

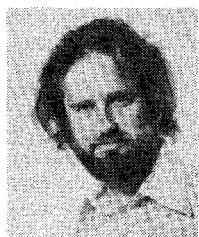
Contributors



Hany L. Abdel-Malek (S'75) was born in Cairo, Egypt, on January 1, 1949. He received B.Sc. degrees in electrical engineering and in mathematics (both with Honors) from Cairo University, Cairo, Egypt, in 1970 and 1972, respectively, and the Ph.D. degree in electrical engineering from McMaster University, Hamilton, Canada, in 1977.

From 1970 to 1974 he served as an Instructor at the Department of Engineering Physics and Mathematics, Cairo University. He was also a Teaching Assistant at the American University, Cairo, from 1973 to 1974. He was with the Department of Electrical Engineering, McMaster University, Hamilton, Canada from 1974 to 1978. In 1977 he was awarded a Postdoctoral Fellowship by the National Research Council of Canada. His main research interests are in the areas of circuit theory, computer-aided circuit and system design, and optimization techniques.

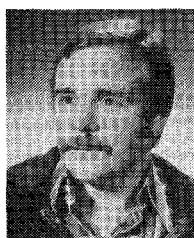
Dr. Abdel-Malek is a member of the Syndicate of Engineers (Egypt).



John W. Bandler (S'66-M'66-SM'74-F'78) was born in Jerusalem, Palestine, on November 9, 1941. He attended the Imperial College of Science and Technology, London, England, from 1960 to 1966. He received the B.Sc. (Eng.), Ph.D., and D.Sc. (Eng.) degrees from the University of London, London, England, in 1963, 1967, and 1976, respectively.

He joined the Mullard Research Laboratories, Redhill, Surrey, England, in 1966. From 1967 to 1969, he was a Postdoctorate Fellow and Sessional Lecturer at the University of Manitoba, Winnipeg, Canada. He became Assistant Professor in 1969, Associate Professor in 1971, Professor in 1974, and Chairman of the Department in 1978 in the Department of Electrical Engineering at McMaster University, Hamilton, Ont., Canada. He has been Coordinator of the Research Group on Simulation, Optimization, and Control since 1973. During part of the year 1975/76, he was a Visiting Professor at the Technion-Israel Institute of Technology, Haifa, Israel, and the University of Bologna, Bologna, Italy. He is a contributor to *Modern Filter Theory and Design* (G. C. Temes and S. K. Mitra, Eds.), Wiley-Interscience, 1973. He is author or coauthor of over 130 papers, four of which appear in *Computer-Aided Filter Design* (G. Szentirmai, Ed.), IEEE Press, 1973, and one in *Microwave Integrated Circuits* (J. Frey, Ed.), Artech House, 1975.

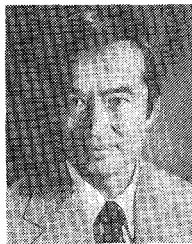
Dr. Bandler is a fellow of the Institution of Electrical Engineers (Great Britain) and a member of the Association of Professional Engineers of the Province of Ontario (Canada). He was an Associate Editor of this Transactions from 1969 to 1974, and also Guest Editor of the Special Issue on Computer-Oriented Microwave Practices, March 1974, of this Transactions.



Günther Begemann was born in Oerlinghausen, West Germany, on February 4, 1948. He received the Dipl. Ing. degree in electrical engineering, in 1975.

He joined the Institut für Hochfrequenztechnik of the Technische Universität Braunschweig, West Germany, in 1975. He is presently studying toward the Ph.D. degree, working on microwave solid-state circuits, especially phase modulators and mixers, and planar integrated circuits.

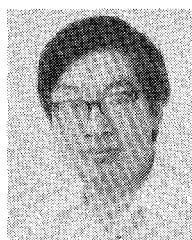
Mr. Begemann is a member of the Verband Deutscher Elektrotechniker.



Alfred Y. Cho was born in Peking, China, in 1937. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1960, 1961, and 1968, respectively.

