Contributors to this Issue

WILLIAM R. BENNETT, B.S. in E.E., Oregon State College, 1925; M.A., Columbia University, 1928; Ph.D., Columbia, 1949. Bell Telephone Laboratories, 1925–. His early Laboratories projects included work on wire transmission problems, particularly the development of terminal apparatus in the voice and telegraph range, the design of circuits for television, and submarine cable telephony. Concerned with the coaxial cable in 1935, he spent several years working on the requirements and measuring techniques applicable to the load rating of multi-channel repeaters. His work during World War II was directed to a number of military projects. Since then he has concentrated on pulse code modulation and general transmission problems. Member of the A.I.E.E., I.R.E., The American Physical Society, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

PAUL W. BLYE, S.B. in E.E., Massachusetts Institute of Technology, 1919, American Telephone and Telegraph Company, 1919–34; Bell Telephone Laboratories, 1934–. His early work at the A.T. and T. Co. and the Laboratories concerned the development of special testing apparatus and methods for inductive coordination of power lines and telephone circuits, and later, studies on interference prevention. During World War II, he supervised a number of military projects, including the laying of field wire from airplanes. In 1946 he was named Transmission Systems Engineer, and in 1951 to his present post as Director of Transmission Engineering at the Laboratories. Served on the joint Sub-Committee on Development and Research of the Edison Electric Institute and as a consultant to N.D.R.C. from 1941–45. Fellow of the A.I.E.E., and Senior Member of the Institute of Radio Engineers.

G. M. BOUTON, Ch.E., Brooklyn Polytechnic Institute, 1926; Bell Telephone Laboratories, 1926–. Over the years he has been engaged primarily in research and development studies on metals and alloys. He is an authority on cable sheath alloys and has published several technical articles relating to them. He has been granted numerous patents on cable sheath alloys and solders. He is a member of the American Society for Metals and the American Institute of Mining and Metallurgical Engineers.

OLIVER H. COOLIDGE, A.B., Harvard College, 1922; New York Telephone Company, 1921–27; American Telephone and Telegraph Company, 1927–34; Bell Telephone Laboratories, 1934–. After six years in plant maintenance methods work with the New York Company, he joined the Development and Research Department of the A. T. and T. Co. in 1927; this department was transferred to Bell Laboratories in 1934. For the past twenty-eight years his work has been both experimental and theoretical in the field of transmission engineering. He was especially concerned with problems of low-energy interference prevention, such as noise and crosstalk in voice, carrier, radio and video systems. During World War II he served as a radar maintenance instructor in the Laboratories' School for War Training. Since 1949 his work has been largely on problems of quality and standards of local transmission.

HAROLD E. CURTIS, B. S. and M.S., Massachusetts Institute of Technology, 1929. He joined the Department of Development and Research of the American Telephone and Telegraph Company in 1929, and was transferred to the Bell Telephone Laboratories in 1934. Mr. Curtis has been concerned with transmission problems related to multi-channel carrier telephony and television. He has been involved particularly in studies of transmission engineering aspects of microwave radio relay systems. His work at the Laboratories has also included pioneering transmission studies of the coaxial cable, the shielded pair and quad, and the waveguide. Mr. Curtis holds ten patents relating to carrier telephony.

EDGAR NELSON GILBERT, B.S., Queens College, 1943; Ph.D., Massachusetts Institute of Technology, 1948; M. I. T. Radiation Laboratory, 1944–46. Mr. Gilbert joined Bell Telephone Laboratories in 1948 and was concerned at first with studies of information theory, and later with switching theory. He is presently a member of a group concerned with probability and information theory, and with discrete systems. Mr. Gilbert is a member of the American Mathematical Society.

HAYDEN W. EVANS, B.A., Ohio Wesleyan University, 1934; B.S. in E.E., University of Michigan, 1936; Bell Telephone Laboratories, 1936–. During his early association with the Laboratories, Mr. Evans was concerned with transmission engineering problems on open wire and cable circuits, including transmission of television on open wire lines, open-wire crosstalk, cable crosstalk, and coaxial cable transmission. Later, he was engaged in the development of radar, radar test equipment, and countermeasures equipment. Following the war, he was concerned with the pri-

mary engineering of broad-band radio relay systems, and radio transmission engineering, including mobile radio problems and radio relay systems. He is a senior member of the I.R.E., a member of the Acoustical Society of America, Tau Beta Pi, Sigma Xi and several other honorary fraternities.

JOHN HERBERT HEISS, B.S. in Chemical Engineering, Newark College of Engineering, 1942. Mr. Heiss joined Bell Telephone Laboratories in 1934 and was concerned at first with experimental wire-coating procedures and test methods. Later he was involved in experimental production of high polymers and examination of their physical properties, and also with research studies on solution properties of high polymers. For some time, Mr. Heiss worked on studies of polymer rheology. More recently, he has been engaged in polymer mechanics studies in the Chemical Research Department. He is a member of the American Chemical Society.

