

SUMMARIES OF APL COLLOQUIA

At the Colloquium on Oct. 26, 1962, Dr. E. J. Sternglass from the Westinghouse Research Laboratories presented for the first time a new, revolutionary theory of the elementary particles. He starts out with the viewpoint that the many recently-discovered "elementary" particles (of which more than 40 are now believed to exist) cannot really all be elementary. Rather, he tries to build composite particles from a few truly elementary ones. The only candidates for this rôle are the electron and positron (although the proton and antiproton might also be needed to explain the so-called hyperons).

With these building blocks, and using nothing more abstruse than classical relativity theory and Bohr's quantization postulates, Dr. Sternglass has succeeded in constructing composite particles which he is able to identify with many of the known "elementary" particles. Among these

are the pions, muons, kaons and all of the recently discovered "resonances" such as the eta, rho, omega, and alpha. Almost all of the properties of these particles predicted on the basis of this semiclassical model correspond to their measured values, within experimental error, and none are in serious conflict with experiment. No particles have been predicted which have not been found, so long as the energy required for their production is available to present-day accelerators, but some new particles whose production energy has not yet been quite reached by these accelerators have been predicted. Some difficulties concerning the consistency of the theory, as presently formulated, remain unsolved. If this theory turns out to be essentially correct, it will represent the most remarkable advance in the past 30 years in our understanding of elementary particles.

E. P. Gray

HONORS AND APPOINTMENTS

Gordon L. Dugger, Supervisor of the Advanced Propulsion Project of the Bumblebee Flight Research Group, has been appointed a member of the editorial board of *Astronautics* magazine.

Ralph E. Gibson, Director of the Applied Physics Laboratory, has been appointed Chairman of the Committee on Cooperation Among Scientists of the American Association for the Advancement of Science.

Walter A. Good, Supervisor of the Controls Group, has been elected Vice President of the Committee of International Aeromodeling of the Fédération Aéronautique Internationale.

Wilbur H. Goss, Assistant Director, Technical Evaluation, was awarded the Howard N. Potts Medal by the Franklin Institute on Oct. 7, 1962. He was honored for his technical effort and leadership that led to

development of the first successful supersonic ramjet and for development of ramjet combustion systems.

Fenton L. Kennedy, Supervisor of the APL Document Library, has been elected Vice President of the Washington D. C. Chapter of the Special Libraries Association. Mr. Kennedy has also been appointed Editor of *Sci-Tech News*, official bulletin of the Science Technology Division, Special Libraries Association.

Robert C. Morton, Supervisor of the Polaris Analysis and Evaluation Group and Assistant Supervisor of the Polaris Division, received an honorary Doctor of Engineering degree from the University of Rhode Island.

Robert P. Rich, Supervisor of the Bumblebee Computing Center, has been appointed Director of the University Computing Center of The Johns Hopkins University.

Oct. 5—"Time and Frequency Standards for the Transit Satellite Program," by L. J. Rueger, Applied Physics Laboratory.

Oct. 12—"Scientific Research and Economic Growth: Some Problems of Public Policy," by R. R. Nelson, President's Council of Economic Advisers.

Oct. 19—"Some Recent Experiments with Gaseous Optical Masers," by W. L. Faust, Bell Telephone Laboratories.

Oct. 26—"Classical Models of the Elementary Particles," by E. J. Sternglass, Westinghouse Research Laboratories.

Nov. 2—"Fundamental Principles in the Projection and Impact Phenomena of High Speed Pellets," by E. M. Pugh, Carnegie Institute of Technology.

Nov. 9—"Microwave Emission from Jupiter," by D. B. Beard, University of California.

Nov. 16—"On the Wind-Driven Ocean Circulation," by G. F. Carrier, Harvard University.

Nov. 30—"The Quantum Theory of Measurement," by H. Margenau, Yale University.

Dec. 7—"Experiments with High-Energy Neutrinos," by L. M. Lederman, Columbia University.

PATENTS

U. S. Government patents recently issued to Laboratory staff members for inventions produced in support of APL objectives.