In 1961, he joined Ion Physics Corporation, Burlington, MA., and undertook a research program involving studies of charged micron-size solid particles in intense electric fields. The effect of contact potential and the electric field on the charge-to-mass ratio of the particle was investigated. He then joined TRW-Space Technology Laboratories, Redondo Beach, Ca., in 1962, and engaged in research on high current density ion beams produced by cesium surface ionization on tungsten. He later turned to research in surface physics using a mass spectrometric method to measure the adsorption and desorption kinetics of various atomic and molecular beams interacting with a tungsten surface. In 1968, he joined Bell Laboratories, Murray Hill, NJ, and began research on solid surfaces of semiconducting materials. He studied the temperature dependence of the work function of clean and cesiated GaP and reconstructed surface structures resulting from atom rearrangement on various crystallographic faces of GaAs as a function of the Ga and As₄ arrival rate and substrate temperature. The conditions for the formation of certain surface structures were used as film growth parameters which later led to the growth of high-quality GaAs and GaP thin films. This film growth technique is referred to as molecular beam epitaxy (MBE). Currently, he is actively engaged in studying the properties of various microwave and optoelectronic devices prepared with MBE. Most recently, he has also extended the MBE technology to the growth of single-crystal metal and insulating materials. While working full time at Bell Laboratories, he is also a Visiting Professor at the University of Illinois, Urbana. He is the author or coauthor of over 50 technical papers on surface science and semiconductor devices related to MBE.

Mr. Cho is a member of the Electrochemical Society, American Physical Society, American Vacuum Society, American Association for the Advancement of Science, New York Academy of Sciences, Tau Beta Pi, and Sigma Xi. He was a Bailey Scholar and a recipient of the W. T. Short Mathematics Award, Kodak International Color Photography Award, and Electronics Division Award of the Electrochemical Society.



Y. Leonard Chow (S'60-M'65) was born in Fukien, China, on December 29, 1936. He received the B. Eng. degree in engineering physics at McGill University, Montreal, P.Q., Canada in 1960, and the M.A.Sc. and Ph.D. degrees in electrical engineering at the University of Toronto, Toronto, Ont., Canada, in 1961 and 1965, respectively.

In 1964, he joined the National Radio Astronomy Observatory, Green Bank, WV, as a Research Associate in the "Very Large Array" group. In 1966, he joined the Electrical Engineering Department at the University of Waterloo, Waterloo, Ont., Canada, where he is presently an Associate Professor.



Pietro de Santis was born in Rome, Italy, on November 24, 1937. He received the "Dottore in Ingegneria Elettronica" degree with highest honors from the University of Rome, Rome, Italy, in 1962, and the M.S. degree in electrophysics from the Polytechnic Institute in Brooklyn, Brooklyn, NY, in 1965. In 1971, he received the Libera Docenza in electromagnetic fields and circuits.

In 1962, he joined the Research Department of Selenia S.p.A., Rome, where he was engaged

in research work on microwave plasmas and ferrites. Since 1969, he has been Professore Incaricato of Microwaves at the University of Naples, Naples, Italy. From 1976 to 1977, he was a Visiting Professor at the Naval Research Laboratory, Washington, DC.

Dr. de Santis is a member of the American Physical Society, the Associazione Elettrotecnica Italiana, and a corresponding member of the SMAG/TCHFM. He was the Italian representative to the Management Committee of the European Microwave Conference from 1973 to 1975. He was also General Chairman of the European Microwave Conference in 1976.

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Lester F. Eastman (A'53-M'58-SM'65-F'69) was born in Utica, NY. He received the B.S. degree in 1953, the M.S. degree in 1955, and the Ph.D. degree in 1957, from Cornell University, Ithaca, NY.

He joined the Faculty of Electrical Engineering at Cornell University in 1957. From 1960 to 1961, he lectured and did research at Chalmers Technical University, Gothenburg, Sweden. From 1964 to 1965, he did research at the RCA Research Laboratory, Princeton, NJ. He was a

founder of Cayuga Associates, now a part of the Narda Microwave Corporation; from 1971 to 1972, he did applied research and development at Narda. He is now on sabbatical, working at Lincoln Laboratories, Massachusetts Institute of Technology, Lexington, MA. Since 1964, he has been involved primarily in graduate education and research in compound semiconductor materials and microwave devices, with emphasis on liquid-phase epitaxial growth of GaAs, InP, and related alloys, on high-power Gunn devices operating in the LSA mode, and, recently, on microwave FET devices.

Professor Eastman served as Editor for the September 1967 special issue of IEEE Transactions on Electron Devices on Microwave Semiconductor Devices and has published a book of reprints on that subject. He has served on the Visitor Committee for Lehigh University and on the Rockwell Program advising Howard University and North Carolina A&T State University at Greensboro, NC. He has also served on the administrative committee for the Electron Devices Group and is presently serving on the U.S. Government Advisory Group on Electron Devices.

