

## Contributors

Dan I. Bolef was born in Philadelphia, Pa., on June 10, 1921. He was graduated from Pennsylvania State College with the degree of Bachelor of Science in physics in 1946. He received the Doctor of Philosophy degree in physics from Columbia University, New York, N. Y., in 1952.

Dr. Bolef was in the Army from 1943 to 1946. He was an instructor in physics in the Stevens Institute of Technology, Hoboken, N. J., from 1949 to 1950; from 1950 to 1953, he was an assistant professor of physics at The State University of New York Maritime College, Bronx, N. Y.

At the present time Dr. Bolef is in the physics department, Westinghouse Research Laboratories, Pittsburgh, Pa. Dr. Bolef's fields of interest are molecular beam studies of diatomic molecules, nuclear magnetic and nuclear quadrupole studies of solids, and electron paramagnetic resonance.

He is a member of Sigma Xi and the American Physical Society.



H. E. BUSSEY

H. E. Bussey was born in Yankton, S. D., on September 14, 1917. He attended Yankton College and the George Washington University, Washington, D. C., receiving from the latter the Bachelor of Arts degree in mathematics in 1943, and the Master of Science degree in physics in 1951. He continued his studies at the Universities of Maryland and Colorado. His military service included the "A"

meteorological course at the Massachusetts Institute of Technology, Cambridge, Mass., the radar-weather course at Seagirt, N. J., and duty as a weather engineering and a weather forecasting officer.

In September, 1946, Mr. Bussey joined the Central Radio Propagation Laboratory of the National Bureau of Standards, to do tropospheric propagation research. In 1951, he transferred to the Radio Standards Division of the same laboratory in the microwave dielectric and magnetic measurements project, and he has been project leader since 1956.

He is a member of the American Physical Society, American Meteorological Society, RESA, Commission I of the International Scientific Radio Union, and Sigma Pi Sigma.



D. I. BOLEF

George W. Catuna was born in Waltham, Mass., on December 7, 1923. He attended public schools in Belmont, Mass. He was associated with radar and electronic computers during his service with the United States Army, from February, 1943, to February, 1946, and again from March, 1951, to December, 1952. Since 1952, he has been employed by the Lincoln Laboratory, M.I.T., Lexington, Mass., where he now holds the position of engineering aide in the Solid State Spectroscopy Group. Mr. Catuna is at present taking the electrical engineering course at the Lowell Institute of M.I.T.



G. W. CATUNA

torate in physics at the University of Florida, Gainesville, Fla., until 1952, at which time he joined the Sperry Gyroscope Company as a project engineer.

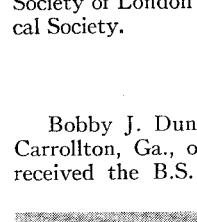
At Sperry he initially did research in applied microwave spectroscopy. Subsequently, he was associated with research and development projects on microwave ferrites, special radar systems, radar countermeasures techniques, and obstacle avoidance equipment. More recently he has worked almost exclusively in the field of microwave ferrite research and components applications. At present, he is a senior engineer and group leader of the microwave ferrite research and advanced development group at the Clearwater, Fla., plant of the Microwave Electronics Division.



Peter F. Chester was born in London, England, in 1929. He was graduated with the B.Sc. degree in physics from London University, London, England; he received the Ph.D. degree from that University in 1953. From 1953 to 1954, he was a post-doctorate Fellow with the National Research Council, Ottawa, Ontario, Canada. From 1954 to the present time, Dr. Chester has been with the Low Temperature Group, Westinghouse Research Laboratories.

Dr. Chester's fields of interest are low temperatures, superconductivity, high-pressure phenomena, acoustoelectric effects in semiconductors, and nuclear and electron spin resonance.

Dr. Chester is a member of the Physical Society of London and the American Physical Society.



