Contributors

Thomas A. Abele was born in Duisburg, Germany, on May 8, 1934. He received the Dipl. Ing. and Dr. Ing. degrees in electrical engineering from the Institute of Technology, Aachen, Germany, in 1958 and 1960, respectively.

From 1958 to 1962 he was engaged in teaching and research at the Institute for High Frequency Techniques of the Institute of Technology, Aachen, Germany. He then joined the Bell Telephone Laboratories, Inc., North Andover, Mass., where he has been concerned with the development of microwave transmission components for microwave radio relay systems.

Dr. Abele is a member of the Nachrichtentechnische Gesellschaft (NTG).

❖

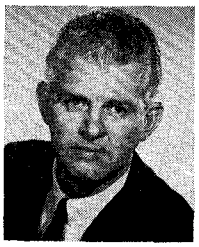
Donald C. Cox (S'58–M'61) was born in Lincoln, Neb., on November 22, 1937. He received the B.S. and M.S. degrees in electrical engineering from the University of Nebraska, Lincoln, in 1959 and 1960, respectively.

From 1960 to 1963 he was a Lieutenant in the U. S. Air Force working on microwave communications system design for the Dyna-Soar project at Wright-Patterson AFB, Ohio. Since 1963 he has been a Research Assistant at the Systems Techniques Laboratory, Stanford Electronics Laboratories, where he is now a Ph.D. candidate working in the field of microwave transhorizon propagation.

Mr. Cox is a member of Sigma Xi, Sigma Tau, Eta Kappa Nu, and Pi Mu Epsilon and is a Registered Professional Engineer in the States of Ohio and Nebraska.

❖

James W. Duncan (M'47–SM'59) was born in Decatur, Ill., on September 15, 1926. He received the B.S. degree in electrical engineering from the University of Colorado, Boulder, in 1950, and the M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1955 and 1958, respectively.



He was employed by Sandia Corporation, Albuquerque, N. M., from 1950 to 1953. As a graduate student at the University of Illinois, he was employed as a Research Associate in the Antenna Laboratory of the Department of Electrical Engineering. From 1958 to 1961, he was with the Antenna Department of Collins Radio Company, Cedar Rapids, Iowa. Since 1961 he has been with Hughes Aircraft Company, Ground Systems Group, Fullerton, Calif., where he is a Senior Staff Engineer on the Electromagnetics Staff of the Communications and Radar Division. His work has included studies of surface wave excitation and surface wave antennas, microwave baluns, slot radiators, feeds for reflector antennas, stripline components, and numerical techniques for calculating transmission line impedance.

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

❖

William F. Gabriel (S'45–A'46–M'55–SM'59) was born in Sault Ste. Marie, Mich., on October 17, 1925. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Wisconsin, Madison, in 1945, 1948, and 1950, respectively.

From 1950 to 1959 he was with the Microwave Antennas and Components Branch of the Naval Research Laboratory, Washington, D.C. In 1959 he joined the technical staff of Stanford Research Institute, Menlo Park, Calif., as a Senior Research Engineer, where he continued in research and development work on antennas and microwave components. In 1961 he returned to the East Coast and became a Staff Consultant at Aero Geo Astro Corp., Alexandria, Va. From 1964 to 1966 he was a member of the technical staff of the Advanced Development Division, NASA-Goddard Space Flight Center, Greenbelt, Md. In August, 1966, he joined the staff of Scanwell Laboratories, Inc., Springfield, Va., where he is currently engaged in the design and development of switched phased array antennas. He has authored numerous reports and papers in the fields of microwave antennas and components, and associated measurement instrumentation.

Dr. Gabriel is a member of Tau Beta Pi, Eta Kappa Nu, Sigma Xi, International Scientific Radio Union (URSI), and the Scientific Research Society of America.

❖

Alfred I. Grayzel (S'55–M'56) was born in Brooklyn, N. Y., on May 24, 1933. He received the B.A. degree from Columbia College, New York, N.Y., in 1954, and the B.S. degree in electrical engineering from Columbia University School of Engineering, in 1955. Under the Lincoln Laboratory Staff Associate degree he received the M.S. degree in February, 1961, the E.E. degree in June, 1961, and the Ph.D. degree in September, 1963, from the Massachusetts Institute of Technology, Cambridge, Mass.

In July, 1955, he joined the staff of Lincoln Laboratory, Lexington, Mass., where he worked on various communication problems for the Sage system and Mercury program. From September, 1963, to December, 1966, he worked on the design of Lincoln Laboratory's experimental satellites. His major interest was in microwave power generation using varactor diodes. In December, 1966, he joined the NASA-Electronics Research Center, Cambridge, Mass., where he is responsible for the direction of a program in solid-state microwave power generation. He has authored numerous publications on varactor multipliers.

