Contributors to This Issue

Richard R. Anderson, B.S.M.E., 1949, Northwestern University; M.S.E.E., 1960, Stevens Institute of Technology; Bell Laboratories, 1949—. Mr. Anderson first engaged in research on electronic switching systems for telephone central offices. In 1956 he joined the data transmission exploratory development department and made several prototype magnetic-tape transports for storing digital data. He has conducted theoretical studies of data transmission systems by computer simulation. Member, AAAS, Sigma Xi, Tau Beta Pi.

Morton Antler, B.A., 1948, New York University (University College); Ph.D. (Chemistry), 1953, Cornell University; Ethyl Corp., 1953–1958; Borg-Warner, 1958–1959; IBM, 1959–1963; Burndy Corp., 1963–1970; Bell Laboratories, 1970—. Mr. Antler's research interests include inorganic and surface chemistry, corrosion, electrodeposition technology, tribology, and electrical contact science. Since 1959 he has been involved in studies of the properties of electric contact materials, particularly as they relate to connector applications. Currently he is studying the wear behavior of experimental contact materials and the influence of environment on contact performance. Precious Metal Plating Awards (1968 and 1971), American Electroplaters Society; the Alfred E. Hunt Memorial Award (1971), American Society of Lubrication Engineers; Special Recognition Award (1975), Electronic Connector Study Group, Inc. Member, American Chemical Society, American Electroplaters Society, American Society of Lubrication Engineers, American Society for Testing and Materials, Sigma Xi; Associate Director of the Annual Holm Conference on Electrical Contacts of the Illinois Institute of Technology; U.S. Representative to the Advisory Group for the International Conferences on Electrical Contact Phenomena.

Corrado Dragone, Laurea in E.E., 1961, Padua University (Italy); Libera Docenza, 1968, Ministero della Pubblica Istruzione (Italy); Bell Laboratories, 1961—. Mr. Dragone has been engaged in experimental and theoretical work on microwave antennas and solid-state power

sources. He is currently concerned with problems involving electromagnetic wave propagation and microwave antennas.

Michael Drozdowicz, Owens Technical Institute, 1968; Bell Laboratories, 1969—. In the Connector Technology Department, Mr. Drozdowicz has worked on the development of wear, porosity, and environmental tests for the evaluation of connector contact materials.

Gerard J. Foschini, B.S.E.E., 1961, Newark College of Engineering; M.E.E., 1963, New York University; Ph.D. (Mathematics), 1967, Stevens Institute of Technology; Bell Laboratories, 1961—. Mr. Foschini initially worked on real-time program design. Since 1965, he has mainly been engaged in analytical work concerning the transmission of signals. Currently, he is working in the area of data communication theory. Member, IEEE, Sigma Xi, Mathematical Association of America, American Men of Science, New York Academy of Sciences.

Richard L. Franks, B.S.E.E., 1963, University of Washington; M.S., 1969, Ph.D. (Electrical Engineering), 1970, University of California, Berkeley; Bell Laboratories, 1970—. Mr. Franks taught Mathematics and Physics at the U.S. Navy Nuclear Power School from 1963 to 1967. His M.S. and Ph.D. theses were on autonomous oscillations in nonlinear systems. He began work at Bell Laboratories on modeling and analysis of large-scale systems related to telephone traffic. After becoming a supervisor in 1973, that work expanded to include fault detection systems. He currently is Head of the Network Management Department.

Michael J. Gans, B.S. (E.E.), 1957, Notre Dame University; M.S., 1961, Ph.D. (E.E.) 1965, University of California, Berkeley; Bell Laboratories, 1966—. At Bell Laboratories, Mr. Gans has been engaged in research on antennas for mobile radio and satellite communications.

J. M. Geary, B.S.E.E., 1968, University of Maryland; M.S.E.E., 1969 and Ph.D.(E.E.), 1973, Carnegie-Mellon University; Bell Laboratories, 1973—. Mr. Geary has worked on optical investigation and computer simulation of plasmas, magnetic and optical data entry devices, infrared optical receiver design, plasma panel displays, and psychoacoustics of inharmonic sound. He is presently engaged in work on magnetic bubble detectors and further ferroelectric devices.

Richard D. Gitlin, B.E.E., 1964, City College of New York; M.S., 1965, and D. Eng. Sc., 1969, Columbia University; Bell Laboratories 1969—. Mr. Gitlin is supervisor of the Data Techniques Group in the Advanced Data Communications Department. He is a member of the Communication Theory Committee of the IEEE Communications Society and is editor for Communication Theory of the IEEE Transactions on Communications. Senior Member, IEEE; Member, Sigma Xi, Eta Kappa Nu, Tau Beta Pi.

B. Gopinath, M.Sc. (Math.), 1964, University of Bombay; Ph.D. (E.E.), 1968, Stanford University; research associate, Stanford University, 1967–1968; Alexander von Humboldt research fellow, University of Göttingen, 1971–1972; Bell Laboratories, 1968—. Mr. Gopinath is engaged in applied mathematics research in the Mathematics and Statistics Research Center.

Harry Heffes, B.E.E., 1962, City College of New York; M.E.E., 1964, Ph.D., 1968, New York University; Bell Laboratories, 1962—. Mr. Heffes has previously worked in the areas of control and filtering theory. More recently, he has been concerned with modeling and analysis of teletraffic systems. He has been Adjunct Associate Professor of Electrical Engineering at New York University. Member, Tau Beta Pi, Eta Kappa Nu, American Men of Science, ORSA.