P. F. CHESTER

Bobby J. Duncan (M'54) was born in Carrollton, Ga., on February 1, 1930. He received the B.S. degree in physics from Berry College, Rome, Ga., in 1950, and the M.S. degree in physics from Emory University, Atlanta, Ga., in 1951. While at Emory, he did research in microwave spectroscopy. He continued research in this same field while performing graduate work toward a doc-

Dominic A. Fleri was born in Brooklyn, N. Y., on November 8, 1931. He received the B.S. degree in physics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1953. He is currently attending evening sessions at New York University, New York, N. Y., where he is completing the requirements for the M.S. degree in physics.



D. A. FLERI

He joined the Sperry Gyroscope Company in June, 1953, but was called to active duty with the U. S. Army Signal Corps in February, 1954. During his two years of military service, he was assigned primarily as an electronics instructor at the Signal School, Fort Monmouth, N. J.

He returned to Sperry in January, 1956, and since then has been engaged in microwave ferrite investigations in the Applied Physics Section of the Microwave Electronics Division, Great Neck, N. Y.



Ladislás Goldstein (SM'55-F'56) was born February 6, 1906, in Dombrád, Hungary. He received the B.S. degree in physics from the College of the City of Nagyvarad in 1924, and the M.S. degree in Paris, France, in 1928. He was a fellow from 1929 to 1934, receiving the D.Sc. degree in nuclear physics in 1937.



L. GOLDSTEIN

Dr. Goldstein was an assistant instructor in radium, in Paris, from 1934 to

1937; 1937-1940, a research associate and a fellow of the National Center Research of France; 1940-1941, a research associate at the Institute of Atomic Physics in Lyon; 1942-1944, director of the laboratories at Canadian Radium and Uranium Corp.; 1944-1945, a research worker with the Admiralty Research Laboratories in England, and 1945-1951, a research physicist with the Federal Telecommunication Laboratory. In 1951, he became a professor of electrical engineering at the University of Illinois, Urbana, Ill.

In April, 1956, he received the IRE Fellow Award for his work in the field of microwave gaseous electronics. He has concentrated his efforts in the field of nuclear physics. He has worked on the use of gas discharge phenomena in microwave physics, microwave propagation through media containing free electrons, infrared radiation detection, and the application of ionizing radiations of radioactive substances.

Dr. Goldstein is a member of the Physical Society.

Professor of physics and worked in theoretical acoustics.

Since 1954, he has been a member of the Microwave Section of the Solid-State Group at the Lincoln Laboratory, M.I.T.

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C. Lester Hogan (SM'54) was born on February 8, 1920, in Great Falls, Mont.

In 1942, he received the B.S. degree from Montana State College; in 1947, the M.S. degree from Lehigh University, and in 1950, the Ph.D. degree in physics. Harvard University conferred an honorary M.A. degree upon him in 1954.

Following his graduation from Montana State College, Mr. Hogan became a research engineer with the Anaconda Copper Mining Company. From 1943 to 1946, he served as a lieutenant (jg) with the U. S. Naval Reserve.

Mr. Hogan became an instructor in physics at Lehigh University in 1947. He left that position in 1950 to join the technical staff at Bell Telephone Laboratories, and in 1953, he was named a subdepartment head.

In 1954, he became associate professor of applied physics at Harvard University, Cambridge, Mass., and, in 1957, a Gordon McKay Professor of Applied Physics.

His research interest is the application of ferrites and semiconductors to microwave transmission systems.

He is a member of the American Physical Society, Sigma Xi, Phi Kappa Phi, and Tau Beta Pi.



C. L. HOGAN

search Center. At the same time, he enrolled as a graduate student in physics at M.I.T. He carried on research in microwave gas discharges until November, 1949, when he became a member of the Solid State Group at the Lincoln Laboratory and researched semiconductors and microwave aspects of ferrites. In May, 1953, he was appointed head of the Ferrites Group, which carried on research in the field of ferrites and semiconductors at microwave frequencies. In July, 1955, he was named leader of the Solid State Group, which carries on fundamental and applied work on semiconductors and ferrites. He became associate division head in charge of solid state research at Lincoln Laboratory in March, 1957.

