

## CONTRIBUTORS TO THIS ISSUE

**Václav E. Beneš**, A.B., 1950, Harvard College; M.A. and Ph.D., 1953, Princeton University; Bell Laboratories, 1953—. Mr. Beneš has pursued mathematical research in traffic theory, stochastic processes, frequency modulation, combinatorics, servomechanisms, stochastic control, and filtering. In 1959–60 he was visiting lecturer in mathematics at Dartmouth College. In 1971 he taught stochastic processes at SUNY Buffalo, and in 1971–72 he was Visiting MacKay Lecturer in electrical engineering at the University of California in Berkeley. He is the author of *General Stochastic Processes in the Theory of Queues* (Addison-Wesley, 1963), and of *Mathematical Theory of Connecting Networks and Telephone Traffic* (Academic Press, 1965). Member, American Mathematical Society, Association for Symbolic Logic, Institute of Mathematical Statistics, SIAM, Mathematical Association of America, IEEE, Phi Beta Kappa.

**A. Carnevale**, B.S. (Physics), 1960, Fairleigh Dickinson University; Bell Laboratories, 1969—. At Bell Laboratories, Mr. Carnevale has been engaged in work on nuclear magnetic resonance, electron paramagnetic resonance, and computer software. For the last two years, his work has been devoted to fiber optics.

**James W. Fleming**, B.S. (Ceramic Engineering), 1970, M.S. (Ceramic Engineering), 1971, University of Missouri-Rolla; University of Missouri-Rolla, 1971–1972; Bell Laboratories, 1972—. At the University of Missouri-Rolla, Mr. Fleming continued work on internal friction in mixed alkali glasses, the subject of his master's thesis. At Bell Laboratories, he initially worked on preparation and properties of positive temperature coefficient barium titanate. By 1974 he was actively involved in lightguide glass preparation and analysis of optical dispersion in lightguides. He is currently interested in the preparation of high rate optical waveguides and novel glasses for optical communication systems. Member, American Ceramic Society, Optical Society of America. He was also a subeditor and session chairman for the American Ceramic Society.

**S. H. Francis**, B.A. (Physics), 1964, Yale University; A.M. (Physics), 1968, Ph.D. (Physics), 1970, Harvard University; Bell Laboratories, 1970—. Mr. Francis worked initially in research on atmospheric and

ionospheric dynamics, in conjunction with the Safeguard project. This research was followed by work on a cable-finding system for use aboard a remotely piloted submersible, for which Mr. Francis' responsibilities included system design verification, and software design and testing. Subsequent research in turbulent flow noise in towed sonar arrays was followed in 1978 by his present job as supervisor of the sonar systems analysis group, engaged in the development of towed sonar systems for Navy applications.

**Nuggehalli S. Jayant**, B.Sc. (Physics and Mathematics), 1962, Mysore University; B.E., 1965, and Ph.D. (Electrical Communication Engineering), 1970, Indian Institute of Science, Bangalore; Research Associate at Stanford University, 1967-1968; Bell Laboratories, 1968—. Mr. Jayant was a Visiting Scientist at the Indian Institute of Science in 1972 and 1975. He has worked in the field of digital coding and transmission of waveforms, with special reference to robust speech communications. He is also editor of the IEEE Reprint Book, *Waveform Quantization and Coding*.

**H. R. Lunde**, B.S.M.E., 1969, Drexel University; M.S.M.E., Columbia University, 1971; Bell Laboratories, 1969—. Mr. Lunde has worked on the physical, thermal, and vibrational design of undersea repeaters. Since 1975 he has also been involved in the design of underwater work systems used to detect, repair, and maintain undersea cables.

**Un-Chul Paek**, B.S. (Engineering), 1957, Korea Merchant Marine Academy, Korea; M.S., 1965, Ph.D., 1969, University of California, Berkeley; Western Electric, 1969—. At the Western Electric Engineering Research Center, Princeton, N. J., Mr. Paek has been engaged primarily in research on laser material interaction phenomena and fiber optics. Member, Optical Society of America, American Ceramic Society, Sigma Xi.

**George E. Peterson**, B.S. (Physics), 1956, Ph.D. (Solid State Physics), 1961, University of Pittsburgh; Bell Laboratories, 1961—. At Bell Laboratories, Mr. Peterson initially was engaged in studies on low-noise amplifiers. He then studied laser crystals, nonlinear optic materials, and glass structure, and recently propagation of light in optical fibers. Member, American Physical Society, American Ceramic Society, Society for Glass Technology, and the American Crystallographic Association.

