Contributors to This Issue

WILLIAM R. BENNETT, B.S. in E.E., 1925, Oregon State University; M.A. in Physics, 1928, Ph.D., 1949, Columbia University; Bell Telephone Laboratories, 1925—. His early work was concerned with low-frequency transmission over wires and cables. He later became associated with the first coaxial carrier project and made basic studies on noise and distortion in broadband amplifiers. Time division multiplex and pulse code modulation were areas of subsequent major interest. He is now Head of the Data Theory Department in the Data Communications Development Laboratory. Fellow, IEEE; member, American Physical Society, U.R.S.I., Sigma Xi, Tau Beta Pi and Eta Kappa Nu.

W. S. BROWN, B.S., 1956, Yale University; Ph.D., 1961, Princeton University; Bell Telephone Laboratories, 1961—. Since joining the Laboratories Mr. Brown has been working on the theoretical and practical problems of symbolic computing. Member, Amer. Phys. Society, Association for Computing Machinery, Phi Beta Kappa, Sigma Xi, and American Association for the Advancement of Science.

C. CHAPIN CUTLER, B.S., 1937, Worcester Polytechnic Institute, Bell Telephone Laboratories, 1937—. He has made significant contributions in the areas of microwave antennas, microwave tubes, and new radar and communication systems. As Director, Electronic Systems Research, he heads a group which has worked on communications engineering for both the Project Echo and Project Telstar satellite communications experiments. Fellow, IEEE.

C. DRAGONE, M.S. (Electrical Engineering), 1961, Padua University (Italy); Bell Telephone Laboratories, 1961—. During his stay in the radio research department at Holmdel, Mr. Dragone worked mainly on microwave antenna problems. At the end of the period he was working on frequency multipliers using microwave varactors.

EDWIN O. ELLIOTT, A.B., 1949, M.A., 1951, Ph.D., 1959, University of California, Berkeley; Operations Evaluation Group of MIT, 1954–1958; Stanford Research Institute, 1958–1959; Assistant Professor of Mathematics, University of Nevada, Reno, 1959–1960; Bell Telephone Laboratories, 1960—. At the Laboratories he has been engaged in mathe-

matical analysis of error-control methods for digital data communication systems and in the application of measure-theoretic techniques in the study of stochastic processes. He has recently worked on problems in the congestion theory of traffic for a model of a store-and-forward data communications network. Member, American Mathematical Society, Operations Research Society of America, Pi Mu Epsilon, Sigma Xi and Phi Beta Kappa.

M. J. Evans, B.S.E.E., 1957, University of Utah; M.E.E., 1959, New York University; Bell Telephone Laboratories, 1957—. His work at BTL has included the analysis of ballistic missile control systems and the development of guidance equations for ballistic missiles. He has specialized in applying the BTL command guidance system to space missions. Member, Phi Kappa Phi, Eta Kappa Nu and Tau Beta Pi.

Harvey J. Fletcher, B.S., 1944, Massachusetts Institute of Technology; M.S., 1948, California Institute of Technology; Ph.D., 1953, University of Utah; Bell Telephone Laboratories, 1961–1962; Bellcomm, Inc., 1963—. At the Laboratories, he engaged in the analysis of attitude control of a two-body gravitationally oriented satellite. He has worked on the analysis of lunar trajectories at Bellcomm, Inc. Member, The Mathematical Association of America.

S. D. Hathaway, B.E.E., 1947, University of Virginia; M.S.E.E., 1950, Virginia Polytechnic Institute; M.S.E.E., 1952, University of Illinois. Bell Telephone Laboratories, 1952—. He has been engaged in systems engineering on microwave radio relay systems, including studies of the effects of rainfall on radio transmission. At present he supervises a group working on short-haul systems. Member, IEEE, Eta Kappa Nu and Tau Beta Pi.

D. C. Hogg, B.Sc., 1949, University of Western Ontario; M.Sc., 1950, and 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 and millimeter wave propagation. He has been concerned with evaluation of sky noise, analysis of performance characteristics of microwave antennas and, most recently, propagation of optical waves. Senior member, IEEE; member, Commission 2, U.R.S.I., and Sigma Xi.

Rudolf Kompfner, Diplom. Ingenieur, Technische Hochschule, Vienna, 1933; Ph.D., Oxford, 1951; Bell Telephone Laboratories, 1951—.