Dr. Lax is a Fellow of the American Physical Society and of Sigma Xi.

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David B. Medved (SM'56) was born February 21, 1926, in Philadelphia, Pa. Following service in the Navy from 1944 to 1946, he attended the University of Pennsylvania from which he received the B.A. degree in chemistry in 1949. From 1949 to 1951 he was with the Research Division of Philco Corp., where he engaged in research on color centers, semiconductors, and electron physics. He received



D. B. MEDVED

the M.S. degree in physics from the University of Pennsylvania in 1951 and the Ph.D. degree in physics in 1955.

While at the University of Pennsylvania, he worked on hydrothermal crystal growth and photoconductivity and chemisorption in zinc oxide semiconductor. Dr. Medved joined Convair's Radiation Systems Section in October, 1954 and has been engaged in research on microwave scanners, radomes, and solid-state devices. He presently is on the staff of the Physics Group at Convair.

Dr. Medved is a member of Sigma Xi and the American Physical Society.

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Benjamin Lax was born in Hungary on December 29, 1915. He received the B.M.E. degree from Cooper Union, New York, N. Y., in 1941 and the Ph.D. degree in physics from Massachusetts Institute of Technology, Cambridge, Mass., in 1949.

During World War II, he served with the U. S. Signal Corps and the Air Force; he was stationed during 1944-1946 at the M.I.T. Radiation Laboratory carrying on radar development.

In 1946, he became a radar consultant for the Sylvania Electric Products Company, Boston, Mass., and later that year joined the staff of the Air Force Cambridge Re-



D. S. HEIM

D. S. Heim (S'55) was born in Niles, Mich. on July 15, 1930. He received the degree of Bachelor of Science from the University of Michigan, Ann Arbor, Mich., in 1957, and at the present time Mr. Heim is employed by the University of Michigan as a research assistant in the Electronic Defense Group, where he is engaged in microwave research.

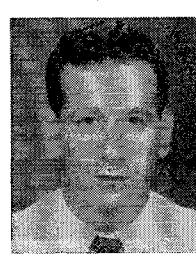
Mr. Heim is a member of the American Physical Society.

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Gerald S. Heller was born on September 5, 1920, in Detroit, Mich. He received the Bachelor of Science degree in physics in January, 1942, from Wayne University, Detroit, Mich.

From 1942 to 1945, he was a staff member of the Radiation Laboratory at Massachusetts Institute of Technology. For one year during this period, he was a member of the Australian Group of the Radiation Laboratory at the Radio Physics Laboratory in Sydney, Australia.

After leaving M.I.T., he was a fellow in applied mathematics at Brown University, where he received the Sc.M. degree in applied mathematics in 1946, and the Ph.D. degree in physics in 1948. Dr. Heller remained at Brown until 1954 as Assistant



G. S. HELLER



B. LAX



C. E. NELSON

Conrad E. Nelson (A'52) was born on December 4, 1927, on Long Island, N. Y. He received the B.S. degree in electrical engineering from the University of California at Los Angeles in 1949. In 1952, Mr. Nelson was graduated from the three-year Advanced Engineering program at the General Electric Company, Schenectady, N. Y., and continued for three years at GE, Syracuse,

N. Y., doing advanced development of microwave components. Since 1955, Mr. Nelson has been in the Electronics Department of the Microwave Laboratory, Hughes Research Laboratories, Culver City, Calif.

He has been a registered professional engineer in New York since 1955.

