

## Contributors to This Issue

LOUIS D. BABUSCI, A.S., 1941, Newark College of Engineering; Engineering Studies, 1943-44, The Citadel, North Carolina State College, University of Tennessee, Columbia University; Bell Telephone Laboratories, 1963—. Initially, Mr. Babusci was engaged in research and development on sealed nickel-cadmium cells. He has a patent for a process of providing a means of escape of any excessive gas generated within nickel-cadmium cells. Presently he is engaged in research on the lead-acid cell.

VÁCLAV E. BENEŠ, A.B., 1950, Harvard College; M.A. and Ph.D., 1953, Princeton University; Bell Telephone Laboratories, 1953—. Mr. Beneš has been engaged in mathematical research on stochastic processes, traffic theory, servomechanisms, and optimal control. In 1959-60 he was visiting lecturer in mathematics at Dartmouth College. He is the author of *General Stochastic Processes in the Theory of Queues* (Addison-Wesley, 1963), and of *Mathematical Theory of Connecting Networks and Telephone Traffic* (Academic Press, 1965). Member, American Mathematical Society, Association for Symbolic Logic, Institute of Mathematical Statistics, SIAM, Mathematical Association of America, Mind Association, Phi Beta Kappa.

R. V. BIAGETTI, B. S., 1960, and M. S., 1962, Providence College; Ph.D., 1966, University of New Hampshire; Bell Telephone Laboratories, 1965—. Since joining Bell Labs, Mr. Biagetti has worked on the lead-acid battery, primarily studying its positive electrode to improve service and reliability. He is Supervisor, Lead-acid Battery Development. Member, American Chemical Society, Sigma Xi.

A. DUANE BUTHERUS, B.A., 1961, Andrews University; Ph.D., 1967, Michigan State University; Bell Telephone Laboratories, 1967—. Mr. Butherus' current interest is the electrochemistry of solid conic conductors and new galvanic cells based on solid electrolytes. Member, AAAS.

ANTHONY G. CANNONE, B.S. (Chemistry), 1958, Seton Hall University; Bell Telephone Laboratories, 1960—. Mr. Cannone has been concerned with vacuum tube materials-processing, cathode development and processing for high power microwave tubes, and the TELSTAR<sup>®</sup> Projects. He is currently involved with the Bell Telephone Laboratories battery, evaluating positive plate designs and cell performance.

R. H. CUSHMAN, studied electrical engineering at Iowa State University, took extension courses at Ohio State University; Western Electric Company, 1961–1970. At Western Electric, Mr. Cushman was Research Leader in charge of the Special Studies Group which engages in the investigation of a wide range of metal bonding and shaping concepts. Prior to that, he had organized and directed his own company involved in the design and manufacture of specialized miniature components for the missile, aircraft and space industries.

DONALD W. DAHRINGER, B.S.Ch.E., 1955, Newark College of Engineering; M.S.Ch.E., 1959, Polytechnic Institute of Brooklyn; Bell Telephone Laboratories, 1961—. Mr. Dahringer has worked in the area of organic materials development. He is currently a Bell System consultant on adhesives and bonding technology. Member, ACS, A.I.Ch.E., NJSPE, Omicron Delta Kappa, Phi Lambda Upsilon, Iota Tau.

D. O. FEDER, B.S., 1946, M.S., 1948, and Ph.D., 1959, Columbia University; Bell Telephone Laboratories, 1954—. Mr. Feder's responsibilities have included studies of electron tube materials and processing; selection and evaluation of materials for use in the TELSTAR<sup>®</sup> Project; and development and application of nickel-cadmium and lead-acid batteries. He is Head of the Battery Development Department. Member, Electrochemical Society, Sigma Xi, Tau Beta Pi, Phi Lambda Upsilon.

C. G. B. GARRETT, B.A., 1946, M.A., 1950, and Ph.D., 1950, Cambridge University; Bell Telephone Laboratories, 1952—. At Bell Labs., Mr. Garrett has worked on semiconductor surfaces, semiconductor electrochemistry, varactors, organic semiconductors, solid-state and gas lasers, paramagnetic resonance, and nonlinear optics. As Director

of the Electron Device Process and Battery Laboratory, he is responsible for fundamental and exploratory work on chemical processes and on the properties of new structures related to integrated circuits. He is also concerned with the development and applications engineering of batteries. Fellow, American Physical Society.

