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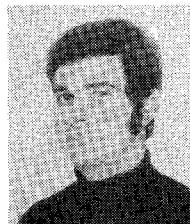
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Contributors



Jean Pierre Bolloch was born in Kermoroch, France, on May 31, 1953.

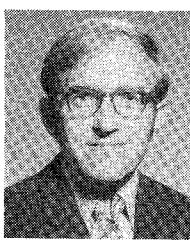
Since joining the Centre National d'Etudes des Télécommunications, Lannion, France, in 1973, his research activities have been in thin-film technology.



Donald J. Coleman, Jr., was born in Tampa, FL, in 1939. He received the B.S. degree from Florida State University, in 1960. He received the Ph. D. degree in physics from Florida State University, in 1967.

From 1960 to 1962, he was employed by NASA, Cape Kennedy, FL. He was then a member of the technical staff at Bell Telephone Laboratories, Murray Hill, NJ, where he worked on microwave device physics until 1973. Since 1973, he has been with Texas Instruments Incorporated, Dallas, TX, where his primary interests have been focused on GaAs Read diodes.

Dr. Coleman is a member of the American Physical Society and the Electrochemical Society.



Eric R. Carlson (M'73) was born in Cleveland, Ohio, on August 26, 1941. He received the B.S., M.S., and Ph.D. degrees in physics from Yale University, New Haven, CT, in 1963, 1965, and 1972, respectively.

From 1972 to 1973 he was a Research Staff Physicist at Yale University, and in 1973 he joined the Radio Research Laboratory at Bell Laboratories, Crawford Hill, in Holmdel, NJ. He has worked primarily on circuits and solid-state devices for millimeter-wave receivers in the

100-300-GHz frequency range.

Dr. Carlson is a member of the American Physical Society.



Marie-Therese Cotte was born in Pontivy, France, on January 30, 1943.

Since joining the Centre National d'Etudes des Télécommunications, Lannion, France, in 1969, her research activities have been in thick-film technology.



Yu-Wen Chang (M'74) received the B.A. degree in political science from the National Taiwan University, in 1959. He also received the B.S. degree from U.C.L.A., in 1966, the M.S. degree from Caltech, in 1967, and the Ph.D. degree from U.C.L.A., in 1971, all in electrical engineering.

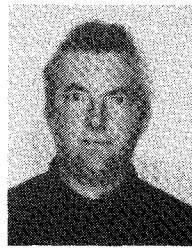
At present, he is a Senior Scientist with the Hughes, Electron Dynamics Division, Hughes Aircraft Company, Torrance, CA, where he is responsible for the millimeter-wave dielectric image-guide integrated circuits and subsystems research and development.



Friedrich H. Doerbeck (M'78) received the Diplom-Physiker degree from the Technische Hochschule, Stuttgart, Germany, in 1962, and the Dr. Ing. degree from the Technische Universität, Aachen, Germany, in 1971.

From 1962 to 1966, he was with AEG-Telefunken, initially at the Research Institute, Ulm, Germany, and later at the Semiconductor Division, Heilbronn, Germany. In 1966, he joined Texas Instruments Incorporated, Dallas, TX. Since 1964, he has been engaged mainly in de-

vice and materials work on III-V compound semiconductors for optoelectronic and microwave applications, such as LED's, Gunn devices, FET's, and injection lasers. Besides R and D work in this field, he has also been responsible for the development and installation of production lines for such components. Most recently he has been responsible for vapor phase epitaxy for GaAs Read diodes and FET's. He is the author or coauthor of 12 publications.



Jean-Jérôme Guena was born in Landuvet, France, on December 14, 1935.

Since joining the Centre National d'Etudes des Télécommunications, Lannion, France, in 1962, his research activities have been in microwave and millimeter-wave integrated circuits.

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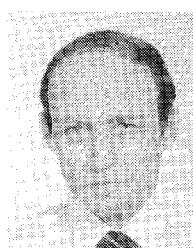
Elmer Freibergs (S'57-M'59) received the B.S. degree in electrical engineering from Drexel University, Philadelphia, PA, in 1958, and the M.S. degree in electrical engineering from the Polytechnic Institute of Brooklyn, Brooklyn, NY, in 1973.

Since 1973 he has been engaged in applied research and development of microwave and millimeter-wave signal control devices and subsystems with the U.S. Army Electronics Research and Development Command, Fort

Monmouth, NJ.