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Ibrahim N. El-Behery was born in Minya, Egypt, on November 12, 1942. He received the B.Sc. degree in electrical engineering from Ain-Shams University, Cairo, Egypt, in 1963, and the M.Sc. and Ph.D. degrees in electrical engineering from the University of Waterloo, Waterloo, Ont., Canada, in 1967 and 1974, respectively. He also obtained the B.Sc. degree in mathematics from Ain-Shams University in 1965, and the M.Sc. degree in applied mathematics from the University of Waterloo in 1968.

In 1974, he was appointed as a Research Associate in the Electrical Engineering Department, University of Waterloo, and has since been involved in research work in sonar signal processing for the Defence Research Establishment Atlantic, Dartmouth, N.S., Canada, and in the study of propagation and radiation in microstrip structures for the Communications Research Center, Ottawa, Ont., Canada.

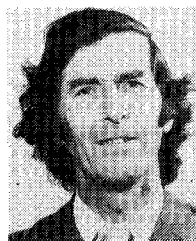


Glenn F. Engen (SM'71) was born in Battle Creek, MI, on April 26, 1925. He received the B.A. degree in physics and mathematics from Andrews University, Berrien Springs, MI, in 1947, and the Ph.D. degree in electrical engineering from the University of Colorado, Boulder, in 1969.

After employment with the U.S. Naval Ordnance Laboratory and Applied Physics Laboratory and The Johns Hopkins University, he joined the National Bureau of Standards, Boulder, CO, in 1954, where he is now Senior Research Scientist, Electromagnetics Division. His special field is microwave measurement standards and techniques. He is the author of numerous technical papers in the field of microwave measurements, and holds two patents.

Dr. Engen is a member of Commission I of the International Scientific Radio Union. In 1960, he was awarded the Department of Commerce Silver Medal for Meritorious Service.

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Douglas J. Harris was born in London, England. He received the B.Sc.(Eng) and the Ph.D. degrees from Queen Mary College, London University, London, England.

His appointments have included seven years as Professor and Head of the department at Ahmadu Bello University, Zaria, Nigeria, and lecturing and research appointments at Stanford University, Palo Alto, CA; Sheffield University, Sheffield, England; Portsmouth Polytechnic, Southampton, England; and University College,

London, England. He is now Professor and Head of the Department of Physics, Electronics & Electrical Engineering, at the University of Wales Institute of Science & Technology, Cardiff, U.K., where his research interests include millimetric waveguides and atmospheric propagation.

Dr. Harris is an officer of the Order of the British Empire (OBE) and a Fellow of the Institute of Electrical Engineers and of the Institute of Radio & Electronic Engineers.

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Albert S. Hebert (M'77) for a photograph and biography please see page 837 of the October 1978 issue of this TRANSACTIONS.

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Tatsuo Itoh (S'69-M'69-SM'74), for a photograph and biography please see page 838 of the October 1978 issue of this TRANSACTIONS.

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Reinhard Knöchel was born near Hamburg, West Germany, on June 20, 1948. He received the Dipl. Ing. degree in electrical engineering from the Technische Universität Braunschweig, West Germany, in 1975.

He joined the Institut für Hochfrequenztechnik of the Technische Universität Braunschweig in 1975. Presently he is studying towards the Ph.D. degree, working on the stabilization and injection locking of microwave oscillators. His current interest lies in the investigation of new methods of microwave integration in the frequency region above the *Ku* band.

Mr. Knöchel is member of the Verein Deutscher Elektrotechniker.



Norio Komiyama was born in Nagano Prefecture, Japan, on May 15, 1946. He received the B.S. and M.S. degrees in electrical engineering from Niigata University, Niigata, Japan, in 1969 and 1971, respectively.

He joined Nippon Electric Company, Ltd., in 1971, and has been engaged in the development of high-speed PSK modem circuits for W-40G guided millimeter-wave transmission system and the 20-GHz digital radio repeating system.

Mr. Komiyama is a member of the Institute of Electronics and Communication Engineers of Japan.



Hidetoshi Kurebayashi was born in Shizuoka City, Japan, on January 30, 1939. He graduated from Shizuoka University, Hamamatsu, Japan, in 1961, and received the Dr. Eng. degree from the Tokyo Institute of Technology, in 1978.