Dr. Kompfner invented the traveling-wave tube while at Birmingham University during World War II. At Bell Laboratories, he has specialized in microwave electronics, work which has more recently been enlarged to include research on quantum electronics and satellites communications. Director of Electronics Research, 1955; Director of Electronics and Radio Research, 1957; Associate Executive Director, Research, Communications Systems Research Division, 1962. Fellow, IEEE, 1950; Duddell Medal, Physical Society, 1955; A.I.E.E. David Sarnoff Award, 1960; Franklin Institute Stuart Ballentine medal, 1960.

Robert W. Lucky, B.S.E.E., 1957, M.S.E.E., 1959, Ph.D., 1961, Purdue University; Bell Telephone Laboratories, 1961—. Mr. Lucky has been concerned with various analysis problems in the area of digital data communications. Member, IEEE, Sigma Xi, Tau Beta Pi and Eta Kappa Nu.

Miss K. L. McAdoo, B.A., 1956, Wilson College; Bell Telephone Laboratories, 1956—. Miss McAdoo has largely been engaged in programming aspects of simulating exchange area facilities on the computer and also speech volume studies. At present, she is involved in the means of improving exchange area transmission performance through loop impedance compensators.

John D. Musa, A.B., 1954, M.S., 1955, Dartmouth College; Bell Telephone Laboratories, 1958—. He has been involved in various types of work in military systems engineering some of which have involved application of data smoothing. He has taught an out-of-hours course in data smoothing. Currently, he is engaged in radar data processing systems engineering work.

George H. Myers, S.B., S.M., 1952. Massachusetts Institute of Technology; Eng. Sc. D., 1959, Columbia University; Bell Telephone Laboratories, 1952—. He has worked on development of analog and digital computers for automatic control including the computer for the K-5 bombing-navigation system, the TRADIC digital computer and the Terrier fire control system. Recently, he has been concerned with guidance equations for space vehicles. Senior member, IEEE; member, AIAA, Sigma Xi.

Winston L. Nelson, B.S., 1950, University of Utah; M.S., 1953, and Ph.D., 1959, Columbia University; Bell Telephone Laboratories, 1960—. He has been engaged in research in optimum control theory, particularly

satellite attitude control and satellite tracking systems. He has also worked on weak-signal detection techniques employing feedback and at present is studying problems in stochastic estimation and control. Member, Sigma Xi, Society for Industrial and Applied Mathematics, and IEEE.

E. A. Ohm, B.S., 1950, M.S., 1951, Ph.D., 1953, University of Wisconsin; Bell Telephone Laboratories, 1953—. Mr. Ohm has worked on circulators, isolators, microwave filters and channel branching networks. He has also been concerned with the measurement of sky temperature and the development of waveguide parts for ultra low-noise receiving systems. He was the assistant project engineer, and responsible for the receiving system at Bell Laboratories during the Project Echo communications experiments. At present, he is working on antenna and system problems of a satellite steerable array repeater. Member, IEEE, Sigma Xi and Tau Beta Pi.

B. Paul, B.S.E. (Mechanical Engineering), 1953, Princeton University; M.S. (Engineering Mechanics), 1954, Stanford University; Ph.D. (Engineering Mechanics), 1958, Polytechnic Institute of Brooklyn; Bell Telephone Laboratories, 1961–1963; Ingersoll-Rand Research Labs., 1963—. He has worked on problems connected with stress, vibration, heating and rigid-body dynamics of passively oriented communications satellites. He has also worked on the problem of reaction forces associated with sublimation of solids into high vacuum. Member, A.S.M.E., A.I.A.A., Sigma Xi and Phi Beta Kappa.

Stephen O. Rice, B.S., 1929, D.Sc. (Hon.), 1961, Oregon State College; Graduate Studies, California Inst. of Tech., 1929–30 and 1934–35; Bell Telephone Laboratories, 1930—. In his first years at the Laboratories, Mr. Rice was concerned with nonlinear circuit theory, especially with methods of computing modulation products. Since 1935 he has served as a consultant on mathematical problems and in investigation of telephone transmission theory, including noise theory, and applications of electromagnetic theory. He was a Gordon McKay Visiting Lecturer in Applied Physics at Harvard University for the Spring, 1958, term. Fellow, IEEE.

