "Gravity-Gradient Capture and Stability in an Eccentric Orbit," *J. Spacecraft and Rockets* **6**, No. 12, Dec. 1969, 1456–1459.
- M. H. Friedman, "On an Analysis of the Constant Field Equation," *J. Theoret. Biol.* **25**, No. 3, Dec. 1969, 502–504.
- J. M. Whisnant, P. R. Waszkiewicz, and V. L. Pisacane, "Attitude Performance of the GEOS-II Gravity-Gradient Spacecraft," *J. Spacecraft and Rockets* **6**, No. 12, Dec. 1969, 1379–1384.
- A. A. Westenberg and N. deHaas, "Observations on ESR Line Widths and Concentration Measurements of Gas Phase Radicals," *J. Chem. Phys.* **51**, No. 12, Dec. 15, 1969, 5215–5225.
- E. H. Klopp, L. A. Jacobs (JHU School of Medicine), B. F. Hoffman, W. Seamone (APL), V. L. Gott (JHU School of Medicine), "Use of Left Atrial Pressure as a Control Parameter for Total Left Heart Bypass," *Trans. Amer. Soc. Artif. Intern. Organs* **15**, 1969, 391–397.
- F. J. Adrian, "Effect of Spin-Orbit Interactions on Radiative Triplet-Singlet Transitions in Aromatic Hydrocarbons," *J. Chem. Phys.* **52**, No. 2, Jan. 1970, 622–627.
- B. F. Hoffman (APL), E. H. Klopp, L. A. Jacobs (JHU School of Medicine), W. Seamone (APL), and V. L. Gott (JHU School of Medicine), "A Pulsatile Roller Pump for Cardiac Bypass," *IEEE Trans. Biomed. Eng.* **BME-17**, No. 1, Jan. 1970, 78–80.
- H. M. Stainer, "Rotational Effects in a High-Beta Plasma Confined by a Longitudinal Magnetic

Field," *Phys. Fluids* **13**, No. 1, Jan. 1970, 193–202.

- C. S. Leffel, Jr., "Characteristics of an Ion Source Made from a Nude Ionization Gauge Tube Element," *Rev. Sci. Instruments* **41**, No. 2, Feb. 1970, 285–286.
- F. D. Rollo and A. G. Schulz, "A Contrast Efficiency Function for Quantitatively Measuring the Spatial-Resolution Characteristics of Scanning Systems," *J. Nuclear Med.* **11**, No. 2, Feb. 1970, 53–60.
- A. G. Schulz, L. G. Knowles, L. C. Kohlenstein, R. F. Mucci, and W. A. Yates, "Quantitative Assessment of Scanning-System Parameters," *J. Nuclear Med.* **11**, No. 2, Feb. 1970, 61–68.

PATENTS

- C. T. Pardoe—*Time Interval Plotting Apparatus for an Input Pulse Series*, Patent No. 3,453,541.
- J. H. Kuck—*Phase Computer*, Patent No. 3,453,550.
- J. B. Garrison—*Search Antenna System*, Patent No. 3,453,637.

APL COLLOQUIA

- Jan. 16—"Laser Produced Plasmas," by A. F. Haught, United Aircraft Research Laboratories.
- Jan. 23—"The O. B. E. Quarterly Econometric Model of the U.S. Economy," by M. Liebenberg, U.S. Department of Commerce.
- Jan. 30—"High Field Magnetism and Some Applications," by S. Foner, Francis Bitter National Magnet Laboratory.
- Feb. 6—"Magnetic Fluid Technology," by R. E. Rosensweig, Ferrofluidics Corporation.
- Feb. 13—"Physical Constraints in the Evolution of an Industrial Culture," by M. K. Hubbert, U.S. Geological Survey.
- Feb. 20—"Continuous-Wave All-Chemical Lasers," by T. A. Cool, Cornell University.
- Feb. 27—"Science's Public Malaise," by R. H. Kargon, The Johns Hopkins University.