L. J. Viernstein—*Synchro Switched Magnetic Amplifier*, Patent No. 3,058,051.

R. E. Kemelhor—*Unitary Fluid Magnetic Spring, Shock and Lockout Device*, Patent No. 3,059,915.

W. W. Hawley and D. J. Haykin, Jr.—*Folding Fin*, Patent No. 3,063,375.

G. M. Edelman—*Guidance System*, Patent No. 3,065,930.

ADDRESSES

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

- L. J. Viernstein (APL), and G. F. Poggio, G. Werner, and V. B. Mountcastle (The Johns Hopkins University), "The Thalamic Transformation of Neuronal Afferent Activity Evoked by Joint Position and Movement," *International Congress of Physiological Sciences*, Leyden, Netherlands, Sept. 8-14, 1962.
- G. L. Seielstad, "A Moving Finger in the Sand," *Sixth National Symposium on Engineering Writing and Speech*, Washington, D. C., Sept. 13-14, 1962.
- S. G. Smith, "The New Art," *Sixth National Symposium on Engineering Writing and Speech*, Washington, D. C., Sept. 13-14, 1962.
- Nancy B. Lakey, "Job Shop Simulator for Engineering Students," *Association for Computing Machinery*, Washington, D. C., Sept. 20, 1962.
- R. E. Fischell, "Solar Cell Performance in the Artificial Radiation Belt," *Space Power Systems Conference*, American Rocket Society, Santa Monica, Sept. 24, 1962.
- S. H. Gordon, "A Thin Film Electronic Subsystem for Missile Application," *Navy Microelectronics Symposium*, Naval Research Laboratory, Washington, D. C., Sept. 26, 1962.
- W. Liben, "A Survey of Microelectronics," *Institute of Radio Engineers*, Philadelphia, Oct. 3, 1962.
- A. I. Mahan and L. P. Bone, "Far-Field Diffraction and Polarization Properties of a Three-Dimensional Hollow, Homogeneous, Isotropic Cone," *Optical Society*, Rochester, Oct. 4-6, 1962.
- J. O. Artman, "Relation of the Optical and Microwave Properties of Ruby to Noncentral-and-Symmetric Electric Fields," *National Magnet Laboratory*, Massachusetts Institute of Technology, Oct. 11, 1962; and Catholic University, Nov. 2, 1962.
- T. Wyatt, "Size and Shape of the Earth Can Be Determined by Satellites," *Montgomery County Science Fair*, Silver Spring, Md., Oct. 12, 1962.
- J. P. Kearns, "Flutter Simulation," *Instrument Society of America*, New York, Oct. 16, 1962.
- R. B. Kershner, "Satellite Navigation," *BuShips Senior Engineers Meeting*, Washington, D. C., Oct. 18, 1962.
- W. E. Buchanan, "The Applied Physics Laboratory and Its Space Research Program," *Maryland Society of New York*, New York, Oct. 19, 1962.
- R. B. Kershner, "Present Accomplishment—The Transit Navigational Satellite," *School of Engineering and Applied Science*, and *Virginia Engineering Foundation*, University of Virginia, Oct. 20, 1962.
- A. G. Carlton, "Linear Estimation of Stochastic Processes," *Professional Group on Information Theory*, Institute of Radio Engineers, Washington, D. C., Oct. 22, 1962.
- A. M. Stone, "The Transit Navigational Satellite System," *Space Research and Technology Institute*, University of Maryland, Oct. 22, 1962.
- C. J. Nisson, "Analog Computer Function Generator," *Electrical Engineering Department*, University of Maryland, Oct. 27, 1962.
- L. Monchick, "Role of Relaxation Phenomena in the Kinetic Theory of Gases," *Physical Chemistry Seminar*, University of Minnesota, Oct. 31, 1962.
- C. J. O'Brien, "Effective Communications Through the Use of News Letters," *Sixteenth Annual Southern Industrial Editors Association*, University of Georgia, Nov. 8, 1962.
- J. Dassoulas, "The Transit and ANNA Satellites," *Industrial Club of Dundalk*, at The Johns Hopkins University, Nov. 13, 1962.
- R. B. Kershner, "Navigational Satellites," *Esso Research Center*, Linden, N. J., Nov. 14, 1962.
- Vivian O'Brien, "Slow Forced Convection with Moving Drops," *Division of Fluid Mechanics*, University of Oklahoma, Nov. 21, 1962.
- G. H. Mowbray, "Short-Term Memory and Models of the Brain," *Staff and Guidance Seminar*, College of William and Mary, Dec. 4, 1962.
- S. D. Bruck, "Degradation of Chemically Modified and Crosslinked Polycaprolactam Systems under Ultraviolet Irradiation," *The American Association for the Advancement of Science*, Philadelphia, Dec. 26-30, 1962.

JOURNAL PUBLICATIONS

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

- J. Apel (APL), S. F. Singer (University of Maryland), and R. Wentworth (Lockheed Aircraft Corp.), "Effects of Trapped Particles on the Geomagnetic Field," *Advances in Geophysics*, **IX**, 1962, 131-189.
- R. B. Roberts (Dept. of Terrestrial Magnetism) and F. T. McClure (APL), "A Search for an Alternative to the Arms Race," *The Educational Record*, **43**, Oct. 1962, 255-268.
- A. J. Cote, Jr., "The Emerging Bionics Technology," *Science Teacher*, **29**, Oct. 6, 1962, 6-13.
- S. N. Foner and R. L. Hudson, "Mass Spectrometric Studies of Metastable Nitrogen Atoms and Molecules in Active Nitrogen," *J. Chem. Phys.*, **37**, Oct. 15, 1962, 1662-1667.
- G. L. Dugger, "Ramjets," *Astronautics*, **7**, Nov. 1962, 138-142.
- R. A. Freiberg, "The Modified Series Magnetic Amplifier," *Elec. Eng.*, **88**, Nov. 1962, 861-863.
- L. Monchick, "Equivalence of the Chapman-Enskog and the Mean Free Path Theory of Gases," *Phys. of Fluids*, **5**, Nov. 1962, 1393-1398.
- S. D. Bruck, "Ultraviolet Stability of Crosslinked Polycaprolactam Systems," *J. Research Nat. Bur. Standards*, **66A**, Nov.-Dec. 1962, 489-495.
- A. W. Nagy and G. E. Friedman, "Reflection Cavity Maser with Large Gain Band-Width," *Proc. I.R.E.*, **50**, Dec. 1962, 2504-2505.

WITH THE AUTHORS



The authors of the papers comprising the discussion of the artificial radiation belt in this issue are (left to right) G. F. Pieper, R. E. Fischell, C. R. Haave, A. J. Zmuda, and B. W. Shaw. Dr. Pieper is the author of "Injun, A Radiation Research Satellite" in the Sept.-Oct. 1961 *Digest*. Mr. Fischell wrote "The TRAAC Satellite" in the Jan.-Feb. 1962 issue, and Dr. Zmuda prepared the concurrent "Solar-Terrestrial Disturbances and Solar Protons in July 1961." Messrs. Shaw and Haave co-authored "Frequency Monitoring of VLF Transmissions" in the May-June 1962 *Digest*.