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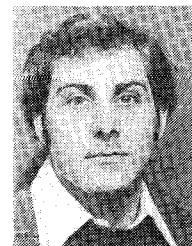
Maurice H. Gibson was born in Middlesbrough, England, on July 2, 1939. He received the B.Sc. degree from London University and the M.Sc. degree in microwave physics from the University of Surrey, in 1969.

From 1957 to 1964, he worked on general electronics dealing with control systems and microwave measurements on magnetohydrodynamic systems at C. A. Parsons/International Research and Development Co. Ltd., Newcastle, England. From 1964 to 1967, he worked at Marconi Instruments Ltd., Stevenage, England, being responsible for the design of a wide range of active and passive microwave components. From 1967 to 1968, he worked at G & E Bradley Ltd., London, England, where he was responsible for the design of oscillators and step recovery diode multipliers. From 1968 to 1972, he worked at Marconi Space and Defense Systems Ltd., Portsmouth, England, where he was responsible for microwave amplifier, modulator, filter, and antennae designs. In 1972 he joined M.E.S.L. Midlothian, Scotland, leading a team working on microwave amplifiers and frequency multipliers, and in 1973 he rejoined Marconi Space and Defense Systems Ltd., Portsmouth, England, to do further work on filter, GaAs FET, bipolar amplifiers, and antennae for space application. In 1976, he joined the European Space Agency, Noordwijk, The Netherlands, as Senior Circuit Design Engineer in a support group, where his main function is to provide project support on all circuit aspects of microwave hardware, particularly amplifiers and filters, and be responsible for microwave circuit development at ESA.

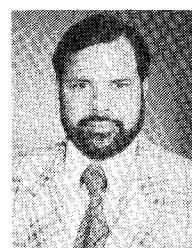
He is a member of the Institution of Electrical Engineers, London.

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A. Gopinath (S'64-M'65), for a photograph and biography please see page 693 of the September 1978 issue of this TRANSACTIONS.



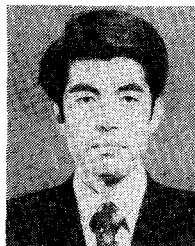
K. C. Gupta (M'62-SM'75) was born in 1940. He received the B.E. and M.E. degrees in electrical communication engineering from the Indian Institute of Science, Bangalore, in 1961 and 1962, respectively, and the Ph.D. degree in electronics engineering from the Birla Institute of Science and Technology, Pilani, in 1969.

He was a Senior Research Fellow at the Indian Institute of Science, Bangalore, from 1962 to 1964, and at the Central Electronics Engineering Research Institute, Pilani, from 1965 to 1968. From 1964 to 1965 he was Assistant Professor at Punjab Engineering College, Chandigarh and from 1968 to 1969 at B.I.T.S., Pilani. He has been with the Indian Institute of Technology, Kanpur, since 1969, where he has been a Professor in electrical engineering since 1975. Since 1971 he has also been the coordinator for the Phased Array Radar Group of the Advanced Centre for Electronics Systems at I.I.T./K. During his leave of absence from I.I.T./K. from 1975 to 1977, he was a Visiting Professor at the University of Waterloo, Canada, at the Ecole Polytechnique Federale de Lausanne, Switzerland, and at the Technical University of Denmark, Lyngby. His present research interests include the CAD of microwave circuits, microwave applications, and optical fibre communications.

Dr. Gupta has published over forty research papers in the area of microwaves and holds an Indian Patent in this area. He has coedited and contributed to a book on microwave integrated circuits. He is a Member of the IETE in India and of the IMPI in Canada.

Albert Sidney Hebert (M'77) was born in Lafayette, LA., on July 27, 1950. He received the B.S.E.E. degree from the University of Kentucky, Lexington, KY in 1977.

Since graduation he has been a Research Engineer with the Department of Electrical Engineering, University of Kentucky, Lexington.



Masahiro Hirayama was born in Obihiro, Japan, on September 4, 1942. He received the B.S. and M.S. degrees in electrical engineering from Hokkaido University, Sapporo, Japan, in 1966 and 1968, respectively.

Since 1968 he has been a member of Musashino Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, where he has been engaged in research and development in the area of millimeter-wave integrated circuits and

nonlinear diode devices.

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

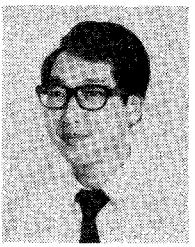
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Robert E. Horn (S'62-M'63) was born in New Philadelphia, OH. He received the B.S. degree from Monmouth College, West Long Branch, NJ, in 1962, and the M.S.E.E. from the Newark College of Engineering, Newark, NJ, in 1966.