HONORS, AWARDS, AND APPOINTMENTS

Certificates of appreciation and commemorative medallions containing metal from a special ball of aluminum orbited around the moon on the Apollo 8 flight were presented on February 26, 1970, to 28 members of the APL staff. The presentation was made at the Goddard Space Flight Center by NASA's Assistant Director for Manned Flight Support, O. M. Covington. The medallions were presented in appreciation for "contributions to the outstanding tracking/data acquisition/communication team effort" that assured the safe return of the Apollo 8 Astronauts.

Following is a list of APL staff members honored by NASA on this occasion: R. L. Appel, E. A. Beck, C. W. Brown, Carol L. Brown, J. F. Burns, E. Byron, A. G. Carlton, F. A. Carmen, J. D. Colson, Barbara A. Dodge, J. R. Dozza, G. P. Gafke, R. J. Gaulin, J. D. Jeffords,

S. C. Jones, C. May, J. W. McIntyre, D. M. Mosley, W. Plummer, H. J. Reider, J. G. Schmidt, V. I. Seneca, W. C. Weatherford, G. G. Whitworth, and H. D. Zink.

Three other persons who are no longer members of the APL staff were similarly honored: W. J. Capanaro, T. W. Coleman, and Maureen L. McGathey.

N. H. Choksy, a member of the staff of the Missile Performance Analysis Group, has been appointed an associate editor of the journal *Automatica*, a publication of the International Federation of Automatic Control.

J. P. Randolph, Supervisor of the Bumblebee Instrumentation Development Group, has been named to the Administrative Committee of the Institute of Electrical and Electronic Engineers, Instrumentation and Measurement Group.

M. H. Friedman, staff member of the Research Center, has received the National Capital Award of the Washington, D.C., Council of Engineering and Architectural Societies. This award is given annually to the outstanding young engineer in the Washington, D.C., area.

R. M. Fristrom, a member of the Research Center, has been awarded the Army Certificate of Achievement for his services as a member of the Scientific Advisory Panel, Armed Services Explosives Safety Board, from May 1968 to March 1970.

R. A. Rollin, Jr., a member of the Project Staff of the Army Projects Office, has been appointed Secretary of the IRIS Countermeasures Specialty Group. He will also be Host Chairman of the Eighth Symposium on Infrared Countermeasures to be held at APL on Mar. 24 and 25, 1970.

ADDRESSES

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

J. R. Apel, "Applications of the Quantum Dielectric Tensor," *University of Maryland, Plasma Physics Seminar*, College Park, November 3, 1969.

E. A. Davis and L. R. Talbert, "The Application of GERT Networks to the Study of a Tactical Command and Control System," *36th National Meeting of the Operations Research Society of America*, Miami, November 10, 1969.

T. Wyatt, "Systems Engineering and the TRANSIT Navy Navigational Satellite Program," *The Johns Hopkins University, Electrical Engineering Department Seminar*, Baltimore, November 12, 1969.

The following four addresses were given at the *Annual Meeting of the American Physical Society, Division of Plasma Physics*, Los Angeles, November 12-15, 1969:

J. R. Apel, T. O. Poehler, and C. R.

Westgate, "ECR Lineshape Analysis Using a Quantum Plasma Dielectric Tensor;"

C. S. Leffel, Jr. and R. Turner, "High-Beta Injection into a Linear Octopole Field;"

W. R. Powell and H. M. Stainer, "Resolution of Azimuthal Plasma Current into Ion and Electron Components using Rigid Rotation Model;"

R. Turner and T. O. Poehler, "Faraday Rotation of a Far Infrared Laser Beam by a Plasma."

P. H. E. Meijer (Catholic University) and R. A. Farrell (APL), "Density Weight Factors for the Ising Model," *15th Annual Conference on Magnetism and Magnetic Materials*, Philadelphia, November 18-21, 1969.

M. H. Friedman, "Computer Experiments on the Cornea," *62nd Annual Meeting of the American In-*

stitute of Chemical Engineers, Washington, D.C., November 19, 1969.

L. Viernstein, "Fluid Mechanical Behavior of the Eye," *The Johns Hopkins University, Biomedical Engineering Seminar*, Baltimore, November 20, 1969.

