

## PUBLICATIONS

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

- B. E. Tossman, C. E. Williams, and N. K. Brown, "SIMCON—An Advancement in the Simulation of Physical Systems," *AFIPS Conf. Proc.*, Fall Joint Computer Conference, Houston, 37, 1970, 399–405.
- R. A. Makofski and R. C. Rand, "Advanced Urban Transportation Systems," *Connecticut Transp. Symposium*, sponsored by the Connecticut Dept. of Transportation and the Connecticut Section of the American Institute of Aeronautics and Astronautics, Univ. of Hartford, May 8, 1971.
- C. J. Swet and H. G. Fox, "Low Head Solar Water Pumping," *Proc. 8th Intersociety Energy Conversion Engineer. Conf.*, Univ. of Pennsylvania, Aug. 13–16, 1973, 341–347.
- R. W. Blevins, "Moving Walks," *Proc. Seminar on Bicycle/Pedestrian Planning and Design*, Disney World, Fla., Dec. 12–14, 1973, 463–482.
- R. R. Newton, "The Authenticity of Ptolemy's Parallax Data—Part I," *Quart. J. Roy. Astronom. Soc.* 14, No. 4, Dec. 1973, 367–388.
- E. J. Hinman and G. L. Pitts, "Practical Safety Considerations for Short-Headway Automated Transit Systems," *Personal Rapid Transit II. Progress Problems Potential*, Univ. of Minnesota, Feb. 1974, 375–380.
- S. J. Brown, Jr., "Design Considerations for Vehicle State Control by the Point-Follower Method," *Personal Rapid Transit II. Progress Problems Potential*, Univ. of Minnesota, Feb. 1974, 381–389.
- W. J. Roesler, M. B. Williams, B. M. Ford, and M. C. Waddell, "Comparisons of Synchronous and Quasi-Synchronous PRT Vehicle Management and Some Alternative Routing Algorithms," *Personal Rapid Transit II. Progress Problems Potential*, Univ. of Minnesota, Feb. 1974, 425–438.
- M. C. Waddell, "Dual Mode PRT System Costs," *Personal Rapid Transit II. Progress Problems Potential*, Univ. of Minnesota, Feb. 1974, 571–575.
- R. R. Newton, "The Authenticity of Ptolemy's Parallax Data—Part II," *Quart. J. Roy. Astronom. Soc.* 15, No. 1, Mar. 1974, 7–27.
- E. P. Cunningham, "Probability of Crashing for a Terrain-Following Missile," *J. Spacecraft and Rockets* 11, No. 4, Apr. 1974, 257–260.
- K. Moorjani (APL), T. Tanaka (Catholic Univ. of America), M. M. Sokoloski (Harry Diamond Labs.), and S. M. Bose (Drexel Univ.), "Numerical Aspects of the Two-Sites Coherent Potential Approximation," *J. de Physique* 35, No. 5, May 1974, C4-153–C4-156.
- E. P. Cunningham, "Guidance of a Bank-to-Turn Missile with Altitude Control Requirements," *J. Spacecraft and Rockets* 11, No. 5, May 1974, 340–342.
- M. H. Friedman, "A Physical Description of the Pathogenesis, Histopathology and Treatment of Corneal Epithelial Edema," *J. Theoret. Biology* 45, No. 1, May 1974, 153–169.
- R. W. Flower (APL) and A. Patz (Johns Hopkins Hospital), "A Viewer for Correlation of Fluorescein and Color Fundus Photographs," *Investigative Ophthalmol.* 13, No. 5, May 1974, 398–401.
- J. R. Albertine, "An Azimuth Determination System Utilizing the Navy Navigation Satellites," *Navigation: J. Inst. Nav.* 21, No. 1, Spring 1974, 54–60.
- F. J. Adrian, "A Possible Overhauser Mechanism for  $^{19}\text{F}$  Nuclear Spin Polarization in the Reaction of Fluorobenzene Halides with Sodium Naphthalene," *Chem. Phys. Letters* 26, No. 3, June 1, 1974, 437–439.
- A. J. Zmuda and J. C. Armstrong, "The Diurnal Variation of the Region with Vector Magnetic Field Changes Associated with Field-Aligned Currents," *J. Geophys. Res.* 79, No. 16, June 1, 1974, 2501–2502.
- P. J. Waltrup and J. M. Cameron, "Wall Shear and Boundary-Layer Measurements in Shock Separated Flow," *AIAA J.* 12, No. 6, June 1974, 878–880.
- R. E. Lohfeld (Computer Sci. Corp.), D. K. Anand (Univ. of Maryland), and J. M. Whisnant (APL), "Pitch Axis Stabilization in Eccentric Orbits Using a Variable-Speed Rotor," *J. Spacecraft and Rockets* 11, No. 6, June 1974, 430–432.
- J. L. Abita, "Improved Conventional Photolithography by Relief Mask Processing," *Solid State Tech.* 17, No. 6, June 1974, 48–49.
- Freda L. Robison and T. G. Konrad, "A Comparison of the Turbulent Fluctuations in Clear Air Convection Measured Simultaneously by Aircraft and Doppler Radar," *J. Appl. Meteorology* 13, No. 4, June 1974, 481–487.
- A. N. Jette (APL), T. Lee and T. P. Das (State Univ. of N.Y., Albany), "Theory of Hyperfine Effects in the Zeeman Splitting of the  $2^3\text{P}$  State of  $\text{Li}^+$ ," *Phys. Rev. A* 9, No. 6, June 1974, 2337–2344.
- W. H. Guier (APL), G. C. Friesinger (Vanderbilt Univ. Medical School), and R. S. Ross (Johns Hopkins Univ. School of Medicine), "Beat-by-Beat Stroke Volume from Aortic-Pulse-Pressure Analysis," *IEEE Trans. Biomed. Eng.* BME-21, No. 4, July 1974, 285–292.
- J. F. Bird, "Neural 1/f Noise and Membrane Models," *Biophys. J.* 14, No. 7, July 1974, 563–565.
- W. H. Avery, "Moving-Way Transportation Concepts," *Proc. of Workshop on Moving Way Transp. Systems*, Center for Continuing Education, Northeastern Univ., Boston, July 30, 1974, 165–184.
- T. O. Poehler (APL) and A. N. Bloch, J. P. Ferraris, and D. O. Cowan (The Johns Hopkins Univ.), "Far Infrared Photoconductivity of TTF-TCNQ," *Solid State Commun.* 15, No. 2, July 15, 1974, 337–340.
- C. Feldman and H. K. Charles, Jr., "Electrothermal Model of Switch-

