

## Contributors to this Issue

JOHN BARDEEN, University of Wisconsin, B.S. in E.E., 1928; M.S., 1930. Gulf Research and Development Corporation, 1930-33; Princeton University, 1933-35, Ph.D. in Math. Phys., 1936; Junior Fellow, Society of Fellows, Harvard University, 1935-38; Assistant Professor of Physics, University of Minnesota, 1938-41; Prin. Phys., Naval Ordnance Laboratory, 1941-45. Bell Telephone Laboratories, 1945-. Dr. Bardeen is engaged in theoretical problems related to semiconductors.

A. E. BOWEN, Ph.B., Yale University, 1921; Graduate School, Yale University, 1921-24. American Telephone and Telegraph Company, Department of Development and Research, 1924-34. Bell Telephone Laboratories, 1934-42. U. S. Army Air Force, 1942-45. Bell Telephone Laboratories, 1945-48. With the American Telephone and Telegraph Company, Mr. Bowen's work was concerned principally with the inductive coordination of power and communications systems. From 1934 to 1942 he was engaged in work in the ultra-high-frequency field, particularly on hollow waveguides. He became a Major and later a Colonel while serving with the U. S. Army Air Force from 1942 to 1945 on a special mission to Trinidad and subsequently in the Pentagon. After returning to Bell Telephone Laboratories in 1945 he was engaged in the problems of microwave repeater research until his death in 1948.

M. E. HINES, B.S. in Applied Physics, California Institute of Technology, 1940; B.S. in Meteorology, 1941; M.S. in Electrical Engineering, 1946. U. S. Air Force Weather Service, 1941-45. Bell Telephone Laboratories, 1946-. Mr. Hines has been engaged in the development of vacuum tubes.

JACK A. MORTON, B.S. in Electrical Engineering, Wayne University, 1935; M.S.E., University of Michigan, 1936. Bell Telephone Laboratories, 1936-. Mr. Morton joined the Laboratories to work on coaxial cable and microwave amplifier circuit research; during the war he was at first a member of a group engaged in improving the signal-to-noise performance of radar receivers. In 1943 he transferred to the Electronic Development Department to work on microwave tubes for radar and radio relay. Since 1948 he has been Electronic Apparatus Development Engineer responsible for the development of transistors and other semiconductor devices.

WILLIAM W. MUMFORD, B.A., Willamette University, 1930. Bell Telephone Laboratories, 1930-. Mr. Mumford has been engaged in work that is chiefly concerned with ultra-short-wave and microwave radio communication.

J. R. PIERCE, B.S. in Electrical Engineering, California Institute of Technology, 1933; Ph.D., 1936. Bell Telephone Laboratories, 1936-. Dr. Pierce has been engaged in the study of vacuum tubes.

ROBERT M. RYDER, Yale University, B.S. in Physics, 1937; Ph.D., 1940. Bell Telephone Laboratories, 1940-. Dr. Ryder joined the Laboratories to work on microwave amplifier circuits, and during most of the war was a member of a group engaged in studying the signal-to-noise performance of radars. In 1945 he transferred to the Electronic Development Department to work on microwave oscillator and amplifier tubes for radar and radio relay applications. He is now in a group engaged in the development of transistors.

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.