He joined the Mitsubishi Electric Corporation in April 1961. Since then, he has been engaged in the research and development of microwave transmission circuits, microwave ferrite devices, and other microwave control devices. His major efforts were directed toward stripline circulators

and latching devices for the last five years as the Chief Engineer of the Electric Laboratory, Kamakura, Japan. Recently he transferred to the Control and Applied Electronics Equipment Department, Kamakura Works, to be engaged in the design and the development of radar systems and their antenna systems as the Radar System Manager.

Dr. Kurebayashi is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan and the Magnetics Society of Japan. He is now the Secretary of the Technical Group on Microwaves of the IECE of Japan.

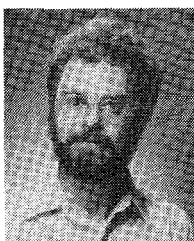


Kin-Wah Lee was born in Hong Kong, China, on September 17, 1946. He received the B.Sc. degree in electrical engineering from the National Taiwan University, Taipei, Taiwan, in 1972. He received the M.Sc. degree in electronics from the University of Wales, Cardiff, U.K., in 1976.

From 1972 to 1975, he worked for the Tapei Long Distance Telecommunications Office. At present, he is carrying out research in waveguides for millimeter- and submillimeter-waves

at the University of Wales Institute of Science and Technology, Cardiff, U.K.

Mr. Lee is an associate member of the Institution of Electrical Engineers of Great Britain.

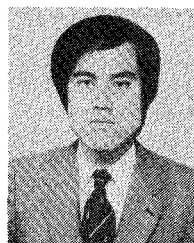


Richard A. Linke was born in Plainfield, NJ, on February 15, 1946. He received the B.A., M.A., and Ph.D. degrees from the Department of Physics at Columbia University, New York, NY, in 1968, 1970, and 1972, respectively.

In 1972, he joined the Radio Physics Research Department of the Bell Telephone Laboratories where he has been developing low-noise millimeter-wave receivers and using these receivers for astronomical observations. He has made low-noise receivers from 50 to 150 GHz for the

University of Texas millimeter-Wave Observatory as well as for the new Bell Laboratories antenna at Holmdel, NJ. His experimental astrophysics thesis work involved the measurement of the X-ray polarization of the Crab Nebula.

Dr. Linke is a member of the American Astronomical Society.



Toyoki Matsuo was born in Nagasaki, Japan, on June 1, 1949. He received a degree in electronic engineering from Doshisha University, Kyoto, Japan, in 1972.

From 1972 to 1973, he was employed as a Engineer at the Namura Shipyard Co., Ltd., Osaka, Japan. Since 1973, he has been with Doshisha University, where he currently is working in the field of fiber optics.

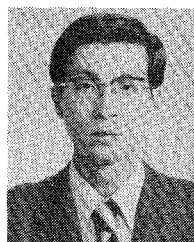
Mr. Matsuo is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan, the Information Processing Society of Japan, and the Optical Society of America.



Akihito Mizobuchi was born in Kochi City, Japan, on January 3, 1940. He received the B.S. and M.S. degrees in physics from Osaka University, Osaka, Japan, in 1963 and 1965, respectively.

Since 1965, he has been with the Mitsubishi Electric Corporation, Kamakura, Japan, and has been engaged in the research and development of microwave ferrite and p-i-n diode devices, especially phase shifters, as the Senior Engineer.

Mr. Mizobuchi is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan.



Kaoru Motoya was born in Hokkaido, Japan, on September 14, 1951. He received the B.S. and M.S. degrees in electronic engineering from Tohoku University, Sendai, Japan, in 1974 and 1976, respectively.

He is now a graduate student at Tohoku University and has been engaged in device design and fabrication of the TUNNETT diode.

Mr. Motoya is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan.



Jun-Ichi Nishizawa (M'57-SM'62-F'69) was born in Sendai, Japan, on September 12, 1926. He received his B.S. degree, in 1948, and his Dr. Eng. degree, in 1960, at Tohoku University, Sendai, Japan.