## PUBLICATIONS (continued)

- ing in Amorphous Boron and Silicon Thin Films," *Solid State Commun.* **15**, No. 3, Aug. 1, 1974, 551-554.
- J. H. Richter, D. R. Jensen, V. R. Noonkester (Naval Elect. Lab. Center), T. G. Konrad, A. Arnold, J. R. Rowland (APL), "Clear Air Convection: A Close Look at its Evolution and Structure," *Geophys. Res. Letters* **1**, No. 4, Aug. 1974, 173-176.
- R. A. Meyer, S. F. Haase (APL) and S. E. Poduslo, G. M. McKhann (Johns Hopkins Univ. School of Medicine), "Light-Scattering Patterns of Isolated Oligodendroglia," *J. Histochem. and Cytochem.* **22**, No. 7, 1974, 594-597.
- R. A. Makofski, R. T. Cusick, and E. E. Mooring, "Results of the Testing of the Dulles Prototype Systems," *Proc. First Internat. Conf. Transp. Res.*, Bruges, Belgium, June 1973; *College d'Europe and Transp. Res. Forum*, Chicago, 1974, 521-533.
- W. H. Avery, R. W. Blevins, "Accelerating Walkway," *Proc. First Internat. Conf. Transp. Res.*, Bruges, Belgium, June 1973; *College d'Europe and Transp. Res. Forum*, Chicago, 1974, 573-579.
- R. R. Newton, "I. Astronomy in Ancient Literate Societies. Introduction to Some Basic Astronomical Concepts," *Phil. Trans. Roy. Soc. London, A* **276**, 1974, 5-20.
- R. R. Newton, "Two Uses of Ancient Astronomy," *Phil. Trans. Roy. Soc. London, A* **276**, 1974, 99-116.
- D. J. Cavalieri and R. J. Deland (New York Univ.) and T. A. Potemra and R. F. Gavin (APL), "The Correlation of VLF Propagation Variations with Atmospheric Planetary-Scale Waves," *J. Atmos. and Terrestrial Phys.* **36**, 1974, 561-574.
- K. Moorjani, N. A. Blum, and C. Feldman contributed "Comments on the Determination and Analysis of Optical Constants of Thin Silicon Films," pp. 563-566 in *Amorphous and Liquid Semiconductors*, Vol. 1 (J. Stuke and W. Brenig, Editors), Taylor & Francis Ltd., London, 1974.
- F. C. Paddison and A. M. Stone contributed Chapter 12, "Transportation in the Arctic," pp. 125-149, to a recently published book, *Polar Deserts and Modern Man* (Terah L. Smiley and James H. Zumberge, Editors), The University of Arizona Press, Tucson, 1974.