**William Pferd**, B.S.M.E., Rutgers University; M.S.M.E., New Jersey Institute of Technology; U.S. Army Air Force Intelligence, 1942-1945; Bell Laboratories, 1947—. During his Bell Laboratories career, Mr. Pferd has worked in the areas of customer products, systems engineering, and computer application. He participated in the development of ringers, rotary dials, card dialers, connectors, automatic sets, and public telephones. While at the Indianapolis Laboratory, his major responsibility was the development of the "single slot" coin telephone. On returning to the Whippany Laboratory, he led engineering studies in criteria for hardened facilities, equipment standards, central office planning, and building investment tax credit. He is currently Head of the Office Planning Department within the Building and Energy Systems Laboratory, responsible for the development of computer systems to facilitate the planning and engineering of Bell Systems buildings. Senior Member, IEEE; Member, ACM, SPIE.

**G. A. Reinold**, B.S.M.E., 1962, Union College; M.S.M.E., 1964, New York University; Bell Laboratories, 1962—. Mr. Reinold was first involved in the development of undersea cable installation and repair techniques. He later worked on methods for installing cables underground with minimal soil disturbance. He then participated in ocean cable design for the military. In 1969, he became supervisor of the undersea apparatus mechanical design group, where he was responsible for the physical design of the SG repeater, and the cable location system on the SCARAB submersible. He is currently responsible for the physical design of the undersea lightguide repeater (SL), and the complete refurbishment of the SCARAB submersible.

**Gerhard C. Stocker**, A.A.S. (Electrical Engineering) 1964, Mohawk Valley Community College; Bell Laboratories, 1970—. Mr. Stocker has worked on nuclear shock and vibration protection of military equipment. He also designed earthquake resistant cable rack systems for New Equipment-Building Systems (NEBS) buildings. Currently, as a member of the Office Standards and Data Conversion Group, he is responsible for the fabrication methods for optical fiber arrays and for the development of an experimental automatic scanning digitizer that uses optical fibers.

**T. E. Talpey**, B.E.E., 1946, Cornell University; M.S.E.E., 1948, Ph.D., 1954, University of Michigan; Doctorat d'Université, 1952, University of Grenoble, France; Bell Laboratories, 1953—. Mr. Talpey first worked on studies of noise in electron tubes and later became a

supervisor (1955-1969) in the electron tube development department with responsibilities that included high figure-of-merit amplifier tubes, long-life submarine cable tubes, and traveling wave tubes. On a leave of absence from 1960 to 1963, he worked as a research associate for Cornell University at the Arecibo Ionospheric Observatory in Puerto Rico. In 1963 he worked at Bell Laboratories on the design of a large phased-array radar receiver for the Nike system and in 1966 assumed his present position in ocean systems studies, where his work currently involves underwater acoustic signal propagation studies.

**Uzi Timor**, B.S. (Electrical Engineering), 1957, M.S. (Electrical Engineering), 1963, Technion, Israel Institute of Technology, Haifa, Israel; Ph.D., 1969, University of California, Berkeley; Armament Development Authority/Israel Ministry of Defence, 1959-1966, 1972—; Member of the Technical Staff, Jet Propulsion Laboratory, Pasadena, California, 1969-1972; Adjunct Faculty (Electrical Engineering), Technion, Israel Institute of Technology, Haifa, Israel, 1972-1980; Bell Laboratories, 1979-1980. At Jet Propulsion Laboratory, Mr. Timor was engaged in research in digital communications and coding. As a consultant at Bell Laboratories, he worked on digital communications and mobile radio. Member, IEEE, Eta Kappa Nu.

**Woodson D. Wynn**, M.S.E.E., 1961, Ph.D., 1965, Georgia Institute of Technology; Assistant Professor, Georgia Institute of Technology, 1964-1966; Bellcomm, Inc., 1966-1971; Bell Laboratories, 1971—. Mr. Wynn has been concerned with the theoretical analysis and practical solution of problems in signal design, transmission, processing and recording. His current interest is in the development and application of statistical communication and adaptive control theory. Member, IEEE, Tau Beta Pi, Pi Mu Epsilon, Eta Kappa Nu, and Sigma Xi.