ARTHUR W. HORTON, JR., A.B. Princeton, 1920; E.E., Princeton, 1922. Mr Horton spent the summer of 1921 as an engineering student in the Physical Laboratories of the Western Electric Company, and on his graduation from college, joined the Transmission Department of that company. He became a member of the Research Department of Bell Telephone Laboratories on its organization in 1925. He has been concerned with telegraph, picture and television transmission and voice-operated equipment, such as the transatlantic radio terminal and echo suppressors. During World War II he worked on an underwater sound detection system for submarine mines and on the development of the Mark 8 computer for antiaircraft fire control. He was a member of the National Defense Research Committee and the recipient of a Certificate of Exceptional Service to Naval Ordnance Development. From 1945 to 1946 he worked on indicators for naval fire control radar. He is presently in charge of groups working on military systems switching research. Senior Member of the Institute of Radio Engineers, member of the American Physical Society, American Institute of Physics, Association for Computing Machinery.

H. R. HUNTLEY, B.S. in E.E., University of Wisconsin, 1921; Wisconsin Telephone Company, 1917–1930, except for a leave of absence to complete education begun earlier at Leland Stanford University and continued at the University of Wisconsin. Leaving the Wisconsin Telephone Company where he was Transmission Engineer, Mr. Huntley came

to the Foreign Wire Relations Section of the Operating and Engineering Department of American Telephone and Telegraph Company in 1930. In 1942 he transferred to the Transmission Section and has been Transmission Engineer since 1951.

Samuel P. Morgan, B.S., California Institute of Technology, 1943; M.S., California Institute of Technology, 1944; Ph.D., California Institute of Technology, 1947; Bell Telephone Laboratories, 1947–. A research mathematician, Dr. Morgan specializes in electromagnetic theory. He has been particularly concerned with problems of waveguide and coaxial cable transmission and microwave antenna theory. Member of the American Physical Society, the Institute of Radio Engineers, Tau Beta Pi, and Sigma Xi.

George, S. Phipps, B.S. in Electrochemical Engineering, Pennsylvania State College, 1930; M.S. in Metallurgy, Columbia University, 1939. Mr. Phipps joined the technical staff of Bell Telephone Laboratories in 1930 on graduation from college. Throughout his telephone career he was chiefly engaged in metallurgical research on low melting alloys, solders and related material. He was responsible for the selection or development of many of the solders now used in the Bell System. He was a member of the American Society for Metals. Mr. Phipps died February 16, 1955, after a brief illness.

G. A. Pullis, Western Electric Company, 1920–1924; Bell Telephone Laboratories 1925–. Mr. Pullis joined the Laboratories in 1920 and his early work involved the testing and development of transmission instruments. Since 1928 he has been concerned with the design and development of toll signaling arrangements. He has also worked on the design of remote control, alarm and order wire arrangements for the TD-2 microwave radio relay system. He is presently in charge of a group working on toll signaling and television program switching.

Eugene D. Reed, B.Sc., University of London, 1941; M.S. and Ph.D. in E.E., Columbia University, 1947 and 1953. U. S. Army, 1944–46; Bell Telephone Laboratories, 1947–. Dr. Reed is engaged in the development and design of microwave oscillators. Member of the Institute of Radio Engineers and Sigma Xi.

Stephen O. Rice, B.S., Oregon State College, 1929; California Institute of Technology, Graduate Studies, 1929–30 and 1934–35; Bell Tele-

phone Laboratories, 1930–. In his first years at the Laboratories, Mr. Rice was concerned with non-linear circuit theory, with special emphasis on methods of computing modulation products. Since 1935 he has served as a consultant on mathematical problems and in investigations of telephone transmission theory, including noise theory, and applications of electromagnetic theory. Fellow, I.R.E.

H. EARLE VAUGHAN, B.S. in C.E., Cooper Union, 1933. Bell Telephone Laboratories, 1928–. In his early years with the Laboratories, Mr. Vaughan worked on voice-operated devices. In 1937 he turned to studies of the effect of speech and noise on voice-frequency signaling systems and continued in this type of work until World War II when he concentrated on the development of anti-aircraft computers, fire-control radar and other military projects. Since the war he has been engaged in research on switching systems and high speed signaling devices. He is presently in charge of groups specializing in research on electronic switching systems. He is a Senior Member of the I.R.E.

IRWIN WELBER, B.S. in E.E., Union College, 1948; M.E.E., Rensselaer Polytechnic Institute, 1950; R.P.I. instructor in electrical engineering, 1948–1950; Bell Telephone Laboratories, 1950–. After he completed studies with the Laboratories' Communications Development Training Program, Mr. Welber was assigned to a group working on TD-2 automatic switching. He is currently concerned with TD-2 equalization. Associate Member I.R.E., A.I.E.E., Associate Member Sigma Xi.