## Contributors to This Issue

SIDNEY DARLINGTON, B.S., 1928, Harvard; B.S.E.E., 1929, Massachusetts Institute of Technology; Ph.D., Columbia University, 1940; Bell Telephone Laboratories, 1929—. Mr. Darlington has been mainly concerned with research in applied mathematics, relating to circuits, systems, and communication theory. Fellow, IEEE; Associate Fellow, American Institute of Aeronautics and Astronautics.

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 Telephone Laboratories, 1961—. Mr. Foschini had initially worked on real time program design. Since 1965 he has engaged in analytical work concerning the transmission of signals over stochastic channels. Member, Sigma Xi, Mathematical Association of America.

Detlef Gloge, Dipl. Ing., 1961, D.E.E., 1964, Braunschweig Technische Hochschule (Germany); research staff, Braunschweig Technische Hochschule, 1961–1965; Bell Telephone Laboratories, 1965—. In Braunschweig, Mr. Gloge was engaged in research on lasers and optical components. At Bell Telephone Laboratories, he has concentrated on the study of optical transmission techniques. Member, Verband Deutscher Elektroingenieure, IEEE.

J. E. Goell, B.E.E., 1962, M.S., 1963, and Ph.D. (E.E.), 1965, Cornell University; Bell Telephone Laboratories, 1965—. While at Cornell, Mr. Goell was a teaching assistant and held the Sloan Fellowship and the National Science Cooperative Fellowship. At Bell Telephone Laboratories, he has worked on solid-state repeaters for millimeter wave communication systems and optical integrated circuits. Member, Tau Beta Pi, Eta Kappa Nu, Sigma Xi, Phi Kappa Phi, IEEE.

Hermann K. Gummel, Diplom-Physiker degree (1952), University of Marburg, Germany; M.S. (physics), 1952, Ph.D. (physics), 1957, Syracuse University; Bell Telephone Laboratories, 1957—. He has worked in semiconductor electronics and presently heads a department responsible for design analysis. Member, American Physical Society, Sigma Xi.

W. M. Hubbard, B.S., 1957, Georgia Institute of Technology; M.S., 1958, University of Illinois; Ph.D., 1963, Georgia Institute of Technology; Bell Telephone Laboratories, 1963—. Mr. Hubbard's work has included analyses related to the design of millimeter-wave solid-state repeaters for use in a waveguide transmission system and the construction of prototype high-speed repeaters for this type of system. Member, Sigma Xi, Tau Beta Pi, Phi Kappa Phi, American Physical Society.

Peter Kaiser, Diplom Ingenieur, 1963, Technische Hochschule, Munich, Germany; M.S., 1965, and Ph.D., 1966, University of California, Berkeley; Bell Telephone Laboratories, 1966—. At Berkeley, Mr. Kaiser was working on frequency independent antennas. He now is engaged in optical transmission research with emphasis on gas lens beam waveguides. Member, IEEE.

- G. D. Mandeville, 1933–34, Monmouth Junior College; 1935–36, Rutgers University; Western Electric Co., 1939–49; Bell Telephone Laboratories, 1949—. With Western Electric, Mr. Mandeville was concerned with radar development and shop test equipment. He headed the shop test equipment prove-in section for three years. With Bell Laboratories he has been associated with guided-wave research in the areas of waveguide and repeaters.
- J. A. Morrison, B.Sc., 1952, King's College, University of London; Sc.M., 1954, and Ph.D., 1956, Brown University; Bell Telephone Laboratories, 1956—. Mr. Morrison has been doing research in a variety of problems in mathematical physics and applied mathematics. His recent interests have included perturbation techniques for nonlinear oscillations and propagation in random media. He was a visiting professor of mechanics at Lehigh University during the fall semester 1968. Member, American Mathematical Society, SIAM, Sigma Xi.

RAYMOND K. MUELLER, B.S., 1963, M.S., 1965, and D.Sc., 1967, Washington University; Bell Telephone Laboratories, 1967—. Mr. Mueller has worked in operations research and information theory. He is presently working on the calculation of the capacity of telephone cables. Member, Tau Beta Pi, Sigma Xi.

CLYDE L. RUTHROFF, B.S.E.E., 1950, and M.A., 1952, University of Nebraska; Bell Telephone Laboratories, 1952—. Mr. Ruthroff has

published contributions on the subjects of FM distortion theory, broadband transformers, FM limiters, threshold extension by feedback, and microwave radio systems for satellite and terrestrial use. He is interested in the extension of radio communication into the millimeter and optical wavelengths. Member, A.A.A.S., I.E.E.E., Sigma Xi.

IRWIN W. SANDBERG, B.E.E., 1955, M.E.E., 1956, and D.E.E., 1958, Polytechnic Institute of Brooklyn; Bell Telephone Laboratories, 1958—. Mr. Sandberg has been concerned with analysis of military systems, synthesis and analysis of active and time-varying networks, studies of properties of nonlinear systems, and some problems in communication theory and numerical analysis. He is Head of the Systems Theory Research Department. Member, IEEE, Eta Kappa Nu, Sigma Xi, Tau Beta Pi.