Following a year as Research Assistant, he became Assistant Professor in 1954 and Professor in 1962, at the Research Institute of Electrical Communication, Tohoku University. In 1968, he was appointed Director of the Semiconductor Research Institute in Sendai and holds

the post at present. His main works have involved the inventions of p-i-n diodes and p-n-i-p (n-p-i-n) transistors (1950), ion implantation (1950), semiconductor injection lasers (1957), solid-state focussing optical fibers (1964) and transit time effect negative resistance diodes (1954) including the avalanche injection and the tunnel injection (1958), hyperabrupt variable capacitance diodes (1959), semiconductor inductance (1957), static induction transistor (SIT) (1950, 1971), etc. At present, he is carrying out works especially on the applications of static induction transistors to the high-frequency and high-power devices, the high-speed thyristor, and the high-speed and low-power dissipation integrated circuit, and growth method of III-V compound semiconductors: controlled vapor pressure-temperature difference method (CVP-TDM) giving rise to high efficiency LED and long life laser diodes.

Dr. Nishizawa is a member of the American Physical Society, the American Institute of Physics, the Electrochemical Society, the Physical Society of Japan, the IEE of Japan, and the Institute of Electrical and Communication Engineers (IECE) of Japan. He is a fellow of the Former Physical Society and the Institute of Physics. In recognition of his research and scholarship, he received the Director's Award of Japanese Science and Technology Agency in 1965 and 1970 for "*Semiconductor devices with high resistivity thin layer*" and "*Invention of semiconductor junction laser and opto-electronics*", respectively, the Imperial Invention Prize in 1966 for "*Invention of semiconductor devices with high resistivity thin layer*", the Matsunaga Memorial Award in 1969 for "*Research works on semiconductor devices*," the Okochi Memorial Technology Prize in 1971 for "*Invention of variable capacitor diode*," the 1974 Award of the Japan Academy for "*Researches of semiconductors and transistors*," the Meritorious Honor Award of Japanese Science and Technology Agency for "*Research on static induction transistors*," the Achievement Award of the Institute of Electronics and Communication Engineers of Japan for "*Invention of static induction transistors*," and the Purple Ribbon Medal from Japanese Government in 1975 for "*Invention of static induction transistors*."

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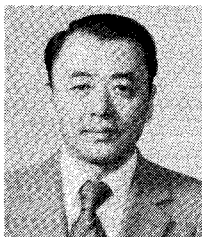


Koichi Ohwi (S'62) was born in Kyoto, Japan, on December 27, 1937. He received the B.S.E.E. and M.S.E.E. degrees from Waseda University, Tokyo, Japan, in 1967 and 1963, respectively.

Since 1963 he has worked at the Department of Electrical Engineering of the National Defense Academy of Japan, Yokosuka, Japan, and is presently a Lecturer. He is currently engaged in work on microwave devices.

Mr. Ohwi is a member of the IECE of Japan.

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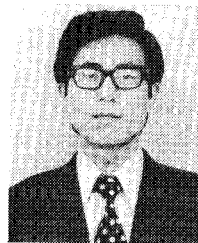


Fumiaki Okada (M'71) was born in Tochigi, Japan, on December 14, 1927. He received the B.E., M.S., and Dr. Eng. degrees from Waseda University, Tokyo, Japan, in 1951, 1954, and 1957, respectively.

He worked for the Department of Electrical Engineering, National Defense Academy of Japan, Yokosuka, Japan, as a Lecturer and as an Associate Professor from 1957 to 1968. Since 1968, he has been a Professor at the National Defense Academy and is presently working on

microwave solid-state devices and measurements, especially on microwave ferrite, and on high-power microwave devices.

Dr. Okada is a member of the IMPI and the IECE, the IEE, and the ITE of Japan.



Yasuo Okuno was born in Kanagawa Prefecture, Japan, on September 8, 1945. He received the B.S. degree from Nihon University, Tokyo, Japan, in 1968, and the doctorate degree in electronics from Tohoku University, Sendai, Japan, in 1973.

In 1973, he became Chief Scientist at the Semiconductor Research Institute, which belongs to the Semiconductor Research Foundation, Sendai, Japan. He is working on the field of nonstoichiometry of III-V compound, optoelectronics, and high frequency devices.

Dr. Okuno is a member of the Japan Society of Applied Physics and the Institute of Electronics and Communication Engineers (IECE) of Japan.

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Jayantkumar P. Parekh (M'74) was born in Mwanza, Tanzania, on January 1, 1941. He received the B.Sc. (Hons.) and M.Sc. degrees in electrical engineering from Glasgow University, Scotland, in 1964 and 1966, respectively. He received the B.Sc. (Hons. Special) degree in mathematics from London University, London, England, in 1966 after two years of study as an external student. He was awarded a Fulbright Scholarship in 1966 for study in the United States. He received the Ph.D. degree in electro-

physics from the Polytechnic Institute of Brooklyn (now called the Polytechnic Institute of New York), Brooklyn, NY, in 1971.

