## Contributors to This Issue

Syed V. Ahamed, B.E., 1957, University of Mysore, India; M.E., 1958, Indian Institute of Science; Ph.D., 1962, University of Manchester, U. K.; Post Doctoral Research Fellow, 1963, University of Delaware; Assistant Professor, 1964, University of Colorado; Bell Laboratories, 1966—. Mr. Ahamed worked in Computer Aided Engineering Analysis and Software Design at Whippany. He has applied algebraic analysis to the design of domain circuits. Presently, he is investigating computer aids to the design of bubble circuits.

RAYMOND H. Bosworth, Air Force Radio Technical Institute, 1950; Union Junior College, 1952–1956; R.C.A. Institutes, 1962–1964; Bell Laboratories, 1952—. Mr. Bosworth has worked on negative impedance repeaters, repertory dial telephones, and PCM coding techniques. He holds patents in printed circuit technology.

- L. H. Brandenburg, B.S., 1962, M.S., 1963, Ph.D., 1968, Columbia University; Bell Laboratories, 1968—. Mr. Brandenburg has worked on various analytical problems associated with communication theory. Member, IEEE, Sigma Xi, Tau Beta Pi.
- J. C. Candy, B.Sc., 1951, Ph.D., 1954, University of Wales, Bangor; British Atomic Energy Authority, 1956–59; Research Associate, University of Minnesota, 1959–60; Bell Laboratories, 1960—. Mr. Candy has worked on digital circuits and pulse transmission systems. He is studying methods for processing video signals, and designing digital coders. Member, IEEE.

Donald C. Cox, B.S. (E.E.), 1959, M.S. (E.E.), 1960, University of Nebraska; Ph.D. (E.E.), 1968, Stanford University; U. S. Air Force Research and Development Officer, Wright-Patterson AFB, Ohio, 1960–1963; Bell Laboratories, 1968—. Since coming to Bell Laboratories from Stanford, where he was engaged in microwave transhorizon propagation research, Mr. Cox has been engaged in microwave propa-

gation research in mobile radio environments and in high-capacity mobile radio systems studies. Senior Member, IEEE; Member, Commission II of USNC/URSI, Sigma Xi, Sigma Tau, Eta Kappa Nu, Pi Mu Epsilon.

B. Gopinath, M.S. (Mathematical Physics), 1964, University of Bombay, India; M.S.E.E. and Ph.D. (E.E.), 1968, Stanford University; Postdoctoral Research Associate, Stanford University, 1967–1968; Bell Laboratories, 1968—. Mr. Gopinath's primary interest, as a member of the Mathematics of Physics and Networks Department, is in the applications of mathematical methods to physical problems.

Shlomo Halfin, M.Sc., 1958, and Ph.D., 1962, The Hebrew University of Jerusalem (Israel); Bell Laboratories, 1968—. Mr. Halfin's work is in the field of Operations Research theory and its applications. Member, American Mathematical Society, Operations Research Society of America, Society for Industrial and Applied Mathematics.

JUDITH A. JOHNSON, A.A., 1969, Colby Jr. College; Bell Laboratories, 1970—. Ms. Johnson is a laboratory assistant in the Acoustics Research Department. She assists staff members in research on digital processing of speech, auditory information processing, and automatic and subjective speaker verification.

ROBERT P. Kurshan, Ph.D. (Mathematics), 1968, University of Washington; Bell Laboratories, 1968—. Mr. Kurshan's recent interests have been in the field of algebra, with work in invariant theory and applications in coding theory and information theory.

Charles J. McCallum, Jr., S.B. (Mathematics), 1965, Massachusetts Institute of Technology; M.S. (Statistics), 1967, and Ph.D. (Operations Research), 1970, Stanford University; Bell Laboratories, 1970—. Mr. McCallum is a member of the Operations Research Studies Department. His current work involves the application of mathematical programming techniques to network optimization problems, such as the multicommodity network flow problem. Member, Operations Research Society of America, The Institute of Management Sciences, Mathematical Programming Society, Sigma Xi.

James McKenna, B.Sc. (Mathematics), 1951, Massachusetts Institute of Technology; Ph.D. (Mathematics), 1961, Princeton University; Bell Laboratories, 1960—. Mr. McKenna has done research in quantum mechanics, electromagnetic theory, and statistical mechanics. He has recently been engaged in the study of nonlinear partial differential equations that arise in solid state device work, and in the theory of stochastic differential equations.

Lawrence R. Rabiner, S.B., S.M., 1964, Ph.D., 1967, Massachusetts Institute of Technology; Bell Laboratories, 1962—. Mr. Rabiner has worked on digital circuitry, military communications problems, and problems in binaural hearing. Presently he is engaged in research on speech communications and digital signal processing techniques. Member, Eta Kappa Nu, Sigma Xi, Tau Beta Pi; Fellow, Acoustical Society of America; Chairman of the IEEE G-AU Technical Committee on Digital Signal Processing; associate editor of IEEE Transactions on Audio and Electroacoustics; member of the technical committees on speech communication of both the IEEE and Acoustical Society.

Douglas O. Reudink, B.A., 1961, Linfield College; Ph.D. (Mathematics), 1965, Oregon State University; Bell Laboratories, 1964—. Since joining Bell Laboratories, Mr. Reudink has been engaged in electronic systems research with particular emphasis on the field of mobile communications. His recent work has been concerned with fundamentals of mobile radio propagation, diversity techniques, and the configuration and control of mobile systems. Member, Sigma Pi Sigma, American Mathematical Society, Pi Mu Epsilon, IEEE.

N. L. Schryer, B.S., 1965, M.S., 1966, and Ph.D., 1969, University of Michigan; Bell Laboratories, 1969—. Mr. Schryer has worked on the numerical solution of parabolic and elliptic partial differential equations. He is currently studying problems of this type which arise in semiconductor device theory.

Moshe Segal, B.Sc. (Mechanical Eng.), 1955, and Ingenieur (Mechanical Eng.), 1956, Technion Israel Institute of Technology; Dr. of Engineering (Operations Research), 1961, The Johns Hopkins University; Bell Laboratories, 1961—. Mr. Segal has worked in the fields of queueing theory and mathematical programming and their application

to operational and engineering problems. He is supervisor of the Operations Research Methodology Group. Member, Operations Research Society of America, The Institute of Management Sciences, Mathematical Programming Society.

MICHAEL YAMIN, B.S., 1949, Polytechnic Institute of Brooklyn; Ph.D., 1952, Yale University; Mellon Institute, 1953–1956; Bell Laboratories, 1957—. Mr. Yamin has worked on problems of semi-conductor materials and process development, especially those concerned with passivating thin films such as silicon dioxide, and on the development of computer aids to integrated circuit design.