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John E. Pippin was born in Kinard, Fla., on October 7, 1927. He served in the U. S. Navy during 1945 and 1946, and entered



J. E. PIPPIN

Georgia Institute of Technology, Atlanta, Ga., in September, 1946. He received the B.E.E. degree (Cooperative plan) in 1951 and the Master of Science in Electrical Engineering degree in 1953, both from Georgia Tech. His undergraduate work periods were spent at the Western

Electric Company in Burlington, N. C., and Radio Station WSB in Atlanta, Ga. While working for the Master's degree (1951-1953), he worked as a research engineer at the Georgia Tech Experiment Station, with a group studying a fundamental problem in radar tracking.

In 1953, Mr. Pippin entered Harvard University, where he is currently completing work for the Ph.D. degree in applied physics. He is a member of the magnetic materials group at Harvard, which is concerned with the microwave properties of ferrites, garnets, and other magnetic oxides.

He is a member of Sigma Xi, Tau Beta Pi, and Eta Kappa Nu.

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Harold Rapaport (M'54-SM'56) was born in Pittsburgh, Pa., in 1922. He received the B.S. degree in physics in 1947 from the

University of Pittsburgh, Pittsburgh, Pa., and the M.E.E. degree from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1956.

From 1947 to 1949, he was a graduate assistant and instructor in engineering physics and electrical measurements at the University of Pittsburgh. His experience includes a year as an engineer with the Electronics Research Laboratory at the University of Pittsburgh where he worked on electron tube properties and devices, and several years as an engineer in the Tube Division of the Westinghouse Electric Corporation where he did research and development on high vacuum power tubes.



H. RAPAPORT

city of Pittsburgh. His experience includes a year as an engineer with the Electronics Research Laboratory at the University of Pittsburgh where he worked on electron tube properties and devices, and several years as an engineer in the Tube Division of the Westinghouse Electric Corporation where he did research and development on high vacuum power tubes.

From 1952 to 1956 he was employed at the Microwave Research Institute, Polytechnic Institute of Brooklyn, as research associate and project engineer on research and development in microwave components and ferrite devices. In 1957, Mr. Rapaport joined the Surface Communications Systems Laboratory of the Radio Corporation of America where he is currently engaged in systems planning.

Mr. Rapaport is a member of Sigma Xi. He was co-editor with M. Wind of the "Handbook of Microwave Measurements" and was on the Editorial Board of the "Handbook of Electronic Measurements."

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G. P. Rodrigue was born on June 19, 1931, in Paincourtville, La. He attended Southwestern Louisiana Institute in 1948-

1949 and received the B.S. and M.S. degrees in physics from Louisiana State University in 1952 and 1954, respectively. During the summer of 1954, he worked with the power transistor development group at Bell Telephone Laboratories. Since entering the Division of Engineering and Applied Physics at Harvard University in 1954, he has worked towards the Ph.D. degree in applied physics on a Fellowship awarded by the Union Carbide and Carbon Corp., and is a member of the magnetic materials group investigating the microwave properties and applications of magnetic oxides. He held a teaching fellowship while a graduate student at both Louisiana State and Harvard Universities.

Mr. Rodrigue is a member of Sigma Pi Sigma and an associate member of Sigma Xi.

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H. E. D. Scovil was born on July 25, 1923, in Victoria, B. C., Canada. He received the Bachelor of Arts degree from the University of British Columbia in 1948, the Master of Arts degree in 1949 from the same University, and the Doctor of Philosophy degree in 1951 from Oxford University, Oxford, England.

Mr. Scovil was a Nuffield Research Fellow at Oxford from 1951 to 1952. He worked as assistant professor at the University of British Columbia from 1952 to 1955.



H. E. D. SCOVIL

For the past two years, he has been employed as a member of the technical staff at Bell Telephone Laboratories, Murray Hill, N. J. Mr. Scovil's work is concerned with solid-state devices.