Since 1967 he has been employed as an Electronic Engineer in solid state research and millimeter-wave development with the U.S. Army Electronics Research and Development Command at Fort Monmouth, NJ.

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Takao Itanami was born in Fukuoka, Japan, on March 9, 1949. He received the B.S.I.E. and M.S.I.E. degrees, both from Kobe University, Kobe, Japan, in 1971 and 1973, respectively.

In 1973 he joined the Electrical Communication Laboratory, N.T.T., Japan, and has been engaged in research work on waveguide circuit components for millimeter-wave transmission system and satellite communication system. Recently, his major efforts have been directed toward the applications of the dielectric wave-

guide.

Mr. Itanami is a member of the Institute of Electronics and Communication Engineers of Japan and the Society of Instrument and Control Engineers.

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Tatsuo Itoh (S'69-M'69-SM'74) received the Ph.D. degree in electrical engineering from the University of Illinois, Urbana, in 1969.

From September 1966 to April 1976, he was with the Electrical Engineering Department, University of Illinois, Urbana. From April 1976 to August 1977, he was a Senior Research Engineer in the Radio Physics Laboratory, SRI International, Menlo Park, CA. In August 1977, he joined the University of Kentucky, Lexington, where he is now an Associate Professor of

Electrical Engineering.

Dr. Itoh is a member of the Institute of Electronics and Communication Engineers of Japan, Sigma Xi, and Commissions B and C of URSI.

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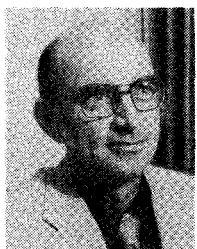


Harold Jacobs (SM'59-F'68) was born in Port Chester, NY, on November 21, 1917. He received the B.A. degree from The John Hopkins University, Baltimore, MD, and the M.S. and Ph.D. degrees from New York University, New York, NY.

He joined the U.S. Army Signal Corps Laboratory at Fort Monmouth, NJ, in 1949, with previous experience at RCA Mgn. Company, Lancaster, PA, and Sylvania Electric Products, Kew Gardens, NY. He has worked in the areas of electron tubes, solid-state devices, lasers, and microwave and millimeter-wave devices.

He received the IEEE Fellow Award in 1967 for his semiconductor-devices contributions and the Army's Decoration for Exceptional Civilian Service in 1969 for millimeter-wave imaging investigations. In 1973 he was the recipient of the IEEE's Harry Diamond Award for identification of bulk semiconductor effects at millimeter-waves with applications to imaging and surveillance.

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Darko Kajfez (SM'67) was born in Delnice, Yugoslavia, in 1928. He received the Electrical Engineer's degree (Dipl. Ing.) from the University of Ljubljana, Yugoslavia, in 1953, and the Ph.D. degree from the University of California, Berkeley, in 1967.

Between 1950 and 1963, he has worked in different R&D laboratories in Yugoslavia, primarily in microwave links and radars. From 1963 to 1966, he was a Research Assistant at the Electronics Research Laboratory, University of California, Berkeley, investigating antennas for circular polarization and their feeding circuits. In 1967, he joined the University of Mississippi, University, where he is now a Professor of Electrical Engineering. During the academic year 1976-1977, he was a Visiting Professor at the Fakulteta za Elektrotehniko, University of Ljubljana, Yugoslavia. His research and teaching interests are in electromagnetic theory and its applications to microwave circuits and antennas.

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Susumu Kamihashi was born in Shizuoka, Japan, on June 6, 1948. He received the B.S. and M.S. degrees in electrical engineering from Keio University, Yokohama, Japan, in 1971 and 1973, respectively.

Since 1973 he has been with Toshiba Research and Development Center in Kawasaki, where he has been engaged in the research and development of microwave circuit components, especially microwave digital phase shifters.

Mr. Kamihashi is a member of the Institute of Electronics and Communications Engineers of Japan.



Kenneth L. Klohn (M'68) was born in Milwaukee, WI, on May 30, 1935. He received the B.S. degree in chemical engineering from the University of Wisconsin, Madison, WI, in 1958, and the M.S. degree in physics from Monmouth College, West Long Branch, NJ, in 1970.