## ADDRESSES

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

- M. H. Friedman, "The Effects of Epithelial and Endothelial Structure on Corneal Transport and Their Implications for Thickness Control," *Institute of Ophthalmology, University of London*, May 14, 1974.
- M. H. Friedman, "The Effects of Structure on Membrane Transport, with Application to the Corneal Thickness Control Problem," *Eye Clinic, Kommunehospital, Aarhus, Denmark*, May 17, 1974.
- F. S. Billig, "Supersonic Combustion Experiments at APL," *U. S. Army Ballistic Research Laboratories, Aberdeen, Maryland*, May 22, 1974.
- R. G. King, "System Testing Techniques for Computer Networks," *IEEE/NBS Symposium on Computer Networks—Trends and Applications*, Gaithersburg, Maryland, May 23, 1974.
- F. G. Satkiewicz, "Polyatomic Positive Ion Mass Spectra of Oxides," *22nd Annual Conference on Mass Spectrometry*, Philadelphia, May 24, 1974.
- R. W. Blevins, "Moving Walks," *International Bicycle/Pedestrian Seminar*, London, May 27-29, 1974.
- The two following addresses were presented at the *International Committee for Eye Research, Symposium on "The Architecture and Transparency of the Corneal Stroma"*, Capri, Italy, June 2-8, 1974:
- R. A. Farrell, "APL Studies of Stromal Transparency";
- M. H. Friedman and K. Green, "Mechanical-Structural Relationships in the Cornea."
- S. M. Yionoulis and H. D. Black, "A Two-Satellite Technique for Measuring the Deflection of the Vertical [The Dovimeter]," *International Symposium on Marine Geodesy*, Columbus, Ohio, June 3-5, 1974.
- R. Turner, "Plasma Effects in the HCN Laser," *International Conference on Submillimeter Waves and Their Applications*, Atlanta, Georgia, June 6, 1974.
- The two following addresses were presented at the *21st Annual Meeting of the Society of Nuclear Medicine*, San Diego, June 6-10, 1974:
- L. G. Knowles, K. S. Bonwit, S. E. Bonwit, L. C. Kohlenstein, and A. G. Schulz, "Quantitative Count Difference Estimation by Observers Viewing Paired Kidneys";
- J. K. Langan (JHU), L. G. Knowles (APL), and E. Prokop (JHU), "Digital TV Display for the Scintillation Camera."
- M. J. Amir and R. R. Kepple, "Sharing Journal Collections—A Union List Is Only a Beginning," *65th Annual Conference, Special Libraries Association*, Toronto, June 9-13, 1974.
- C. C. Kilgus, "Spacecraft and Ground Station Applications of the Resonant Quadrifilar Helix," *1974 IEEE Antenna and Propagation*

## ADDRESSES (continued)

- gation Group Meeting, Atlanta, June 10–12, 1974.
- R. K. Frazer, "A Unified Flight Limitations Computer Program," *12th Symposium on Electromagnetic Windows*, Atlanta, June 12–14, 1974.
- A. J. Cote, Jr., "Concepts for Future Vessel Traffic Systems," *Annual Meeting of the Institute of Navigation*, San Diego, June 25, 1974.

The following two addresses were presented at the *Summer Computer Simulation Conference*, Houston, July 9–11, 1974:

- P. F. Bohn, "Interactive Programming Aid for Generating Real-Time Hybrid Simulations—User's Guide";
- K. W. Colby and P. F. Bohn, "Generalized Man/Machine Communications Subroutines for Hybrid Simulation."

