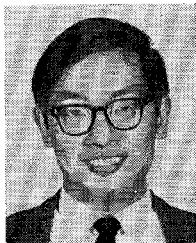


## Contributors

**Peter Benedek** (S'67), for a photograph and biography please see page 561 of the August 1972 issue of this TRANSACTIONS.



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

In 1964 he became affiliated with the National Radio Astronomy Observatory, Charlottesville, Va., as a Research Associate.

In 1966 he joined the Department of Electrical Engineering, University of Waterloo, Waterloo, Ont. During the summer months of 1970 and 1971, he worked on the design studies of supersynthesis arrays in the Radio and Electrical Engineering Division, National Research Council of Canada.



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

While at the University of Wisconsin he investigated specialized electromagnetic boundary value problems using numerical methods. In 1961 he joined the staff of the Electromagnetic Techniques Laboratory of the Stanford Research Institute, Menlo Park, Calif., where he was engaged in applied research and development of a wide variety of microwave and UHF components including filters, multiplexers, directional couplers, impedance matching networks, equalizers, and multipliers. Since January 1972 he has been with the Faculty of Electrical Engineering and the Communications Research Laboratory of McMaster University, Hamilton, Ont., Canada. His current research interests include active filters and computer-aided design.

Dr. Cristal is a member of the IEEE Professional Group on Microwave Theory and Techniques and the IEEE Professional Group on Circuit Theory.

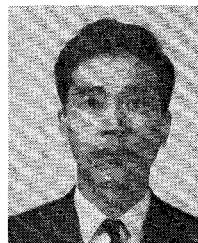


**Sidney Frankel** (A'37-SM'44-F'57) received the E.E., M.S., and Ph.D. degrees, the latter in mathematics, all from Rensselaer Polytechnic Institute, Troy, N. Y., in 1931, 1934, and 1936, respectively.

From 1937 to 1960 he was employed in industry as a development engineer and manager in the fields of radio communication and microwave radar. Since 1960 he has served as a consultant engaged in analytic studies associated with electromagnetic sys-

tems. He has taught mathematics at Rensselaer Polytechnic Institute, extension courses in electromagnetic theory at Brooklyn Polytechnic Institute, Brooklyn, N. Y., and courses on multiconductor RF transmission systems at the University of California, as well as various research laboratories. He holds nine patents, has published 14 papers and numerous consulting reports, and was a contributing editor to *Reference Data for Radio Engineers*.

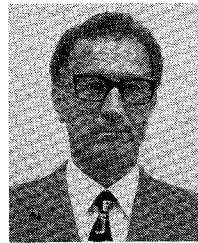
Dr. Frankel is a member of Sigma Xi and Eta Kappa Nu.



**Otozo Fukumitsu** was born in Fukuoka, Japan, on December 29, 1926. He graduated from the Communication Engineering Course, and received the B.S., the M.S., and Dr. Eng. degrees, all from Kyushu University, Fukuoka, Japan, in 1953, 1955, and 1963, respectively.

From 1958 to 1964 he was an Assistant Professor at Kumamoto University, Kumamoto, Japan, and from 1964 to 1971 he was an Assistant Professor at Kyushu University. He has been a Professor at Kyushu University since 1971. His main areas of interest are microwave transmission lines, beam waveguides, and integrated optics.

Dr. Fukumitsu is a member of the Institute of Electronics and Communication Engineers of Japan and the Institute of Electrical Engineers of Japan.



**Rudolf P. Hecken** (M'69) received the diploma in electrical engineering, and the Ph.D. degree, both from Technische Hochschule, Aachen, Germany, in 1959 and 1964, respectively.

At the High-Frequency Institute in Aachen he was engaged in teaching and research on pulse techniques from 1959 to 1962. From 1962 to 1965 he worked there on He-Ne gas lasers. From 1965 to 1968 he was Research and Development Engineer on RF accelerating structures for a synchrocyclotron at the European Center for Nuclear Research (CERN) in Geneva, Switzerland. In 1968 he joined Bell Telephone Laboratories in North Andover, Mass., as a Member of the Technical Staff doing development work on microwave networks and components for a millimeter waveguide transmission system. Since May 1971 he has been Supervisor of a transmission networks group.

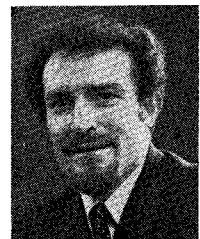


**Shichiro Miki** (A'57) was born in Wakayama, Japan, on March 26, 1910. He received the B.S. and Ph.D. degrees in electrical engineering from the University of Tokyo, Tokyo, Japan, in 1936 and 1950, respectively.

From 1936 to 1966 he worked at the Technical Research Laboratories of NHK, where he was engaged in research on the development of VHF, UHF, and microwave circuits and components. Since 1966 he has held the position of Professor in the Department of

Electronic Engineering at Nagoya University, Nagoya, Japan. His present interests are in microwave delay lines and circuits using ferrite crystals.