After serving two years in the U.S. Army Signal Corps as a First Lieutenant, he joined the U.S. Army Electronics Laboratories, Fort Monmouth, NJ, in 1960. Since that time he has been engaged in research and development programs involving semiconductor lasers and microwave and millimeter-wave devices and associated technology. He is presently with the Electronics Technology and Devices Laboratory of the Electronics Research and Development Command, Fort Monmouth, NJ.

Mr. Klohn is a member of the American Physical Society and Sigma Pi Sigma.

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Paul J. Meier (S'55-M'59-SM'69) was born in New York, NY, on April 10, 1936. He received the B.E.E. degree from Manhattan College, New York, NY, in 1958, and the M.S. degree from Long Island University, Brookville, NY, in 1969.

From 1958 to 1965, he was a Development Engineer, and later, a Senior Development Engineer at Wheeler Laboratories, Great Neck, NY. There his work included the study of dielectric-lined and periodically-loaded circular waveguides and their application to phased-array radiators and polarization converters. In 1966, he joined AIL, a division of Cutler-Hammer, Incorporated, Melville, NY, where, as a Project Engineer in the Radar Techniques Department, he was responsible for the development of phased-array antenna elements and ferrite phase shifters. Later at AIL, he served as a Project Engineer in the Applied Electronics Division, on programs resulting in the development of a high-power solid-state switch, an X-band MIC sweeping receiver, and a multibeam quasi-optical millimeter receiver. He is currently a consultant in the Advanced Microwave Systems Department engaged in the development of millimeter integrated circuits.

Mr. Meier is a member of Eta Kappa Nu and the MTT-6 Committee. He is a Past-Chairman of the New York/Long Island Chapter of the MTT Committee.

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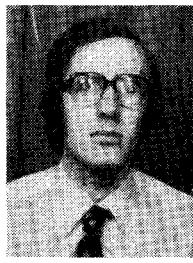


Yoshihiro Konishi (A'61-SM'65) was born in September 1928, in Nara, Japan. He received the B.S. degree in 1951, and the Ph.D. degree in 1961, from Kyoto University, Japan.

He joined the Nippon Hoso Kyokai (NHK, Japan Broadcasting Corporation). He has been working at its Technical Research Laboratory being engaged in research of microwave circuits and systems. From 1962 to 1963, he was at the Microwave Research Institute of the Polytechnic Institute of Brooklyn, Brooklyn, NY, as a Visiting Scholar. At present he is a Principal Researcher and a Deputy Director for research at NHK Technical Research Laboratories. He is a Principal Investigator and a Project Manager of the joint experiment "Advanced Ground Receiving Equipment Experiment (AGREE)" between NASA and NHK. Since 1973, he has also been in charge of the advanced course of microwave engineering for graduate students at Osaka University.

Dr. Konishi is a member of the editorial board of this TRANSACTIONS, a member of the Institute of Electronics and Communication Engineers of Japan, and a member of the Institute of Television Engineers of Japan.

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Brian M. Neale was born in London, England, on October 17, 1952. He received the B.Sc.(Hons.) degree in electronic engineering from the University College of North Wales, Bangor, in 1975.

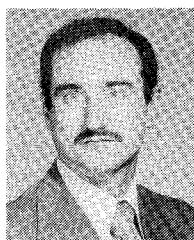
He spent a year with Marconi Communications Systems Limited. He is now employed as a Research Assistant at the University College of North Wales, Bangor.

Mr. Neale is an Associate Member of the Institution of Electrical Engineers, London, England.

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Reinhard H. Knerr (M'71-SM'73), for a photograph and biography please see page 705 of this issue.

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Thomas F. McMaster (M'77) was born in New York City, NY, in 1944. He received the B.S.E.E. degree from Drexel University, Philadelphia, PA, in 1972, and the M.S.E.E. degree from the Polytechnic Institute of Brooklyn, Brooklyn, NY, in 1974.

He joined Bell Laboratories in 1972, where he has worked on the development of millimeter-wave mixers and waveguide components. He is presently engaged in the systems analysis of wideband, long haul, analog, coaxial cable communication systems, and satellite systems.

Mr. McMaster is a member of Eta Kappa Nu and Phi Kappa Phi.



Jeffrey A. Paul received the B.S. degree from Carnegie-Mellon University, in 1974, and the M.S. degree in electrical engineering from Stanford University, in 1976.

In 1974, he joined the Hughes Aircraft Missile Systems Division, Hughes Aircraft Co., in Canoga Park, CA, where he was involved with hardware evaluation and design for airborne radar systems and missiles. After completing his graduate work, he joined the Hughes Electron Dynamics Division in Torrance, CA. He is currently involved in research and development of millimeter-wave dielectric image-guide integrated circuits and integrated subsystems.



