

Contributors to This Issue

DONALD C. BENNETT, B.S. 1949 and M.S. 1951, Rensselaer Polytechnic Institute; Battelle Memorial Institute, 1951-1952; Bell Telephone Laboratories, 1952-. Mr. Bennett has been engaged in the development of processes for producing single crystals suitable for use in transistors. He is a member of the American Institute of Mining and Metallurgical Engineers.

F. G. BUHRENDORF, B.S.M.E. and M.E., Cooper Union Inst. Tech. 1925. Bell Telephone Laboratories 1925-. Mr. Buhrendorf's early Laboratories work included the design of switchboard apparatus and sound recording and reproducing equipment; among the latter were the Mirrophone and the stereophonic equipment demonstrated at the New York World's Fair. During World War II he was concerned with the design of mechanical components of a number of radar systems, particularly antenna drives and range units. After the war he resumed his work on high-quality sound reproduction and more recently has devoted his efforts to the design of magnetic drum units for digital data storage and special machinery for the purification and production of single-crystal semiconductors. He is a New York State Professional Engineer.

CALVIN S. FULLER, B.S. 1926 and Ph.D. 1929, University of Chicago. Bell Telephone Laboratories, 1930-. His early work was on organic insulating material, after which he made studies of plastics and synthetic rubber including investigations of the molecular structure of polymers and the development of plastics and rubbers. Since 1948 Dr. Fuller has concentrated on semiconductor research and the development of semiconductor devices. His work led to a technique of diffusing impurities into the surface of a silicon wafer, a preparation basic to the Bell Solar Battery and other silicon devices. He is a member of the A.C.S., an associate member of the A.P.S. and a member of the A.A.A.S.

H. A. HENNING, B.S. in Electrochemical Engineering, Pennsylvania State College 1926; Columbia University 1930-33. Bell Telephone

Laboratories, 1926-. Mr. Henning's early Laboratories work was connected with the development of high-quality sound recording and reproducing equipment and techniques. During this interval he developed the 9A disc phonograph reproducer. Other pre-war experience included development of telephone voice recorders, noise reduction studies of the dynamics of teletype equipment, and design of coin collector slug rejectors and coin disposal relays. During World War II he was concerned with improvements to the sound power telephone, and later with development of specialized magnetic sound recording-reproducing systems. After the war he resumed his work on high quality sound recording equipment and supervised the design of the 2A lateral disc feedback recorder. More recently he has been concerned with the principles and design of magnetic drum digital data storage and apparatus. He is currently engaged in investigating the application of square hysteresis loop magnetic cores to digital computer systems.

DAVID, A. KLEINMAN, S.B. in Chemical Engineering, 1946, S.M. in Mathematics, 1947, Massachusetts Institute of Technology; Ph.D. in physics, Brown University, 1952. Dr. Kleinman joined Bell Telephone Laboratories at Murray Hill in July, 1953. Since then he has studied theory of transistor devices and has been engaged in research in the band theory of solids in the Solid State Electronics Research Department. He is a member of the American Physical Society.

F. J. MORIN, B.S. and M.S., University of New Hampshire, 1939 and 1940; University of Wisconsin, 1940-1941; Bell Telephone Laboratories, 1941-. During World War II, Mr. Morin was involved in research on elemental and oxide semiconductors and the development of thermistor materials. Since that time he has worked on fundamental investigations into the mechanism of conduction in silicon, germanium and oxide semiconductors. Mr. Morin is a member of the American Chemical Society and the American Physical Society.

O. J. MURPHY, B.S. in Electrical Engineering, University of Texas, 1927; Columbia University, 1928-31. Bell Telephone Laboratories, 1927-. Mr. Murphy's early Laboratories projects included studies of voice-operated switching devices, effects of transmission delay on two-way telephone conversation, and voice-frequency signaling systems. During World War II he was concerned with design and development of the M-9 electrical gun director and related projects. After the war he resumed his research work on signaling systems and more recently has

concentrated on the design of magnetic drum digital data storage apparatus and circuits. He is a member of the A.I.E.E., a senior member of the I.R.E., and is a licensed professional engineer.

M. B. PRINCE, A.B., Temple University, 1947; Ph.D., Massachusetts Institute of Technology, 1951; Bell Telephone Laboratories, 1951-1956; National Semiconductor Products, 1956-. Between 1949-51 he was a research assistant at the Research Laboratory of Electronics at M.I.T. where he was concerned with cryogenic research. At Bell Telephone Laboratories, Dr. Prince was concerned with the physical properties of semiconductors and semiconductor devices and was associated with the development of silicon devices, including the Bell Solar Battery and the silicon power rectifier. Dr. Prince is a member of the I.R.E., the American Physical Society, and Sigma Xi.

HOWARD REISS, B.A., New York University, 1943; Ph.D., Columbia University, 1949; Instructor and Assistant Professor in Chemistry, Boston University, 1949-51; Head of the Fundamental Research Section, Celanese Corporation, 1951-52; Bell Telephone Laboratories, 1952-. Dr. Reiss is engaged in the theoretical chemistry of defects in semiconductors. He is a member of the American Chemical Society, the American Physical Society, Sigma Xi and Phi Lamda Upsilon.

BALDWIN SAWYER, B.E., Yale University, 1943; D.Sc., Carnegie Institute of Technology, 1952; Manhattan Project, University of Chicago, 1943-1946; Instructor and Research Associate in Physics, Carnegie Institute of Technology, 1948-1951; Bell Telephone Laboratories, 1951-. Dr. Sawyer's first work at the Laboratories was on the development of semiconductor devices, especially the silicon alloy junction diode. Since 1953 he has been in charge of a group at Allentown concerned with the growth, measurement and characterization of germanium and silicon crystals for use in semiconductor devices. He is a member of the American Physical Society, the American Institute of Mining and Metallurgical Engineers, Tau Beta Pi, Sigma Xi, and an associate of the I.R.E.

DONALD E. THOMAS, B.S. in E.E., Pennsylvania State University, 1929; M.A., Columbia University, 1932; Bell Telephone Laboratories, 1929-. Mr. Thomas specialized in the development of repeatered submarine cable systems until 1940 when he became engaged in the development of sea and airborne radar. In 1942 he entered military service where he was active in electronic countermeasures research and development.

Following the war he took part in the development and installation of the first deep-sea repeatered submarine telephone cable system between Key West and Havana. During this period he also served as a civilian member of the Department of Defense's Research and Development Board Panel on Electronic Countermeasures. At present Mr. Thomas is engaged in characterization and feasibility evaluation of research models of semiconductor devices. He is a senior member of the I.R.E. and a member of Tau Beta Pi and Phi Kappa Phi.