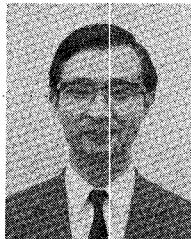
Dr. Miki is a member of the Institute of Electronics and Communication Engineers of Japan.



**J. David Rhodes** (M'67) was born in Doncaster, Yorkshire, England, on October 9, 1943. He received the B.Sc. and Ph.D. degrees in electrical engineering from the University of Leeds, Leeds, England, in 1964 and 1966, respectively.

From 1966 to 1967 he was a Research Fellow in the Department of Electrical and Electronic Engineering, Leeds University. He then joined Microwave Development Laboratories Inc., Natick, Mass., as a Senior Research Engineer. He is currently a Reader at Leeds University and is also a consultant in microwave engineering to Microwave Development Laboratories, U.S.A., and Ferranti Ltd., Great Britain. In 1969 he was awarded the Microwave Prize by the professional group on Microwave Theory and Techniques, in 1970 the IEEE Browder J. Thompson Award, and in 1971 the J. J. Thompson Award from the I.E.E. London.

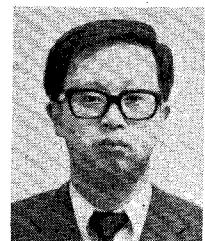
Mr. Tanaka is a member of the Institute of Electronics and Communication Engineers of Japan and the Japan Society of Applied Physics.



**Masayoshi Umeno** was born in Nara, Japan, on March 10, 1938. He received the M.S. degree in electronic engineering from the Tokyo Institute of Technology, Tokyo, Japan, in 1962, and the Ph.D. degree, also in electronic engineering, from Nagoya University, Nagoya, Japan, in 1967.

He is currently an Associate Professor in the Department of Electronic Engineering at Nagoya University. He has been engaged in research on the interaction of electromagnetic waves (laser and microwave) with semiconductors and ferrimagnets. He received research grants for his studies from Hattori Hokokai in 1967 and 1968, from Nishina Kinen in 1969, from Kurata in 1970, and from RCA in 1971.

Dr. Umeno is a member of the Japan Society of Applied Physics, the Physical Society of Japan, the Institute of Electronics and Communication Engineers of Japan, and the Information Processing Society of Japan. In 1967 he received the first Yonezawa Award of the Institute of Electronics and Communication Engineers of Japan.



**Masaru Shibukawa** was born in Saga, Japan, on August 29, 1947. He received the B.S. degree and the M.S. degree in electronics, both from Kyushu University, Fukuoka, Japan, in 1970 and 1972, respectively.

He is now with the Central Research Laboratory, Hitachi Co. Ltd., Tokyo, Japan.

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

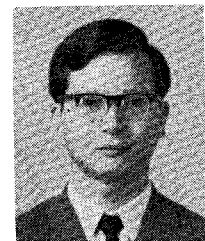


**Sien-chong Wu** (S'68) was born in Palembang, Indonesia, on March 7, 1942. He received the B.S.E.E. degree in 1965 from the National Taiwan University, Taipei, Taiwan, Republic of China, and the M.A.Sc. degree in 1968 from the University of Waterloo, Waterloo, Ont., Canada. He is currently working toward the Ph.D. degree at the University of Waterloo.

From 1965 to 1966 he was a Teaching Assistant in the Faculty of Engineering, Chiao Tung University, Hsin-Chu, Taiwan. Since 1966 he has been with the Antenna and Microwave Laboratory, University of Waterloo, as a Research Assistant.



**P. Silvester** (S'60-M'64), for a photograph and biography please see page 562 of the August 1972 issue of this TRANSACTIONS.



**Kazumasa Tanaka** was born in Fukuoka, Japan, on September 27, 1941. He received the B.S. degree and the M.S. degree in communication engineering both from Kyushu University, Fukuoka, Japan, in 1965 and 1967, respectively.

From 1967 to 1969 he was a Research Assistant at Kyushu University. From 1969 to 1971 he was a Lecturer in the Department of Electrical Engineering, Nagasaki University, Nagasaki, Japan. He is presently an Assistant Professor at Nagasaki University.



**Toshio Yoshida** was born in Nagoya, Japan, on June 7, 1944. He received the M.S. degree in electronic engineering from Nagoya University, Nagoya, Japan, in 1970.

He is currently with the Department of Electronic Engineering at Nagoya University. He has been engaged in research on the microwave properties of ferrites and the application of the numerical computation to the electromagnetic boundary problems.

Mr. Yoshida is a member of the Institute of Electronics and Communication Engineers of Japan, the Physical Society of Japan, and the Information Processing Society of Japan.