L. Rongved, B.S. (Civil Engineering), 1950, M.S. (Civil Engineering), 1952, Ph.D. (Theoretical Mechanics), 1954, Columbia University; Bell Telephone Laboratories, 1956–1962; Bellcomm, Inc., 1962—. He has been engaged in theoretical problems in design of electron devices for

high shock and vibration environments. He also worked on metal-ceramic seal problems and made several contributions to the thermal and mechanical design and testing for the Telstar satellite. He was supervisor of the mechanics exploratory group. Member, Executive Committee of Industrial and Professional Advisory Council.

DONALD D. SAGASER, B.S.E. (EE), 1948, University of Michigan; Bell Telephone Laboratories 1948—. His early work was on development of short-haul carrier systems. Assignments in development areas concerned with negative impedance repeaters, submarine cable, short haul microwave TV transmission systems and mobile radio systems preceded the project on TL radio. Mr. Sagaser is presently responsible for circuit development activities on short-haul carrier systems. Member, IEEE, Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

J. SALZ, B.S.E.E., 1955, M.S.E., 1956, Ph.D., 1961, University of Florida; The Martin Company, 1958–1960; Bell Telephone Laboratories, 1961—. He first worked on the remote line concentrators for the electronic switching system. He has since engaged in theoretical studies of data transmission systems. Member, IEEE; associate member, 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—. He has been concerned with analysis of military systems, particularly radar systems, and with synthesis and analysis of active and time-varying networks. He is currently involved in a study of the signal-theoretic properties of nonlinear systems. Member, IEEE, Eta Kappa Nu, Sigma Xi and Tau Beta Pi.

WILLIAM W. SNELL, JR., Bell Telephone Laboratories, 1955—. His early work for the radio research department centered around waveguide components for use in the 4-, 6- and 11-kmc common carrier bands: ferrite devices, microwave diode detectors and polarization couplers. He later participated in the Shotput experiments, suborbital proving tests for Project Echo. During Project Echo he operated the Crawford Hill receiving system. Presently, he is working on strip line components for a proposed communications satellite.

LEROY C. TILLOTSON, B.S.E.E., 1938, University of Idaho; M.S.E.E., 1940, University of Missouri; Bell Telephone Laboratories, 1941—. Mr. Tillotson's early work included design of filters and networks; he has

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J. W. Timko, B.S.E.E., 1951, Rutgers University; M.S.E.E., 1952, Yale University; Bell Telephone Laboratories, 1952—. He first was engaged in the design and development of the analog computer control system for the AN/MSG-3 fire control system. From 1957–1960 he worked on the ground radar receiver and tracking circuits for the WS-107A-2 ground guidance system. From 1961 to the present, he has been supervisor of a group responsible for the preparation of guidance equations for use with the WS-107A-2 system in the guidance of launch vehicles for space satellites. Member, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

J. W. West, B.S. (Physics), 1946, City College of New York; Bell Telephone Laboratories, 1930—. His early work was in the field of electron tube design and development. He later headed groups concerned with the mechanical development of microwave tubes and semiconductors. For 10 years he was associated with the final development device activity at Bell Laboratories branches of the Western Electric Company. His department was responsible for the mechanical development, attitude control and thermal design of the Telstar satellite. At present, his department is concerned with satellite attitude control studies, engineering mechanics studies associated with device work and mechanical development of microwave tubes and parametric amplifiers. Member, AIAA, Soc. for Experimental Stress Analysis.

John A. Word, B.S., 1930, University of California (Berkeley); Bell Telephone Laboratories, 1930—. Prior to World War II he worked on the design of toll terminal room equipment. During World War II he worked on sonar, communications counter measures and microwave radio. At present, he supervises a group in the equipment design of short- and long-haul microwave radio systems. Member, Tau Beta Pi and Eta Kappa Nu; associate member, Sigma Xi; senior member, IEEE.

Er-Yung Yu, M.S. (Mechanical engineering), 1957, Washington University; Ph.D. (Engneering mechanics), 1960, Stanford University; Bell Telephone Laboratories, 1960—. Mr. Yu has been engaged in ex-

ploratory mechanics studies in problems of passive attitude control of satellites. His work has included studies of magnetic orientation of medium-altitude communications satellites and the related damping problems. He also participated in the Telstar satellite dynamics analysis and precession damper design. At present, he is working on the system design and dynamics analysis of a two-body gravitationally oriented satellite. Member, Sigma Xi and A.I.A.A.