V. O'Brien, "Vortices in Viscous Shear Flows Over Wall Cavities," *American Physical Society, Fluid Dynamics Meeting*, Norman, Oklahoma, November 24, 1969.

T. Konrad and I. Katz, "Radar Studies of Clear Air Convection Communication," *Scientific Radio Union (URSI), University of Texas*, Austin, December 9, 1969.

S. Kowal, "A Proposed GEOS-C System with a Radar Altimeter," *Goddard Space Flight Center, Greenbelt, Maryland*, December 10, 1969.

R. M. Fristrom, "The Use of a Protective Deck for Fire and Explosion Protection," *Carrier Aircraft Safety and Survival Meeting, Naval Research Laboratory*, Washington, D.C., December 16, 1969.

R. M. Fristrom, "Fire and Chemis-

try," *Reserve Training Group*, Aberdeen Proving Ground, Maryland, December 16, 1969.

Vivian O'Brien, "Large Drops in the Gravity Field," *Yale University, Departments of Engineering and Applied Science and of Chemical Engineering*, New Haven, Connecticut, January 13, 1970.

G. M. Starken, "Science of the Sea," *U.S. Naval Reserve Training Center*, Adelphi, Maryland, January 15, 1970.

The following three addresses were presented at the *ALAA 8th Aerospace Sciences Meeting*, New York, January 19-21, 1970:

F. S. Billig, R. C. Orth, and M. Lasky, "A Unified Approach to the Penetration of Gaseous Jets in a Supersonic Stream;"

R. E. Fischell and F. F. Mobley, "Gravity-Gradient Stabilization Studies with the DODGE Satellite;"

E. F. Lucero, "Supersonic Turbulent Boundary Layer Separation Induced by Three-Dimensional Protruberances on a Flat Plate."

The following two addresses were given at the *Annual Meeting, American Physical Society*, Chicago, January 29, 1970:

R. A. Farrell (APL) and P. H. E. Meijer (Catholic University), "Density Factors for the Ising Model;"

J. T. Sullivan, P. H. E. Meijer, and J. R. Peverley (Catholic University) and R. A. Farrell (APL), "Dependence of Critical Behavior of a Four Nearest Neighbor Ising Model on the Potential."

The following two papers were presented by A. A. Westenberg at the *23rd Annual Symposium on Modern Methods of Analytical Chemistry*, Louisiana State University, Baton Rouge, January 26-27, 1970:

"Measurement of Gas Phase Free Radical Concentrations by ESR;"
"Applications of ESR to Gas Phase Kinetics."

R. M. Fristrom, "The Chemistry of Flame Inhibition," *Tennessee Eastman Corporation Colloquium*,

Kingsport, Tennessee, February 7, 1970.

The following two papers were presented by M. H. Friedman at the *14th Annual Meeting of the Biophysical Society*, Baltimore, February 25-27, 1970:

"Sodium Ion Binding in Isolated Corneal Stroma," with K. Green

(The Johns Hopkins Medical Institutions);

"Mass Transfer in the Cornea. Interacting Flows in a Series Membrane System."

K. Moorjani, "Amorphous Semiconductors," *Catholic University, Physics Department*, Washington, D.C., February 27, 1970.

WITH THE AUTHORS



The authors of the article on "A Fixed-Rate Rechargeable Cardiac Pacer" are shown above. They are (left to right): Dr. K. B. Lewis, R. E. Fischell, W. E. Radford, and P. W. Barnhart.

Dr. K. B. Lewis has been involved in collaborative medical research with APL for the past three years. Born in Burlington, North Carolina, Dr. Lewis has a B. S. degree in psychology from Davidson College and received his M. D. degree from the University of North Carolina. He was a Fellow of the Heart Association of Maryland from 1963 to 1965 and received his cardiology training at The Johns Hopkins Hospital. Dr. Lewis was Chief of the Cardiovascular Division of the Department of Medicine at the Baltimore City Hospitals from 1965 to 1970. He is an assistant professor of medicine at The Johns Hopkins University and a Diplomate of the

American Board of Internal Medicine.

