

Contributors



Myron E. Armstrong (S'57-M'60) was born in Reynolds, Ill., on June 18, 1931. He received the B.S. and M.S. degrees in electrical engineering from the University of Illinois, Urbana, in 1958, and 1959, respectively. He has

taken further graduate work in theoretical physics at the University of Southern California, Los Angeles.

From 1957 to 1959 he was on the staff of the University of Illinois as a Senior Student Teaching Assistant in the General Engineering Department and later as a Research Assistant in the Radio Astronomy and Propagation Laboratory in the Electrical Engineering Department. His research studies there included investigations of extraterrestrial radio noise and analyses of lunar reflected signals, the latter effort being performed in conjunction with the Signal Corps Laboratory at Fort Monmouth, N. J. In 1959 he joined the Antenna Department at Collins Radio Company, Cedar Rapids, Ia., where he was responsible for the design and development of log-periodic antennas, ECM antennas, and miniaturized microwave filters. In 1961 he joined the Electromagnetics Staff, Communications and Radar Division, Ground Systems Group, Hughes Aircraft Company, Fullerton, Calif., where he is a Staff Engineer responsible for research, design, and development in log-periodic antennas and circuits and in the more general class of ultra-broadband microwave components such as magic-T's and hybrid coupling networks.

Mr. Armstrong is Past National Secretary-Treasurer of Chi Gamma Iota-Veterans Scholastic Honor Society. He is also a member of Phi Eta Sigma, Sigma Tau, Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

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Morris E. Brodwin (A'49-M'55) was born in New York, N. Y., on July 14, 1924. He received the B.S. degree in electrical



engineering from the University of Nebraska, Lincoln, in 1947, and the M.S. and Dr. Eng. degrees from The Johns Hopkins University, Baltimore, Md., in 1951 and 1957, respectively. He joined The Martin Company in 1948. In 1949 he joined the Radiation Laboratory of the Johns Hopkins University, where he was appointed Research Scientist in charge of microwave research. In September, 1958, he became a member of the faculty of Northwestern University, Evanston, Ill., where he is presently Professor of Electrical Engineering. He is currently engaged in the study of microwave physics.

Dr. Brodwin is a member of Sigma Xi, Eta Kappa Nu, Pi Mu Epsilon, and the Physical Society.

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Raymond H. DuHamel (S'47-A'52-M'57- SM'61-F'63) was born in Tuscola, Ill., on October 11, 1922. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1947, 1948, and 1951, respectively.

While in graduate school, he was a research assistant in the Radio Direction Finding Laboratory, where he performed research on RDF antenna systems and methods of antenna pattern synthesis. At RCA Labs. from 1951 to 1952, he investigated television broadcast antenna systems. From 1952 to 1956, he was Research Assistant Professor and Associate Director of the Antenna Laboratory at the University of Illinois. His work there included studies of surface waves launchers and antennas, aircraft antennas, microwave measurement techniques, and the original formulation and investigation of log-periodic antennas. At Collins Radio Company, Cedar Rapids, Ia., from 1956 to 1961, he was Head of the Antenna Department and later Assistant

Director of the Research Division. He was involved in the research and development of log-periodic antennas, airborne communication and navigation antennas, space vehicle antenna systems, ECM antennas, HF antenna systems, and monopulse tracking feeds. He has been at Hughes Aircraft Company, Ground Systems Group, Fullerton, Calif., since 1961, and is now Manager of the Electromagnetics Laboratory in the Communications and Radar Division. During this time he has been involved in basic studies of log-periodic circuits and broadband microwave components.

Dr. DuHamel is a member of Sigma Xi and Eta Kappa Nu.

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Edward G. Cristal (S'58-M'61-SM'66) was born in St. Louis, Mo., on January 27, 1935. He received the B.S. and A.B. degrees in electrical engineering and mathematics, respectively, in 1957, and the M.S. degree in electrical engineering in 1958, all from Washington University, St. Louis, Mo. He received the Ph.D. degree in electrical engineering from the University of Wisconsin, Madison, in 1961.

In 1961 he joined the staff of the Electromagnetic Techniques Laboratory at Stanford Research Institute, Menlo Park, Calif., and since that time has been engaged in research and development of UHF and microwave components.

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Garabet J. Gabriel was born in Basrah, Iraq, on February 15, 1935. He received the B.S. degree, magna cum laude, from St. Louis University, St. Louis, Mo., in 1956, the M.S. degree from Illinois Institute of Technology, Chicago, in 1960, both in electrical engineering, and the Ph.D. degree from Northwestern University, Evanston, Ill., in 1964.

He worked on circuit design while employed by Motorola, Chicago, Ill., from 1956 to 1957. He was a full-time Instructor



in the Electrical Engineering Department, Illinois Institute of Technology, from 1957 to 1961. In summer 1958, he was a Research Fellow in the Physiology Department, Loyola University, Chicago, engaged in instrumentation for experiments on the cardiovascular system. During 1960, he held a part-time position as a Research Associate with the Chicago Medical School Research Institute where he collaborated in studies on electromagnetic aspects of cardiology. In 1961, he was Consultant to the Advanced Development Department, Sunbeam Corp., Chicago. From 1961 to 1964 he was a Graduate Research Assistant in the Electrical Engineering Department, Northwestern University, where he completed his doctoral studies in an interdisciplinary program of

EE-Physics. In 1964, he joined the Aerospace Division, Hallicrafters Company, where he was involved principally in radiation scattering in the atmosphere. Since September, 1965, he has been Assistant Professor of Electrical Engineering at the University of Notre Dame, Notre Dame, Ind. His current research activity is in scattering of radiation in random distributions and wave propagation in fluctuating media.

Dr. Gabriel is a member of Sigma Xi, Eta Kappa Nu, and Pi Mu Epsilon.



Charles C. H. Tang was born in Shanghai, China, on September 27, 1924. He received the B.S. degree in physics in 1946 from the University of Shanghai. He received the M.S. degree in electrical engineering from Oklahoma State University, Stillwater, and



the Ph.D. in applied physics from Harvard University, Cambridge, Mass., in 1952 and 1956, respectively.

From 1946 to 1949 he taught in the Physics Department of the University of Shanghai. He was

Chief Accountant at the University Textile Company, Ltd., Hong Kong, China, from 1950 to 1951. From 1956 to 1957 he was at Harvard University as a Post-Doctoral Fellow. From 1957 to 1958 he was an Assistant Professor at the University of California, Berkeley. From 1958 to 1959 he was an Associate Professor in Physics at Tunghai University, Taiwan, Formosa. Since 1959 he has been with the Bell Telephone Labs., Murray Hill, N. J.

Dr. Tang is a member of Sigma Xi and Phi Kappa Phi.