- R. G. King, F. S. Gregorski, and P. C. Marth, "Traffic Analysis and Display for the San Francisco Vessel Traffic System," *Conference on Computer Graphics and Interactive Techniques*, University of Colorado, Boulder, July 15–17, 1974.

- P. B. Edwards, "Effective Utilization of Professional Manpower in Educating Part-Time Students," *1974 International Conference on Frontiers in Education*, University College, London, July 15–19, 1974.

- A. N. Jette, "Theory of the Fine Structure of Homonuclear Diatomic Molecules Applied to the  $c^3 \Pi_u (1s, 2p)$  State of  $H_2$ ," *Fourth International Conference on Atomic Physics*, Heidelberg, West Germany, July 22–26, 1974.

The two following addresses were presented at the *8th International Congress on Acoustics*, London, July 23–31, 1974:

- C. A. Boyles, "Theory of an Acoustic, Spherical Compliant Tube, Luneburg Lens";
- E. V. Byron, "Low Sidelobe Response by Combining Hydrophones on an Acoustic Luneburg Lens,"

- I. Katz, "Clear Air Phenomena Seen by Ultrasensitive Radar," *USAF Scientific Advisory Board Geophysics Panel Task Group on Meteorological Effects on Microwave Propagation*, Air Force Cambridge Research Laboratory, Bedford, Massachusetts, July 30, 1974.

The following three addresses were presented at the *AIAA Mechanics and Control of Flight Conference*, Anaheim, California, August 5–9, 1974:

- J. E. Kain and D. J. Yost, "Target State Estimation in an ECM Environment";
- F. F. Mobley, R. Konigsberg, and G. H. Fountain, "Attitude Control System of the SAS-C Satellite";
- B. Tossman and D. L. Thayer, "Interactions between SAS-C Spacecraft Nutations and Spin Control."

- S. M. Krimigis and J. W. Kohl (APL), and C. D. Wende (NASA/Goddard), "Continuous Observations of Long-Term Variations in Cosmic X-Ray Sources," *International Conference on X-Rays in Space*, University of Calgary, Alberta, Canada, August 14–21, 1974.

- G. L. Dugger, "Air Breathing Propulsion," *U. S. Army Missile Research, Development, and Engineering Laboratory*, Redstone Arsenal, Alabama, August 15, 1974.

- F. J. Adrian, "A Possible Test of the Photoexcited Triplet Mechanism of Chemically Induced Electron Spin Polarization: Dependence of the Spin Polarization on Polarized Light Orientation," *Gordon Research Conferences: Electron Donor-Acceptor Interactions*, New Hampton, New Hampshire, August 18–23, 1974.

- R. C. Benson, C. B. Barger, and R. E. Walker, "Kinetic Mechanisms for the Alkali-Metal Catalyzed CO-NO Chemical Laser," *XVth International Symposium on Combustion*, Tokyo, August 25–31, 1974.

- D. G. Sager, "An Introduction to TSO and Retrofitting VS to OS,"

*SHARE XLIII*, Chicago, August 26 and 27, 1974.

The two following addresses were presented at the *IEEE Conference on Control Aspects of New Forms of Guided Land Transport*, London, August 28–30, 1974:

- E. J. Hinman, "Practical Headway Limitations for Personalized Automated Transit Systems";
- G. L. Pitts, "Control Function Distribution in Automated Transit Systems,"

- R. R. Newton, "Coordinates Used in Range or Range-Rate Systems, and Their Extension to a Dynamic Earth," *International Astronomical Union Colloquium on "Reference Coordinate Systems for Earth Dynamics"*, Torun, Poland, August 31, 1974.

## HONORS AND AWARDS

*H. Reichenberg*, a member of the staff of the Satellite Reliability Group, has been elected to a third two-year term as a member of the Industry Advisory Group of the Government-Industry Data Exchange Program. This Government-sponsored organization provides defense contractors with current data on reliability test and usage of parts, materials, and processes, and test equipment calibration procedures and with data developed in testing weapon systems, aerospace systems, and other equipment and systems of interest.

