

Contributors to this Issue

FRANK R. DICKINSON, B.S., Union College, 1927. Bell Telephone Laboratories, 1931-. Mr. Dickinson has been primarily concerned with the development of carrier telephony and is currently working on the L3 carrier system. During World War II he was engaged in the development of airborne radar bombsights. Member of Eta Kappa Nu.

H. F. DODGE, S.B., Massachusetts Institute of Technology, 1916; Instructor, Electrical Engineering, 1916-17; A.M., Columbia University, 1922; Engineering Department, Western Electric Company, 1917-25; Bell Telephone Laboratories, 1925-. Mr. Dodge was associated with the development of submarine detection apparatus, telephone transmitters and electro-acoustic devices until 1924. He then joined the newly organized Quality Assurance Department and as Quality Results Engineer has been concerned with the development and application of sampling inspection methods, quality control techniques, and quality rating plans based on statistical methods. His group is also responsible for the preparation of Laboratories Inspection Practices. Consultant to Secretary of War, 1942-44. Shewhart Medal, American Society for Quality Control, 1949. Award of Merit, American Society for Testing Materials, 1950. Member of American Society for Testing Materials; Fellow of American Society for Quality Control, American Statistical Association, and Institute of Mathematical Statistics. Chairman of the American Standards Association Committee Z1 on Quality Control, the American Society for Testing Materials Committee E-11 on Quality Control of Materials, and the Standards Committee of the American Society for Quality Control. Co-author with H. G. Romig of *Sampling Inspection Tables* (John Wiley and Sons, 1944). Member of editorial board of Industrial Quality Control.

R. D. EHRBAR, B.E., Johns Hopkins University, 1937. Bell Telephone Laboratories, 1937-. Mr. Ehrbar is in charge of equipment design and field operations related to the development of the L3 coaxial system. During World War II he worked on radar development for the Signal Corps. Member of the Institute of Radio Engineers and Tau Beta Pi.

C. H. ELMENDORF, III, B.S., California Institute of Technology, 1935; M.S., California Institute of Technology, 1936. Bell Telephone Laboratories, 1936-. Transmission Systems Development Engineer, 1952. Since joining the Laboratories, Mr. Elmendorf has been associated with the development of the coaxial repeater system and is currently in charge of the group responsible for the development of the L3 coaxial system. During World War II he participated in the development of microwave components and airborne radar systems. Member of I.R.E.

TUDOR R. FINCH, B.S., University of Colorado, 1938; M.S., University of Colorado, 1939. After joining the Laboratories, Mr. Finch spent two years in the study of relay contacts. From 1940-46 he developed networks and circuits for radar applications and more recently networks for the wide-band L3 coaxial transmission system. He is currently engaged in transistor network development for both military and telephone applications. Member of the Institute of Radio Engineers.

ROBERT F. GARRETT, Graduate Electrical Engineer, Johns Hopkins University, B.S.E.E. 1926. Western Electric Company, 1926-. Worked since graduation as an engineer and as an engineering supervisor on various assignments with the Western Electric Company in the Engineer of Manufacture organization. These assignments include the design of factory testing equipment, the supervision of various departments engaged in the engineering planning for field maintenance test sets, spiral four carrier and microwave equipment. Member of American Society for Quality Control.

R. SHIELDS GRAHAM, B.S. in E.E., University of Pennsylvania, 1937. Mr. Graham has been principally concerned with the design of equalizers, electrical wave filters, and similar apparatus for use on long distance coaxial cable circuits for both telephone and television transmission. During World War II he designed circuits for electronic fire control computers for military use, and later developed methods for computing network and similar problems on a digital relay computer. Member of the A.I.E.E., Tau Beta Pi, and Pi Mu Epsilon.

E. I. GREEN, A.B. Westminster College (Fulton, Missouri) 1915, graduate student University of Chicago 1915-16, B.S. in E.E., summa cum laude, Harvard University 1921. Professor of Greek at Westminster College 1916-17; Captain Infantry Overseas Service 1917-19. American Telephone and Telegraph Company, Department of Development and Research, 1921-34; Bell Telephone Laboratories 1934-. From 1921 to 1940, and again from 1946 to 1947, Mr. Green was engaged in development work on toll transmission systems, principally in multiplex wire transmission. During the war, 1941 to 1945, he was responsible for

development of microwave test equipment for radar systems, radio monitoring and jamming equipment. In 1948 he was made Director of Transmission Apparatus Development, and in 1953 was appointed Director of Military Communication Systems. He is a Fellow of the A.I.E.E. and a Senior Member of the I.R.E.