L. T. GUSLER, B.S., 1962, and M.S., 1964, Mississippi State University; Bell Telephone Laboratories, 1964—. Mr. Gusler has been concerned with the effects of precipitation on microwave transmission. He is currently engaged in studies of the coupling between terrestrial and satellite communications systems due to scattering by rain and aircraft. Member, IEEE, Eta Kappa Nu, Tau Beta Pi.

D. C. HOGG, B.Sc., 1949, University of Western Ontario; M.Sc., 1950, Ph.D., 1953, McGill University; Bell Telephone Laboratories, 1953—. His work has included studies of artificial dielectrics for microwaves, diffraction of microwaves, and over-the-horizon, millimeter wave and optical propagation, sky noise and low-noise antennas. Fellow, IEEE; Chairman U. S. Commission 2 of Union de Radio Scientifique Internationale, Sigma Xi, American Association for the Advancement of Science.

P. HUBBAUER, B.S., 1956, Budapest Technical Institute of Hungary; attended Fairleigh Dickinson University and Newark College of Engineering, Bell Telephone Laboratories, 1967—. Mr. Hubbauer is involved in design and processing problems.

T. W. HUSEBY, B.S. (Ch.E.), 1960, Purdue University; M.S. (plastics engineering), 1961, and Ph.D. (aerospace and mechanical science), 1965, Princeton University; Bell Telephone Laboratories, 1961—. Mr. Huseby initially worked on injection molding and mold design for plastic materials. He then turned to applied research in rheology of polymer melts and thermodynamic studies of polymers. He is now supervisor of a group responsible for the development and testing of plastic materials for Bell System applications. Member, American Physical Society, Society of Rheology, Society of Plastic Engineers, Sigma Xi, Tau Beta Pi.

HISASHI KANEKO, B.S.E.E., 1956, University of Tokyo (Japan); M.S.E.E., 1962, University of California; Dr. Eng., 1967, University of Tokyo; Bell Telephone Laboratories, 1968-70. At Bell Telephone Laboratories, Mr. Kaneko worked on future digital channel banks. Member, IEEE, Institute of Electronics and Communication Engineers of Japan.

D. E. KOONTZ, B.S. in Chemistry, 1945, Youngstown University; M.S. in Chemistry, 1948, and Ph.D. in Chemistry, 1951, University of Pittsburgh; Bell Telephone Laboratories, 1952—. Mr. Koontz was first engaged in studies of electron tube materials and processing. For the TELSTAR<sup>®</sup> Project, he was responsible for the selection and application of materials for the space vehicle and their evaluation in simulated space environments. Later he was responsible for the materials and chemistry associated with the development of electron tubes, sealed nickel-cadmium batteries, ultrasonic devices, masers, and magnetic and solid-state microwave devices. He is currently Head of the Exploratory Technology Development Department. Member, American Chemical Society, Sigma Xi, Phi Lambda Upsilon, American Society for Testing Materials.

J. A. LEWIS, B.S., 1944, Worcester Polytechnic Institute; M.S., 1948, and Ph.D., 1950, Brown University; Bell Telephone Laboratories, 1951—. Mr. Lewis has worked on problems in piezoelectricity, elasticity, and heat conduction. He is currently concerned with semiconductor problems. Member, American Mathematical Society, Society for Industrial and Applied Mathematics, American Institute of Aeronautics and Astronautics.

W. S. LINDENBERGER, B.S., 1965, Guilford College; 1966, Clarkson College of Technology; Bell Telephone Laboratories, 1967—. Mr. Lindenberg's work has been concerned with materials for electronic components. Member, American Chemical Society, American Vacuum Society, The Catalysis Society.

HENRY J. LUER, B.S.M.E., 1956, Newark College of Engineering; Bell Telephone Laboratories, 1956—. Mr. Luer's work has included development of guided missile inertial instruments and guidance systems. He is presently engaged in the physical design of power equipment.