Zoja Paunovic was born in Split, Yugoslavia, on May 3, 1949. She received the Electrical Engineers degree (Dipl. Ing.) from the University of Zagreb, Yugoslavia, in 1975.

From 1975 to 1976 she worked at the University of Split as an Assistant. Since 1976 she has been at ISKRA-IPT, the Electronics Research Laboratory, Ljubljana, Yugoslavia, working on the research and development of microwave devices.

Professor at the Ruhr-Universität, Bochum, Germany. He is now a Full Professor of electrical engineering at the Fernuniversität, Hagen, Germany. His main research interests include network theory, integrated optics, and microwave theory.

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Stane Pavlin was born in Ljubljana, Yugoslavia, in 1941. He received the Electrical Engineers degree (Dipl. Ing.) from the University of Ljubljana, Yugoslavia, in 1965.

He worked in the Microwave Department of the Iskra Research Institute as a Research Engineer on stripline and microstrip circuits, VHF and microwave filters, and on solid-state components for communication receivers. From 1970 his research dealt with the development of radio-relay communication systems for transmission of FDM signals. Presently he is a Senior Engineer in a Microwave Group of the Department for Radio-Relay Communications at the Iskra Institute researching transmission technique.



Adolph Presser (M'59) received the B.E.E. degree from the Institute of Technology, Vienna, Austria, in 1950, and the M.E.E. degree from the Polytechnic Institute of Brooklyn, New York, NY, in 1961.

In 1959, he joined the RCA Microwave Technology Center at the David Sarnoff Research Center in Princeton, NJ, as a Member of the Technical Staff. As a Member of the Microwave Electronics Section of this group, he has been engaged in the development of various solid-state microwave components and of many microwave integrated circuits. His work includes the design and development of parametric amplifiers, tunnel-diode amplifiers, power sources for ECM systems and telemetry transmitters, Doppler radar modules, and, more recently, bipolar transistor-and-FET-linear power amplifiers. He is the author and coauthor of many papers in the field of solid-state components and is the holder of several U.S. patents.

Mr. Presser received the RCA Laboratories Achievement Award in 1965 and 1976.

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Sotirios G. Pintzos (M'74) was born in Markopoulou Attikis, Greece, on November 24, 1944. He received the Dipl. Ing. degree in electrical engineering from the Technische Universität Braunschweig, Braunschweig, Germany, and the Dr. Ing. degree from the Ruhr-Universität, Bochum, Germany.

Since 1972 he has been a Research Assistant at the Institut für Hoch- und Höchstfrequenztechnik of the Ruhr-Universität, Bochum, where he has been engaged in teaching and research

on electromagnetic theory and microwave integrated circuits.

Mr. Pintzos is a member of the NTG and the VDE.



Jean-Pierre Ramy was born in Cahors, France, on April 22, 1946. He received the Diploma, "Master of Chemistry," and the Ph.D. degree, "Nuclear Physics Doctor Degree" from the Paul Sabatier University of Toulouse, France, in 1969 and 1971, respectively.

Since joining the "Centre National d'Etudes des Télécommunications," Lannion, France, in 1973, his research activities have been in hybrid microelectronic technology development.

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T. E. Rozzi (M'66-SM'74) was born in Italy, in September 1941. He received the degree of dottore in physics from the University of Pisa, Italy, in 1965, and the Ph.D. degree in electronic engineering from Leeds University, England, in 1968.

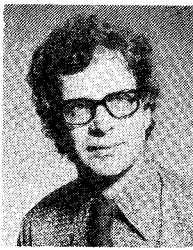
From 1968 to 1978 he was a Research Scientist at the Philips Research Laboratories, Eindhoven, The Netherlands. There he worked in various areas of circuit and waveguide field theory, in particular, waveguide discontinuities. In 1975 he spent a year at the Electromagnetics Laboratory, Department of Electrical Engineering, University of Illinois at Urbana, Urbana. Since October 1978, he holds a Chair in the Department of Electrical Engineering and Electronics of the University of Liverpool, England. At present his interests lie in the propagation and scattering of waves in passive and active planar dielectric waveguides for optical communications.

Dr. Rozzi was awarded the IEEE Microwave Prize in 1975.



Reinhold Pregla (M'76) was born in Luisenthal, Silesia, Germany, on August 5, 1938. He received the Dipl. Ing. and Dr. Ing. degrees in electrical engineering from the Technische Universität Braunschweig, Braunschweig, Germany, in 1963 and 1969, respectively.