From 1971 to 1973, he was a Postdoctoral Associate in Electrical Sciences at the State University of New York at Stony Brook, Stony Brook. Since 1973, he has been with the State University of New York Maritime College, Fort Schuyler, Bronx, where he is currently an Associate Professor of Engineering and Head of the Electrical Engineering Program. He is concurrently a Visiting Associate Professor in the Electrical Engineering Department at the State University of New York at Stony Brook. During the summer of 1976, he was a Visiting Research Assistant Professor in the Electrical Engineering and Electrophysics Department at the Polytechnic Institute of New York, Brooklyn. He is currently engaged in research on surface acoustic waves and magneto-elastic and magnetostatic surface waves.

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Christen Rauscher (S'73-M'75) was born in Boston, MA, on November 4, 1944. He received the Diploma in electrical engineering and the Ph.D. degree in 1969 and 1975, respectively, both from the Swiss Federal Institute of Technology, Zurich, Switzerland.

From 1969 to 1976, he was employed as an Assistant and Research Associate at the Microwave Laboratory of the Swiss Federal Institute of Technology where he conducted research on computer-aided tolerance optimization of microwave active circuits and on IMPATT power amplifiers. He also was responsible for the design of an antenna system for a radio astronomy project. He held a Postdoctoral Fellowship from the Swiss National Science Foundation from 1976 to 1978. He spent this time at Cornell University, Ithaca, NY, and the Naval Research Laboratory, Washington, DC, investigating the nonlinear behavior of GaAs MESFET's and pursuing a new approach to the design of broad-band varactor-tuned oscillators. He is presently employed at the Naval Research Laboratory, Washington, DC.

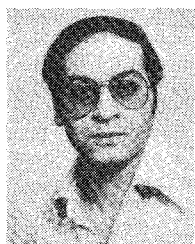


John M. Reeves was born in London, England, on August 11, 1936. He received the External London B.Sc. (Eng) degree in 1962, from Brunel University, Middlesex, England, as a Sponsored Student of the General Electrical Company.

After graduating, he was engaged in the development of control systems for high-supersonic-speed wind tunnels. In 1964, he joined the lecturing staff of the Mid-Essex Technical College, Essex, England, moving to Portsmouth Polytechnic, Southampton, England, in 1968. He is currently the leader of the telecommunications group and is engaged in research and development of millimeter-wave guides.

Mr. Reeves is a member of the Institution of Electrical Engineers of Great Britain.

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Mohamed R. M. Rizk (S'75) was born in Alexandria, Egypt, on September 17, 1949. He received the B.Sc. (Hons.) degree from Alexandria University, Alexandria, Egypt, and the M.Eng. degree from McMaster University, Hamilton, Ont., Canada, both in electrical engineering in 1971 and 1975, respectively.

From 1971 to 1973, he was a Teaching Assistant at Alexandria University. Currently, he is studying towards the Ph.D. degree at McMaster University, specializing in computer-aided design.

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Abdel Megid Kamal Saad was born in Behera, Egypt, on September 3, 1943. He received the B.S. degree in electrical engineering in 1966, and the M.S. degree in 1973, both from Ain-Shams University in Cairo. Since 1974, he has been working toward the Ph.D. degree at the Institut für Hochfrequenztechnik of the Technische Universität Braunschweig, Braunschweig, West Germany.

His current research interest is in the field of microwave integrated-circuit techniques in the millimeter-wave region.

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Martin V. Schneider (M'56-SM'71-F'76) was born in Bern, Switzerland. He received the Diplom-Physiker degree and the doctorate degree in natural sciences from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1956 and 1959, respectively.

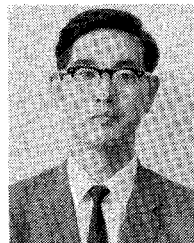
From 1959 to 1961, he was a Research Assistant at the Swiss Federal Institute of Technology, and, in 1961, he joined the Radio Research Laboratory at Bell Laboratories, Incorporated, in Holmdel, NJ. He has worked on thin-film

solid-state devices and circuits, Schottky-barrier photodetectors, and microwave and millimeter-wave integrated circuits. He is presently engaged in advanced work on millimeter-wave devices and circuits for use in communication receivers and transmitters.