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C. B. Sharpe (S'46-A'52) was born in Windsor, Ont., Canada, on April 8, 1926. He attended Northwestern University,

Evanston, Ill., and the University of Michigan, Ann Arbor, receiving the B.S. degree in electrical engineering from the latter in 1947. He received the S.M. degree from Massachusetts Institute of Technology, Cambridge, Mass., in 1949 and the Ph.D. degree from the University of Michigan in 1953, both in electrical engineering. From 1953 to 1955, he served as assistant project officer in the guided missile branch of the U. S. Navy Bureau of Ordnance and as a technical aide in the Office of Naval Research.

Since returning to the University of Michigan in 1955, he has held the title of assistant professor of electrical engineering. As a faculty consultant at the Electronic Defense Group, he is presently doing microwave research in the field of solid-state devices.

Mr. Sharpe is a member of Tau Beta Pi and Sigma Xi.

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Leon A. Steinert was born in Shattuck, Okla., on May 2, 1930. He attended La Sierra College, Arlington, Calif., where he received the B.A. degree in physics in 1952. In 1956, he received the M.S. degree in physics from the University of Colorado, Boulder, Colo.

During most of 1953, he was associated with the National Bureau of Standards, Washington, D. C., working in the Resistance Measurements Section. In September, 1953, he began graduate studies in physics and mathematics and served as a part time instructor in physics at the University of Colorado.

Since June, 1956, Mr. Steinert has been associated with the Microwave Physics Section of the National Bureau of Standards Laboratories, Boulder, Colo. He has been connected generally with dielectric and magnetic measurements and presently is



L. A. STEINERT

engaged in the study of measurements of ferrite characteristics.

Mr. Steinert is an associate member of RESA.



F. J. Tischer, for a biography and photograph please see page 77 of the January, 1957, issue of these TRANSACTIONS.



Myron S. Wheeler (A'43-M'55) was born in Pittsburgh, Pa., in 1920. He received the B.S. degree from Pennsylvania State University, University Park, Pa., in 1942 and the M.S. degree from Stevens Institute of Technology, Hoboken, N. J., in 1946. Since 1942, he has been with the Westinghouse Electric Corporation working on microwave tubes at the Bloomfield Lamp Division and on microwave



M. S. WHEELER

cuits and antennas at the Air Arm Division. During the war, he was engaged in development work on fm, cw magnetrons,

frequency reference cavities, and tr devices. More recently he has been in development work on radar antennas and other electro-mechanical devices.

He has assisted the IRE on the Papers Review Committee and the Antennas and Waveguides Committee. Mr. Wheeler is a member of Sigma Tau and Eta Kappa Nu.



Walter L. Whirry (S'54-M'56) was born in McMinnville, Ore., on January 21, 1933. He received the Bachelor of Science degree in electrical engineering in 1955 and the Master of Science degree in electrical engineering in 1956 from the California Institute of Technology, Pasadena, Calif.

From 1955 to 1956, Mr. Whirry was employed as a teaching assistant at the California Institute of Technology. Since June, 1956, he has been engaged in microwave component development as a member of the technical staff in the Micro-



W. L. WHIRRY

wave Laboratory, Hughes Research Laboratories, Culver City, Calif.

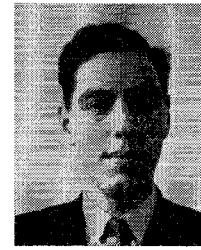
Mr. Whirry is a member of Tau Beta Pi.



Werner P. Wolf was born in Vienna, Austria, on April 22, 1930. He received the B.A. degree in physics at Oxford University

in 1951 and the M.A. and D.Phil. degrees in 1954. He continued with research and teaching work at Oxford during 1955 and 1956 and then spent a year at Harvard University in the Division of Engineering and Applied Physics as a research fellow. He is currently at Oxford University on an I.C.I. Fellowship. Dr. Wolf's

research has dealt with the properties of paramagnetic salts at very low temperatures and their applications to cooling by adiabatic demagnetization. He has also worked on the ferrimagnetic resonance of rare earth garnets and the theory of ferromagnetic anisotropy.



W. P. WOLF