*A. G. Carlton*, a member of the Director's staff, and *R. L. Appel* and *C. T. Pardoe*, members of the staff of the Space Communications Group, have been honored by the National Aeronautics and Space Administration with a Certificate of Recognition for their invention of a high-speed data communications system for real-time handling of data transmitted from space.

*K. Moorjani*, a staff member of

## HONORS AND AWARDS

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the Solid State Group of the Research Center, has been named by the French Government to a visiting professorship at the University of Grenoble and a concurrent term in research at the Phase Transition Laboratory of the National Center for Scientific Research also in Grenoble. His appointment is for the year from October 1974 to September 1975.

## PATENTS

G. F. Emch—*Method and Apparatus for Producing Target Range, Height and Elevation Voltages from a PPI Display*, Patent No. 3,697,990.

D. W. Rabenhorst—*Fixed Element Rotor*, Patent No. 3,698,262.

F. F. Mobley—*Variable Magnetic Hysteresis*, Patent No. 3,698,660.

J. H. Kuck—*Flux Driver Circuit for Phased Array*, Patent No. 3,699,397.

N. D. Foley—*Automatic Tuning Device*, Patent No. 3,701,025.

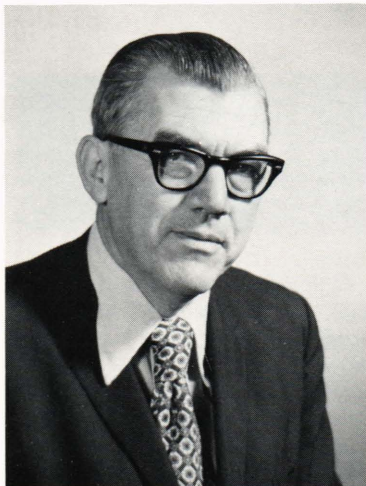
F. Nathanson and D. M. White—*Digital Programmed Transmitter*, Patent No. 3,702,476.

E. A. Beck and A. J. Bassnett—*Coherent Frequency Multiplier and Encoder*, Patent No. 3,706,928.

A. M. Chwastyk—*FFT Processor Utilizing Variable Length Shift Registers*, Patent No. 3,783,258.

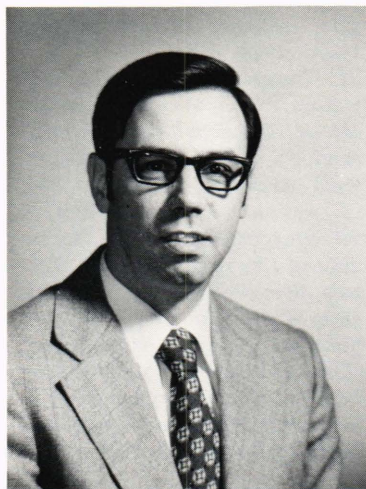
R. E. Fischell—*System for Sensing and Compensating for the Disturbance Forces on a Spacecraft*, Patent No. 3,785,595.

## WITH THE AUTHORS



M. L. Moon, a native of Iowa, received the B.A. degree from Iowa State Teachers College and the M.S. and Ph.D. from the State University of Iowa with a major in physics. A specialist in nuclear physics, guidance, navigation, and missile systems, Dr. Moon was employed by APL in 1951 and was assigned to the Terrier guided-missile program with a principal interest in Terrier guidance. From 1957 to 1962 he was in the Terrier/Tartar Division Office where he worked on radar and guidance system development engineering. From 1962 to 1973 he was Assistant Division Supervisor of the Fleet Systems Division and was the Terrier Ship Systems Project Engineer. Since 1972 Dr. Moon has been Supervisor of the APL Power Plant Site Evaluation

Group engaged in interdisciplinary studies of the environmental impacts of power plant operation at sites in the State of Maryland. In this task he also provides general coordination of the activities of the Chesapeake Bay Institute and the JHU Department of Geography and Environmental Engineering in the detailed power plant site evaluation program.