Jack M. Holtzman, B.E.E., 1958, City College of New York; M.S., 1960, University of California (Los Angeles); Ph.D., 1967, Polytechnic Institute of Brooklyn; Hughes Aircraft Company, 1958–1963; Bell Laboratories, 1963—. Mr. Holtzman has worked in systems and control theory. More recently, he has been working on problems in traffic theory and computer communications networks. He is currently Head, Teletraffic Theory and Applications Department. Member, ORSA.

Sheldon Horing, B.E.E., 1957, City College of New York; M.E.E., 1959, New York University; Ph.D. (E.E.), 1962, Brooklyn Polytechnic Institute; Bell Laboratories, 1957–1960, 1962—. Mr. Horing completed the communications development training program in 1960. He was first engaged in the design and development of an optical electromechanical control system. After spending two years on the faculty at Brooklyn Polytechnic Institute, he returned to Bell Laboratories where he joined the Mathematical Analysis and Consulting Group and engaged in research and consulting in control theory and related areas, as well as in studies of defense systems. He is currently Head of the

Performance Analysis Department, which is engaged in traffic studies of computer-based systems. Member, Sigma Xi, Tau Beta Pi, Eta Kappa Nu.

Roy Stephen Krupp, S.B., (Mathematics, Physics), 1960, Massachusetts Institute of Technology; M.I.T. Aerophysics Laboratory, 1960–65; S.M., 1967 and Ph.D., 1970 (Aeronautics and Astronautics), Massachusetts Institute of Technology; Bell Laboratories, 1970—. A member of the Toll Switching Systems Studies Department, Mr. Krupp has worked at traffic problems, modeling the toll network, and on studies of switching networks. His general interests include combinatorics, fluid mechanics, and various branches of applied mathematics.

Victor B. Lawrence, B.Sc, 1968, D.I.C., 1970, Ph.D., 1972, London University; General Electric Company of Great Britain, Hirst Research Center, 1973; Staff of Kumasi University, 1974; Bell Laboratories, 1974—. Mr. Lawrence's technical experience has been in the field of digital signal processing and data communications.

E. J. Messerli, B.A.Sc. (E.E.) 1965, University of British Columbia; M.S. (E.E.) 1966, Ph.D. (E.E. and C.S.) 1968, University of California, Berkeley; E.E. & C.S. faculty, Berkeley, 1968–69; Bell Laboratories, 1969—. Mr. Messerli has been primarily involved in systems analysis and network planning. His work includes studies on the demand assignment of capacity for a domestic satellite system, on the impact of faulty trunks on customers and the network, and on the worth of more accurate data for trunk provisioning. He is currently supervisor of a group concerned with planning for the measurement of new services. Member, IEEE, ORSA.

Kent V. Mina, B.S.E.E., 1958, Princeton University; M.S.E.E., 1960, New York University; Bell Laboratories, 1958—. Mr. Mina is currently a member of the Electronic and Computer Systems Research Laboratory and has been working in the field of digital communication circuits.

John A. Morrison, B.Sc., 1952, King's College, University of London; Sc.M., 1954, and Ph.D., 1956, Brown University; Bell Laboratories, 1956—. Mr. Morrison has done research in various areas of applied mathematics and mathematical physics. He has recently been interested in queuing problems associated with data communications net-

works. He was a Visiting Professor of Mechanics at Lehigh University during the fall semester 1968. Member, American Mathematical Society, SIAM, IEEE, Sigma Xi.

Kurt H. Mueller, Diploma (E.E.) 1961, and Ph.D., 1967, Swiss Federal Institute of Technology; Bell Laboratories, 1969–1972, 1973—. Mr. Mueller has worked on a variety of problems in coding, modulation, signal processing, and echo cancellation for high-speed data communication. During 1972–73, he was on leave at the Swiss Federal Institute of Technology where he lectured on information theory and was a member of the executive body of the European Informatics Network. He is currently employed by Gretag, AG in Zurich, Switzerland. Senior Member, IEEE.

William Pferd, B.S.M.E., Rutgers University; M.S.M.E., New Jersey Institute of Technology; 1st Lt., U.S. Army Air Force Intelligence, 1942–1945; Bell Laboratories, 1947—. During his Bell Laboratories career, Mr. Pferd has worked in the areas of customer products, systems engineering, and computer application. He participated in the development of ringers, rotary dials, card dialers, connectors, automatic sets and public telephones. While at the Indianapolis Laboratory, his major responsibility was the development of the "single slot" coin telephone. On returning to the Whippany Laboratory, he led engineering studies in criteria for hardened facilities; equipment standards, layout and assembly; central office planning and design and building investment tax credit. He is currently Head of the Office Planning Department within the Building and Energy Systems Laboratory, responsible for the development of computer systems engineering and systems to facilitate the planning, design, and operation of Bell System buildings. Recipient, Industrial Achievement Award, Copper and Brass Research Association (for the "insulation crushing" clip connector); Meritorious Service Award, National Automatic Merchandising Association (for the new "clad" coinage). Senior Member, IEEE; Member, ACM.

Stephen B. Weinstein, B.S.E.E., 1960, Massachusetts Institute of Technology, M.S.E.E., 1962, University of Michigan, Ph.D. (E.E.), 1966, University of California at Berkeley; Philips Research Laboratories, Eindhoven, Netherlands, 1967–1968; Bell Laboratories, 1968—. Mr. Weinstein's technical interests include data communications, data communications security, and microcomputer systems. Senior member, IEEE.