R. E. Fischell has contributed four articles to the *Digest* previously. Born in New York City, Mr. Fischell has a B.S. degree in mechanical engineering from Duke University and an M.S. in physics from the University of Maryland. He is a specialist in satellite system design, satellite power and attitude control systems, magnetics and measurement and instrumentation. Mr. Fischell was employed by APL in 1959 and is Supervisor of the Space Power and Attitude Control Systems Group in the Space Development Department.

try," *Reserve Training Group*, Aberdeen Proving Ground, Maryland, December 16, 1969.

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He is a member of the Institute of Electrical and Electronic Engineers and the American Institute of Aeronautics and Astronautics. He was selected in 1963 by the Washington Academy of Sciences as the Outstanding Young Engineer in the Washington National Capital Area.

W. E. Radford was born in Spindale, North Carolina, and received his B.S. degree in electrical engineering from North Carolina State University. Employed at APL in 1961, he is a radar specialist and he originally helped design and fabricate space vehicle power systems and conducted post-launch analyses of satellite launchings. More recently he has become interested in the design and operation of a rechargeable heart pacemaker, for which he is now assistant problem sponsor. Since 1964 he has been a member of the Space Power and Attitude Control Systems Group.

P. W. Barnhart, a native Virginian, obtained the B.S.E.E. degree from the University of Tennessee and the M.S.E.E. from Cornell. After working at the Naval Ordnance Laboratory, Feedback Controls, Inc., and Emerson Research Laboratories, he joined APL in 1961, but left in 1962 to go with Booz-Allen Applied Research, Inc. Mr. Barnhart returned to APL in 1969 and is now an engineer in the Space Power and Attitude Control Systems Group. A specialist in systems analysis, instrumentation, reliability, and quality control, he is working primarily on the rechargeable heart pacer and DISCOS equipment for the TRIAD satellite.

The authors of the "Three-Dimensional Radiography" paper are D. G. Grant, Dr. J. B. Garrison, and Dr. R. J. Johns. Their photographs and biographies follow.

D. G. Grant is a native of Fall River, Massachusetts. He received a B. S. in electrical engineering from Bradford Durfee College of Technology in 1959 and an M. A. in mathematics from the University of Maryland in 1966. Mr. Grant was



employed by APL in 1959. His specialty is applying optical signal-processing techniques to radar problems. He has also worked on laser applications, optical image processing systems, and electro-optical devices. Since 1964 Mr. Grant has been Supervisor of the Optical Development Project in the Missile Radar Techniques Group and since 1969 he has been the Project Engineer for Three-Dimensional Radiography.



J. B. Garrison was born on Prince Edward Island, Canada, and received his Ph.D. in physics from Massachusetts Institute of Technology. A specialist in system design, missile guidance, radar development, and high-speed signal and data processing, Dr. Garrison joined APL in 1950 as a physicist. Between 1955 and 1965, he was Supervisor of several Groups and Programs including

the Terrier Analysis Group, the Guidance Intelligence Group, the AN/SPG-59 Development Program, the Typhon Weapon Control Division, and the Typhon Program. From 1966 to 1968 Dr. Garrison was on the staff of the Advanced Surface Missile System Program Office. He became interested in the Biomedical Program at the Laboratory and was a collaborating investigator on the Three-Dimensional Radiography Project. For the past few months he has been engaged in instrumentation developments and related experimental investigations in support of the Fleet Ballistic Missile Program.



Dr. R. J. Johns, a native of Pendleton, Oregon, received his M. D. degree from The Johns Hopkins University in 1948. Dr. Johns interned at The Johns Hopkins Hospital and progressed through various appointments at the Hospital and the School of Medicine to his present positions of Professor of Medicine and Director of the Sub-Department of Biomedical Engineering. He was appointed a member of the APL Principal Professional Staff in 1967. Dr. Johns was licensed by the American Board of Internal Medicine in 1957 and is a member of the Myasthenia Gravis Foundation Medical Board, the American Society for Clinical Investigation, and the Association of American Physicians. His major research interests are in the neuromuscular function in man and the applications of engineering principles to medical problems.