

Contributors to This Issue

SIDNEY DARLINGTON, Harvard University, B.S. in Physics, 1928; Massachusetts Institute of Technology, B.S. in E.E., 1929; Columbia University, PH.D. in Physics, 1940. Bell Telephone Laboratories, 1929-. Dr. Darlington has been engaged in research in applied mathematics, with emphasis on network theory.

R. O. GRIDALE, S.B., Harvard University, 1930. Bell Telephone Laboratories, 1930-. In the Chemical, Physical Research, Electronic Apparatus Development, and Transmission Apparatus Development Departments, Mr. Gridale has been concerned with the development of varistors, thermistors, ceramics, microphone carbon, carbon film resistors, wire coverings, and dielectric materials.

A. H. INGLIS, B.A., Yale University, 1914. Western Electric Company, Engineering Department, 1914-17. Signal Corps, A.E.F., 1917-19. American Telephone and Telegraph Company, Department of Development and Research, 1919-34; Bell Telephone Laboratories, 1934-. As Station Instrumentalities Engineer, Mr. Inglis has been concerned with both equipment and transmission matters of station apparatus.

W. E. KAHL, Bell Telephone Laboratories, 1921-. Graduated in 1924 from the Student Assistants' Course given in the Laboratories. Prior to World War II Mr. Kahl was engaged in the development of filters, equalizers and other transmission networks used in various carrier systems, particularly those for the Type C and Type J Systems. During the war he was concerned with the development of airborne submarine detection equipment under-water mine detection equipment, and special networks for Naval Ordnance Laboratory projects. Immediately following the war he was active as apparatus engineer for the Type "M" Power Line Carrier System and the N-1 Carrier System developments. Present activity is concerned with the development of special networks for military application.

W. H. MARTIN, A.B., Johns Hopkins University, 1909; S.B., Massachusetts Institute of Technology, 1911. American Telephone and Telegraph Company, Engineering Department, 1911-19; Department of Development and Research, 1919-34. Bell Telephone Laboratories, 1934-. Now Vice

President, Mr. Martin has been associated in various capacities with the work on telephone instruments and sets since 1918. He has participated also in the development and application of these and allied devices in the fields mentioned in the Conclusion section of his paper.

W. P. MASON, B.S. in E.E., University of Kansas, 1921; M.A., Ph.D., Columbia, 1928. Bell Telephone Laboratories, 1921-. Dr. Mason has been engaged principally in investigating the properties and applications of piezoelectric crystals and in the study of ultrasonics.

L. PEDERSEN, graduate of Christiania Technical School, 1919. Western Electric International, 1919-20. Bell Telephone Laboratories, 1920-. Prior to World War II Mr. Pedersen was engaged chiefly in the development of d-c. telegraph equipment. During the war he was engaged in the design of the Spiral-Four carrier equipment and served with the U. S. Army in the European Theatre of Operation as a technical observer. Since the war his principal activities have been as equipment engineer for the N-1 and O Carrier telephone development.

A. C. PFISTER, B.M.E., Brooklyn Polytechnic Institute, 1939. Bell Telephone Laboratories, 1930-. In the Physical Research, Electronic Apparatus Development, and Transmission Apparatus Development Departments, Mr. Pfister has been engaged in research and development on microphone carbon and deposited carbon resistors.

GORDON RAISBECK, Massachusetts Institute of Technology, 1941-43; teaching fellow, Stanford University, 1943-44; B.A. in pure mathematics, 1944; Radio Technical Officer, U. S. Navy, 1944-46; instructor in mathematics, M.I.T., 1946-47; Rhodes Scholar, New College, Oxford, 1947-48; instructor in mathematics, M.I.T., 1948-49; Ph.D. in pure mathematics, 1949. Bell Telephone Laboratories, 1949-. Mr. Raisbeck is in the Transmission Research Department and is engaged in the study of acoustics and acoustical devices.

THOMAS SHAW, S.B., Massachusetts Institute of Technology, 1905. American Telephone and Telegraph Company, Engineering Department, 1905-19; Department of Development and Research, 1919-33. Bell Telephone Laboratories, 1933-48. Mr. Shaw's active telephone career was mainly concerned with loading problems in telephone circuits, including the transmission and economic features of the loading apparatus. The article now being published was started shortly before his retirement in 1948.

W. L. TUFFNELL, B.S. in Electrical Engineering, University of Wisconsin, 1930. Bell Telephone Laboratories, 1922-27; 1930-. Until 1949 Mr. Tuffnell was chiefly concerned with the development of telephone instruments, and since then with the development of other station apparatus as Station Apparatus Development Engineer.

W. VAN ROOSBROECK, A.B., Columbia College, 1934; A.M., Columbia University, 1937. Bell Telephone Laboratories, 1937-. Mr. van Roosbroeck's work at the Laboratories was concerned during the war with carbon-film resistors and infra-red bolometers and, more recently, with the copper oxide rectifier. In 1948 he transferred to the Physical Research Department where he is now engaged in problems of solid-state physics.

R. L. WALLACE, JR., B.A., The University of Texas, 1936; M.A., The University of Texas, 1939; graduate study at Harvard University, 1937-40. During the recent war Mr. Wallace was a special Research Associate at Harvard University, where he worked on military communications problems. Since he came to work for the Bell Telephone Laboratories in 1946 he has been concerned with some problems in magnetic recording and with transistors.