Dr. Grayzel is a member of Sigma Xi.

Thomas P. Miles (S'59–M'60) was born in Decatur, Ill., on May 24, 1935. He received the B.S. degree in electrical engineering from Purdue University, Lafayette, Ind., in 1958, and the M.S. degree in electrical engineering from the University of California, Berkeley, in 1959.

From 1959 to 1961 he was with the Motorola Systems Research Laboratory, Riverside, Calif., working in the area of electronic countermeasures. Since 1961 he has been a Research Associate at the System Techniques Laboratory of the Stanford Electronics Laboratories. He is primarily engaged in the investigation of solid-state microwave receiver techniques and their applications to electronic reconnaissance systems.

Mr. Miles is a member of Eta Kappa Nu and Sigma Xi.

❖

Barbara A. Miller was born in Manville, N.J., on December 31, 1941. She received the B.S. degree in electrical engineering from the University of Pennsylvania, Philadelphia, in 1963, and the M.S. degree in electrical engineering from Stanford University, Stanford, Calif., in 1965.

From 1963 to 1964 she was a Research and Development Engineer with the General Electric Microwave Laboratory, Traveling-Wave Tube Division, Palo Alto, Calif., and attended Stanford University on an Honors Co-op Program. From 1964 to 1965 she was a Student Research Assistant at Stanford University. Since 1966 she has been on the full-time research staff at the Systems Techniques Laboratory of the Stanford Electronics Laboratories.

Mrs. Miller is a member of Eta Kappa Nu and Sigma Xi.

❖

Han-Chiu Wang was born in Chekiang, China, on May 27, 1932. He received the B.S.E.E. degree from the Cheng Kung University, Taiwan, China, in 1955, the M.S.E.E. degree from the University of Notre Dame, South Bend, Ind., in 1960, and the Ph.D. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1965.

From 1956 to 1958 he was employed by the Chinese Government Radio Administration, Taiwan. As a graduate student he held a Teaching Assistantship at Notre Dame, and a Research Fellowship at the Polytechnic Institute of Brooklyn where he did research in wave propagation and scattering on periodic structures. In November, 1964, after completing the requirements for the Ph.D. degree, he continued his research work at Polytechnic Institute of Brooklyn as a Research Associate. In 1965, he joined the Bell Telephone Laboratories, Inc., North Andover, Mass., where he has been engaged in development of microwave transmission components for microwave radio relay systems.

Microwave Abstracts

Based on technical merit and timeliness, microwave papers in journals published outside the United States have been selected and compiled below, many with annotations. Reprints of the papers may be obtainable by writing directly to the author or to the source quoted. The papers are in English unless noted otherwise.

—F. G. R. Warren, *Associate Editor for Abstracts*
RCA Victor Company, Ltd., Montreal, Canada

Papers from Journals Published in the Scandinavian Countries

Compiled by M. M. Brady, Radar Division, NERA, Oslo, Norway. (Twenty-two journals from Denmark, Finland, Norway, and Sweden were scanned.)

22

Van Atta Reflector, by J. Appel-Hansen (Laboratory for Electromagnetic Field Theory, Technical University of Denmark, Copenhagen, Denmark); *Ingeniören*, vol. 75, no. 8, p. 224, November 15, 1966.

Describes the extension of Van Atta reflectors to multidipole cases and discusses the experimental results on a 4-dipole Van Atta reflector for 3.2 GHz. (In Danish)

23

Piezo-Optical Interband Absorption in Silicon and Germanium, by I. Balsley (Technical University of Denmark, Copenhagen, Denmark); *Ingeniören-Forskning*, vol. 75, no. 4, p. 111, June 15, 1966.

Reports on investigations of optical absorption in the near infrared region of elastically-deformed germanium and silicon crystals. Essentially the condensed results of a larger English-language engineer's degree thesis. (In Danish)

24

Rapid and Simple Method for Measuring Minority-Carrier Lifetime in Monocrystalline Silicon, by K. E. Borbye (reprints from: Teknisk Forlag, Skelbaekgade 4, Copenhagen K, Denmark); *Ingeniören*, vol. 75, no. 3, pp. 163–165, February 1966.

Describes a light-pulse electrical technique with a counter being fed by gated RF whose envelope is the decay time of the crystals when pulsed. (In Danish)

25

The Radio Refractive Index in Finland and Remarks on *K*-Type Fading, by T. Haikonen (Finnish Post-Telegraph Laboratories, Helsinki, Finland); *Sähkö*, vol. 39, no. 2, pp. 68–72, February 1966.

The effects of average gradient distribution on probability density of field strength for microwave paths containing obstacles are