PAUL C. MILNER, B.S., 1952, Haverford College; M.A., 1954, and Ph.D., 1956, Princeton University; Bell Telephone Laboratories, 1957—. Mr. Milner has worked in the areas of electrochemical kinetics and energy storage and is currently head of the Electrochemical Research and Development Department. Member, American Association for the Advancement of Science, American Chemical Society, Electrochemical Society.

T. D. O'SULLIVAN, B.S., 1961, Manhattan College; Ph.D., 1968, Fordham University; Bell Telephone Laboratories, 1966—. Mr. O'Sullivan is engaged in investigating the electrochemical phenomenon associated with the lead-acid battery. Member, American Chemical Society, Sigma Xi, Phi Lambda Upsilon.

J. T. RYAN, B.S. (Ch.E.), 1959, and M.S. (Ch.E.), 1962, Newark College of Engineering; Bell Telephone Laboratories, 1952—. Initially Mr. Ryan worked with casting resins. In 1957 he began his present assignment where he is responsible for polyolefin, polyvinyl chloride, and epoxy transfer molding compounds materials development. Member, American Society for Testing and Materials Committee D-20 on plastics.

LOUIS H. SHARPE, B.S. (Chemistry-Honors), 1950, Virginia Polytechnic Institute; Ph.D. (Physical Chemistry), 1957, Michigan State University; Bell Telephone Laboratories, 1955—. Prior to 1968, Mr. Sharpe was concerned with the phenomenon of adhesion. He presently supervises the Adhesives Engineering and Development Group in the Organic Materials Research and Development Department. Member, American Chemical Society, New York Academy of Sciences, Sigma Xi, Sigma Pi Sigma, Alpha Chi Sigma, Phi Lambda Upsilon; Fellow, American Institute of Chemists. He is Editor-in-Chief of The Journal of Adhesion.

DAVID A. SHNIDMAN, B.S. and M.S. (electrical engineering), 1959, Massachusetts Institute of Technology; Ph.D. (applied mathematics), 1965, Harvard University; Data Sciences Lab at Air Force Cambridge Research Laboratory, 1959-1965; Bell Telephone Laboratories, 1965—.

At AFCRL, Mr. Shnidman was concerned with problems of reliable communications at low signal-to-noise ratios. At Bell Laboratories, as a member of the Coaxial Systems Department, he is involved with problems related to high speed digital signal, transmitted over coaxial lines. Member, IEEE, AAAS, Eta Kappa Nu, Tau Beta Pi, Sigma Xi.

JAYANT R. SHROFF, B.Sc. with honors, University of Bombay; B.S.Ch.E., 1965, University of Florida; M.S.Ch.E., 1967, Drexel Institute of Technology; Bell Telephone Laboratories, 1968—. Mr. Shroff has been engaged in various aspects of Bell System lead-acid battery development program. Areas of activities include materials evaluation, components design, and testing. Member, Phi Lamda Upsilon, American Chemical Society, American Institute of Chemical Engineers.

F. J. VACCARO, B.S. (Chemistry), 1957, and M.A. (Chemistry), 1967, Brooklyn College; Western Electric Company, Inc., 1957-1966; Bell Telephone Laboratories, 1968—. From 1964 to 1966, Mr. Vaccaro was temporarily assigned to the Lead-Acid Battery Development Group at Bell Labs, engaged in life testing, and experimental design and studies. He is presently responsible for the design and evaluation of post seals for the circular lead-acid cell and for the selection and electrochemical evaluation of materials for that cell.

ARVIDS VIGANTS, B.E.E., 1956, City College of New York; M.S. (E.E.), 1957, Eng. Sc.D. (E.E.), 1962, Columbia University; Bell Telephone Laboratories, 1962—. Mr. Vigants has worked on various electromagnetic wave propagation problems, and is currently working on line-of-sight microwave propagation. Member, IEEE, Eta Kappa Nu, Tau Beta Pi, Sigma Xi, Commission 2 of URSI.

MICHAEL C. WEEKS, B.A., (Chemistry), 1967, Taylor University; Bell Telephone Laboratories, 1967—. Since joining Bell Telephone Laboratories, Mr. Weeks has worked in the Battery Development area, primarily in developing the positive paste material used in the new circular lead-acid cell.