ALEXANDER J. GROSSMAN, E.E., Rensselaer Polytechnic Institute, 1925. Bell Telephone Laboratories, 1925-. Transistor Network Engineer, 1952. Mr. Grossman has been engaged in the development of transmission networks since joining the Laboratories. Author of *Electric Wave Filters* in *Electrical Engineers' Handbook* (Pender and McIlwain, 4th ed.). Member of the Institute of Radio Engineers.

R. W. KETCHLEDGE, B.S., Massachusetts Institute of Technology, 1942; M.S., Massachusetts Institute of Technology, 1942; Bell Telephone Laboratories, 1942-. During World War II Mr. Ketchledge assisted in research related to infra-red detecting devices and in the development of sonar devices. After the war he spent two years working on the development of the Key West-Havana submarine cable system and from 1949-53 he was in charge of systems design for the L3 coaxial system. He was recently appointed Electronic Apparatus Development Engineer and is responsible for gas tube and storage tube development. Member of Sigma Xi.

BORIS J. KINSBURG, B.S., University of Southern California, 1926; M.A., University of Southern California, 1928. Southern California Edison Company, 1928-30; Bell Telephone Laboratories, 1930-. Since joining the Laboratories, Mr. Kinsburg has worked on research and development of broad band carrier systems using coaxial cable as the transmission medium. This includes amplifier development, study of cross-talk in coaxial conductors, requirement studies for coaxial equipment, equalization studies and television echo requirements and, currently, quality control studies of the L3 system components and reliability studies of the long-range submarine cable development. Member of the Institute of Radio Engineers, American Association for the Advance of Science, and Society for Social Responsibility in Science.

ROBERT H. KLIE, B.E.E., Polytechnic Institute of Brooklyn, 1945. New York Telephone Company, 1930-42; Bell Telephone Laboratories, 1942-. After spending two years in the Commercial Relations Department, Mr. Klie entered a group engaged in the development of radar systems. Since 1946 he has worked on coaxial systems development. Member of Tau Beta Pi and Eta Kappa Nu.

M. K. KRUGER, B.S., St. Lawrence University, 1920. Engineering Department, Western Electric Company, 1920-25; Bell Telephone Lab-

oratories, 1925-37; Western Electric Company, 1937-49; Bell Telephone Laboratories, 1949-. Mr. Kruger spent a few years as an instructor in the student assistant course and then became engaged in the design of filters, networks, and transmission testing equipment. He devoted twelve years at Kearny to the design of shop testing equipment for transmission apparatus. Since 1949 he has been concerned with the application of quality control methods for the L3 carrier system and, more recently, with general quality assurance work. Member of the American Society for Quality Control and Phi Beta Kappa.

G. H. LOVELL, B.S. in E.E., Texas A. & M., 1927; M.S. in E.E., Polytechnic Institute of Brooklyn, 1943. N. Y. Edison Company, 1927-28. Bell Telephone Laboratories, 1929-. From 1929 to 1948 Mr. Lovell was concerned with the development of crystal filters for carrier systems. Since then he has worked on the development of broadband amplifier networks.

LESTER H. MORRIS, B.S., College of the City of New York, 1935. Bell Telephone Laboratories, 1928-. Mr. Morris' first assignments were in the calibration of standard telephone instruments and, later, the development of acoustic impedance bridges. From 1930 to 1935 he conducted research in loudspeakers and since 1935 he has developed repeaters for coaxial systems. Member of Phi Beta Kappa.

JOHN W. RIEKE, M.S. in E.E., Purdue University, 1940. Bell Telephone Laboratories, 1940-. A member of the Transmission Systems Development Department, Mr. Rieke worked on television circuits before and after World War II. During the war he assisted in the development of radar indicators, and currently he is engaged in the development of broad band television transmission systems. Member of American Institute of Electrical Engineers, Tau Beta Pi, and Eta Kappa Nu.

T. L. TUFFNELL, Bell Telephone Laboratories, 1927-1941, Western Electric Company, 1941-. With the Laboratories, Mr. Tuffnell worked on terminal equipment for transatlantic telegraph and telephone service, and the design of vacuum tubes for carrier telephone systems. His work in the Western Electric Company has been chiefly concerned with engineering problems related to the manufacture of vacuum tubes.

R. A. WADDELL, B.S. in E.E., Rose Polytechnic Institute, 1936. M.S.E.E., Ohio State University, 1938; Westinghouse Electric and Manufacturing Company, 1939-1941; Western Electric Company, 1941-. Since January, 1941, has been in various phases of product and test planning on test sets, varistors and coils used in the telephone system. Engineer Resistances and Spool Wound Coils, 1951-. Member Eta Kappa Nu.