Dr. Schneider is a member of the American Physical Society and a member of the editorial board of this TRANSACTIONS.

Klaus Schünemann (M'76), for a photograph and biography please see page 222 of the March 1978 issue of this TRANSACTIONS.

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Hiroshi Shigesawa (S'62-M'63) was born in Hyogo, Japan, on January 5, 1939. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1961, 1963, and 1969, respectively.

Since 1963, he has been with Doshisha University. Currently, he is an Associate Professor at the Faculty of Engineering. His research activities have been concerned with microwave transmission lines with open structures, fiber optics, and microwave holographies.

Dr. Shigesawa is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan, the Japan Society of Applied Physics, and the Optical Society of America (OSA).

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Tadao Shimamura (M'70) was born in Tokyo, Japan, on January 31, 1938. He received the B.S. degree in applied physics from the University of Tokyo, Tokyo, Japan, in 1960.

He joined Nippon Electric Company, Ltd., in 1960, and has been engaged in the research and development of digital radio communication systems and equipment. Since 1970, he has been engaged in the development of 800-Mb/s QPSK repeaters and terminal equipment for W-40G guided millimeter-wave transmission systems and high-speed modem circuits and terminal equipment for the 20-GHz digital radio repeating system. He is now responsible for the development of millimeter-wave communication systems and on-board regenerative repeaters and associate devices.

Mr. Shimamura is a member of the Institute of Electronics and Communication Engineers of Japan.

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Michael S. Shur was born in Kamensk-Uralski, U.S.S.R., on November 13, 1942. He received the M.S. degree (Hons.) in electrical engineering from the Leningrad Electrotechnical Institute, Leningrad, U.S.S.R., in 1965, and the Ph.D. degree in physics from the A.F. Ioffe Institute of Physics and Technology, Leningrad, U.S.S.R., in 1967.

From 1965 to 1976, he was with the A. F. Ioffe Institute of Physics and Technology. In 1976, he immigrated to the U.S. where he joined

the School of Electrical Engineering, Cornell University, Ithaca, NY, and then the Department of Electrical Engineering, Wayne State University, Detroit, MI. Presently, he is an Assistant Professor of the School of Engineering, Oakland University, Rochester, MI. His research has included hot electron effects, electrical properties of amorphous semiconductors, ferroelectrics, and solid-state microwave and optical devices. He has five Soviet patents on solid-state devices and has published three books and many research papers. During the summers he works at the School of Electrical Engineering, Cornell University, Ithaca, NY.

Willem Steenaart (AM'55-M'57-SM'70), for a photograph and biography please see page 926 of this issue.



Yukio Takimoto was born in Tokyo, Japan, on April 21, 1940. He received the B.S. degree in electrical communication engineering from Waseda University, Tokyo, Japan, in 1964.

He joined Nippon Electric Company Ltd., in 1964, and has been engaged in the research and development of terminal equipment for W-40G guided millimeter-wave transmission systems and TDMA terminal equipment for the SMAX experimental system and for the domestic satellite communication system for remote islands.

He is presently engaged in the development of millimeter-wave communication systems and on-board digital satellite subsystems.

Mr. Takimoto is a member of the Institute of Electronics and Communication Engineers of Japan.

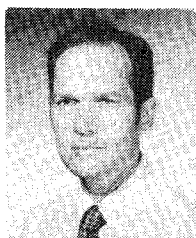


Kei Takiyama (M'58) was born in Osaka, Japan, on October 20, 1920. He received the B.S. and Ph.D. degrees in electrical engineering from Kyoto University, Kyoto, Japan, in 1942 and 1955, respectively.

Since 1954, he has been a Professor of Electronic Engineering at Doshisha University, Kyoto, Japan, where he carried out research in the fields of microwave transmission lines and optical engineering. From 1957 to 1958, he was a Fulbright Scholar and a Research Associate at

the Microwave Research Institute of the Polytechnic Institute of Brooklyn.

Dr. Takiyama is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan, the Institute of Electrical Engineers of Japan, and the Optical Society of America.

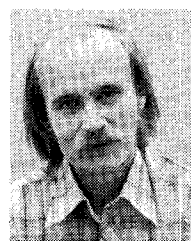


Herbert L. Thal, Jr., (A'53-M'58) was born in Mount Vernon, NY, on February 15, 1932. He received the B.E.E., M.E.E., and Ph.D. degrees in electrical engineering from Rensselaer Polytechnic Institute, Troy, NY, in 1953, 1955, and 1962, respectively.