L. C. Kohlenstein was coauthor of an earlier paper in the *Digest* on "Simulation Studies of Nuclear Medicine Instrumentation," which appeared in the January-February 1971 issue. A native of Baltimore, he received the B.S. and M.S. degrees in electrical engineering from The Johns

Hopkins University. Employed by APL in 1963, Mr. Kohlenstein first studied the effects of quantization and limiting in analog-to-digital conversion in a radar system. From 1965 to 1970 he worked principally in radioisotope scanning system research and on studies of human observer visual detection performance. Since 1970 he has been interested in applying systems analysis and modeling techniques to social and environmental systems in the Chesapeake Bay and surrounding areas. His present assignment, as Assistant Supervisor of the APL Power Plant Evaluation Group, is to cooperate in evaluating potential power plant sites from an environmental perspective. He was the Project Engineer for the Perryman Site and Douglas Point Site studies.

J. P. Reilly was coauthor of a paper on "Frequency Agility for Radar Target Detection and Tracking" that was published in the July-August 1970 issue of the *Digest*. He received the B.E.E. degree from the University of Detroit and the M.S.E. degree in Applied Science from George Washington University. Mr. Reilly joined APL in 1962 and participated in advanced radar development projects for the Navy, working in the areas of signal processing, clutter problems, and target characteristics from both the theoretical and experimental viewpoints. After that

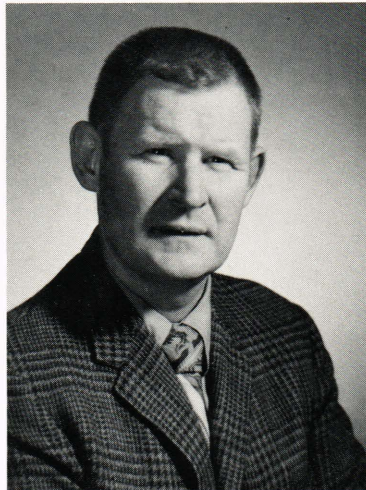
## WITH THE AUTHORS *(continued)*



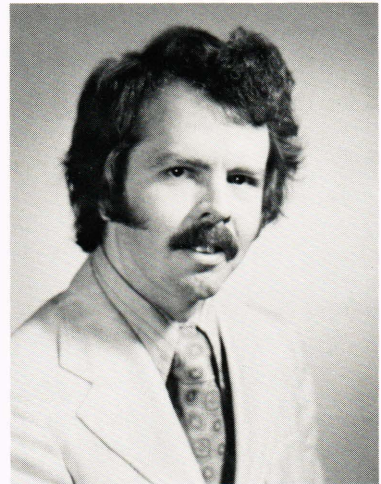
he was involved in developing automatic signal processing techniques for identifying transient airborne sounds. More recently, he participated in the SSBN Security Program as section supervisor of the Sonar Systems Analysis Project. Since 1972 Mr. Reilly has participated in the APL power plant site evaluation studies with special emphasis on the environmental effects of noise and of high voltage power transmission, and has testified in public hearings as an expert witness for the State of Maryland.

*J. J. Lentz*, a native of Baltimore, received the B.S. degree from the U.S. Military Academy and the M.S.E. and Ph.D., specializing in sanitary engineering and water resources, from The Johns Hopkins University. Prior to his appointment at APL in 1972, Dr.

Lentz served in the U.S. Army and held several engineering positions related primarily to health and water and sewer planning. These positions included work with the Baltimore District of the U.S. Corps of Engineers, the State of Maryland Department of Health and Mental Hygiene, and as Director of Health and Environmental Protection, Metropolitan Washington Council of Governments. Dr. Lentz was employed at APL as an engineer in the Power Plant Site Evaluation Group where he is involved in the environmental review of proposed power plants, the study of air and water pollution, and plant and cooling tower operation. He is a



member of several professional societies including the National Society of Professional Engineers and the American Association for the Advancement of Science.



*R. C. Eberhart* is a native Kansan; he received the B.S., M.S., and Ph.D. degrees in electrical engineering from Kansas State University. From 1970 to 1971, he was President of the Stellar Electronics Corporation, Manhattan, Kansas. Since 1971 he has been technical advisor to Congressman William Roy on environmental matters. Dr. Eberhart was employed by APL in 1972 as an engineer in the Power Plant Site Evaluation Group; his work has emphasized environmental studies. He is currently a delegate-at-large to the Maryland Conservation Council, which represents the environmental interests of member organizations totaling over 40,000 members. In 1974 he was appointed Principal Investigator, Permit Analysis Project, Wetland/Edges Program, Chesapeake Research Consortium.