From 1963 to 1969 he was a Research Assistant at the Institut für Hochfrequenztechnik of the Technische Universität, Braunschweig. In 1969 he became a Lecturer at the same University. In 1973 he was appointed Associate Pro-



Martin V. Schneider (M'56-SM'71-F'76) was born in Bern, Switzerland, on October 20, 1930. He received the Diploma in Physics and the Doctorate 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 photo-detectors 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 in the 100-300-GHz frequency range.

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

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Shuichi Shindo was born in Yamanashi, Japan, on June 1, 1946. He received the B.S. and M.S. degrees in electrical engineering from the Tohoku University, Sendai, Japan, in 1969 and 1971, respectively.

He joined the Electrical Communication Laboratory, Tokyo, Japan, in 1971, and has since been engaged in research work on branching filters and other components for satellite communication system. He is now an Engineer of the Yokosuka Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Yokosuka-shi, Kanagawa-ken, Japan. Recently, his major efforts have been directed toward millimeter- and submillimeter-wave components.

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

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Raymond Schnitzler was born in Metz, France, on July 18, 1922. He received the Dipl. in radio engineering from the Ecole Centrale d'Electronique de Paris, France, in 1944.

From 1950 to 1966, he worked at the Commissariat à l'Energie Atomique, Scalay, France, in the High Energy Technology Laboratories. Since joining the Centre National d'Etudes des Télécommunications, Lannion, France, his research activities have been in semiconductors (Schottky diode) and in thin-film technology.

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Klaus Solbach, for a photograph and biography please see page 318 of the April 1978 issue of this TRANSACTIONS.

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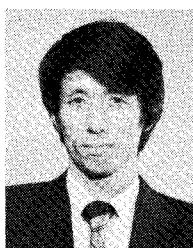


Srigiripuram D. Shamasundara (S'76) was born in Kolar, India, on Ganesh Chaturthi, Vikruti Samvatsara, in 1950. He received the M. Tech. degree in electrical engineering from I.I.T. Kanpur, in 1974.

His main field of interest is transmission line theory.

Mr. Shamasundara won the IEEE Student Paper Contest in India, in 1977.

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Yusuke Tajima was born in Chiba, Japan, on February 19, 1945. He received the B.S. degree in electrical engineering from Tokyo University, Tokyo, Japan, in 1968.

After graduation he joined the Toshiba Research and Development Center in Kawasaki where he has been engaged in the research and development of microwave semiconductor devices and circuit components. From 1973 to 1974 he worked on FET amplifier design as an exchange engineer at Raytheon Research Division in Waltham, MA.

Mr. Tajima is a member of the Institute of Electronics and Communications Engineers of Japan.

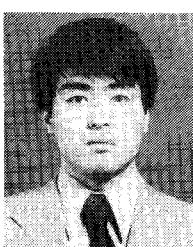
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Don W. Shaw received the Ph.D. degree in physical chemistry, in 1965, from Baylor University, Waco, TX.

Following graduation, he joined the Technical Staff of Central Research Laboratories, Texas Instruments Dallas, TX. Since that time, he has been responsible for development of semiconductor materials for microwave devices and has been engaged in research into fundamental mechanisms of epitaxial growth by chemical vapor transport.

Dr. Shaw is a member of the American Chemical Society, the Electrochemical Society, the American Association for Crystal Growth, and Sigma Xi.



Tohru Takada was born in Iwate, Japan, on October 12, 1950. He received the B.S. degree in electrical engineering from Iwate University, Morioka, Japan, in 1973.

In 1973, he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Musashino, Japan, where he has been engaged in the research and development of millimeter-wave integrated circuits and gallium arsenide diodes.

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



Claude Thebault was born in Antrain sur Couesnon, France, on May 31, 1948.

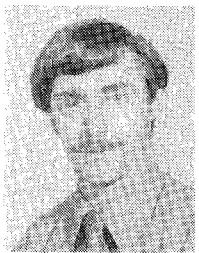
Since joining the Centre National d'Etudes des Télécommunications, Lannion, France, in 1968, his research activities have been in microwave and millimeter-wave integrated circuits.



Hua Quen Tserng (M'70) received the B.S. degree in electrical engineering from the National Taiwan University, Taipei, Taiwan, in 1962, and the M.S. and Ph.D. degrees in electrical engineering from Rice University, Houston, TX, in 1966 and 1968, respectively.

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