From 1953 to 1956 he was a Research Associate at R.P.I. In 1956 he joined the General Electric Power Tube Department, Schenectady, NY, where he performed research and development on circuits and beam interactions in fixed-frequency and voltage-tunable magnetrons, multiple-beam klystrons, and distributed amplifiers. In 1967 he transferred to the

Re-Entry Systems Department, King of Prussia, PA, where he was involved with the prediction and control of radar cross section and the analysis of antennas. Since 1974 he has been engaged in the analysis and design of microwave filters, multiplexers, and antennas for the Space Division.

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



Herman Tromp was born in Antwerp, Belgium, on September 15, 1949. He received a degree in electrical engineering, a degree in communications engineering, and the doctorate degree in applied sciences from the University of Ghent, Ghent, Belgium, in 1972, 1973, and 1978, respectively.

In 1972, he became a Research and Teaching Assistant and, in 1977, a Researcher of the National Research Fund of Belgium in the Laboratory of Electromagnetism and Acoustics, University of Ghent. From 1974 to 1975 he was on leave with the Group on Simulation, Optimization, and Control and the Department of Electrical Engineering, McMaster University, Hamilton, Ont., Canada, as a Rotary Foundation Fellow. He worked in the areas of circuit design, optimization, and tolerancing.

Dr. Tromp is a member of the Royal Society of Flemish Engineers.

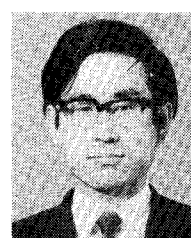


Hang-Sheng Tuan (M'69) was born in Hankow, China, on October 23, 1935. He received the B.S.E.E. degree from the National Taiwan University in 1958, the M.S.E.E. degree from the University of Washington, Seattle, in 1961, and the Ph.D. degree in applied physics from Harvard University, Cambridge, MA, in 1965.

Presently, he is with the Department of Electrical Engineering at the State University of New York at Stony Brook, Stony Brook. He has been engaged in teaching and research in

plasma, electromagnetic theory, and antennas. Currently, he is interested in microwave acoustics.

Dr. Tuan is a member of Sigma Xi and Phi Tau Phi.



Makoto Washio was born in Tokyo, Japan, in 1945. He received the B.S. and M.S. degrees in electrical engineering from Yokohama National University, Yokohama City, Japan, in 1968 and 1970, respectively.

He joined Electrical Communication Laboratories, NTT, in 1970, and has been engaged in the research and development of high-speed PSK modulation and demodulation circuits for the W-40G guided millimeter-wave transmission system. He is presently engaged in the research

and development of optical fiber transmission systems.

Mr. Washio is a member of the Institute of Electronics and Com-

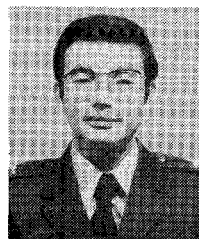
munication Engineers of Japan. He received the Paper Award from the IECE of Japan, in 1978, for his paper, "A Proposal of a Digital Carrier Transmission System Using Multilevel APSK."



Harry A. Willing (A'54-M'58) received the B.S.E.E. degree from the University of Connecticut, Storrs, in 1952, and the M.S.E.E. degree from the University of Florida, Gainesville, in 1963.

From 1963 to 1967, he was with the Sperry Microwave Electronics Division, where he was engaged in the studies of microwave properties of ferrite materials and the microwave acoustic properties of various single-crystal media. From 1967 to 1971, he was with Texas Instruments,

Incorporated, where he was engaged in the design and development of MIC modules. From 1971 to 1975, he was with the Communications and Electronics Division, Martin Marietta Aerospace, where he designed solid-state RF power amplifiers for commercial microwave applications. He is presently with the Naval Research Laboratory, Washington, DC.



Yukio Yokochi was born in Aichi, Japan, on January 7, 1949. He received the B.S. degree in electrical engineering from Aichi Industry Technology, Nagoya, Japan, in 1971.

Since 1973, he has been with the Air Force, Defense Agency of Japan. From 1976, he was engaged in research on the YIG resonator circuit as a Graduate Student of the National Defense Academy, Japan. After receiving the M.S. equivalent degree from the Academy in 1978, he joined the Air Proving Wing, Japan Air

Force.