Contributors

Fritz Arndt was born in Constance, Germany, on April 30, 1938. He received the Dipl.-Ing. and the Dr.-Ing. degrees from the Technical University at Darmstadt, Germany, in 1964 and 1969, respectively.

Since 1964 he has held an Assistantship at the Institut für Hochfrequenztechnik, Technical University at Darmstadt. He works in the field of microwave theory and techniques. His recent work has been on problems of directional couplers and transmission-line pulse techniques. He is currently working toward a habilitation in electrical engineering at the Technical University at Darmstadt.

Dr. Arndt is a member of the Verband Deutscher Elektrotechniker and the Nachrichtentechnische Gesellschaft.

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Alfred J. Bahr (S'55–M'65) was born in San Antonio, Tex., on May 21, 1935. He received the B.S. degree in electrical engineering (magna cum laude) from San Jose State College, San Jose, Calif., in 1958 and the M.S. and Ph.D. degrees, both in electrical engineering, from Stanford University, Stanford, Calif., in 1959 and 1964, respectively.

While at Stanford, he held a National Science Foundation Cooperative Fellowship during the years 1960 and 1961, and from 1961 to 1964 he was a Research Assistant at the W. W. Hansen Microwave Laboratory, where he worked in the field of high-power traveling-wave tubes. From 1964 to 1965 he was a Visiting Research Fellow in the Department of Electrical Engineering, Sheffield University, Sheffield, England, where he was engaged in research on the use of photoelectric mixing of coherent light to produce millimeter waves. In September 1965 he returned to Stanford University as a Research Associate in the Stanford Electronics Laboratory. There he worked on theoretical beam-plasma interaction problems and the theory of internally modulated ring lasers. In September 1966 he joined the staff of Stanford Research Institute, Menlo Park, Calif., where he is presently engaged in work on microwave acoustics; in particular, thin-film transducers, acoustic filters, and surface-wave devices.

Dr. Bahr is a member of Tau Beta Pi, Phi Kappa Phi, Phi Eta Sigma, Sigma Xi, and the IEEE Groups on Electron Devices, Microwave Theory and Techniques, and Sonics and Ultrasonics. He is presently Chairman of the G-MTT Technical Committee on Microwave Acoustics and was the guest editor of a Special Issue on Microwave Acoustics published in November, 1969.

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Thomas G. Bryant (S'68–M'68) was born in Rockport, Me., on September 2, 1940. He received the B.S.E.E. and M.S.E.E. degrees from the University of Maine, Orono, in 1966 and 1968, respectively.

In 1968 he joined the staff of the Array Radars Group of the Massachusetts Institute of Technology Lincoln Laboratory, Lexington.

Mr. Bryant is a member of Tau Beta Pi, Eta Kappa Nu, and Phi Kappa Phi.

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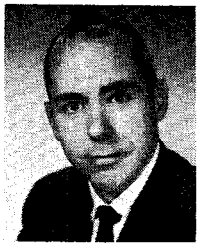

Keith S. Champlin (S'56–M'59) was born in Minneapolis, Minn., on August 20, 1930. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Minnesota, Minneapolis, in 1954, 1955, and 1958, respectively.

After serving in the U. S. Army Signal Corps in 1951 and 1952, he was associated with the Department of Physics, University of Minnesota, and with Remington Rand UNIVAC. Both positions dealt with applications of radio telemetry. As a graduate student, he was engaged in research on noise in semiconductors, first as Research Assistant and later as Research Fellow. His thesis work was in the field of fluctuations in p–n junction devices. He is currently Professor of Electrical Engineering at the University of Minnesota and is directing research on interactions of microwaves and ultramicrowaves with semiconductors. During 1963 he served as Exchange Professor at the Laboratoire de Physique, Ecole Normale Superieure, Universite de Paris, France.

Dr. Champlin is recipient of the Distinguished Teaching Award granted by the Institute of Technology. He is a member of Tau Beta Pi, Eta Kappa Nu, Gamma Alpha, and Sigma Xi.

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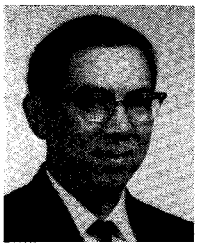

Fung-Yuel Chang (M'68) was born in Canton, China, on June 2, 1936. He received the B.S. degree in electrical engineering from Cheng Kung University, Taiwan, China, in 1959, the M.S. degree in electronics from the National Chiao Tung University, Taiwan, in 1961, and the M.S. and Eng. Sc.D. degrees, both in electrical engineering, from Columbia University, New York, N. Y., in 1964 and 1968, respectively.

In 1964 he was a Teaching Assistant in the Department of Electrical Engineering, Columbia University. He was also a recipient of a Columbia Fellowship in 1964. From 1965 to 1968 he was a Research Assistant in the Hudson Laboratories of Columbia University. Since June 1968 he has been with the Components Division, East Fishkill Facility, IBM Corporation, Hopewell Junction, N. Y. His areas of interest include distributed RC networks, coupled transmission lines, integrated circuits, and computer-aided network design.

Dr. Chang is a member of Sigma Xi.

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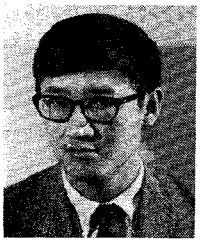

Gene Chao (S'64–M'65) was born in Shanghai, China, on September 1, 1942. He received the B.S. degree from the University of California, Berkeley, in 1965, the M.S. degree from San Jose State College, San Jose, Calif., in 1967, and is currently a candidate for the Ph.D. degree at Stanford University, Stanford, Calif., all in electrical engineering.

From 1965 through 1969 he was with Dalmo Victor Company, Belmont, Calif., where he was engaged in microwave com-

ponent development and system design. Since 1967 he has been a Research Assistant at Stanford University, presently at the Microwave Laboratory, W. W. Hansen Laboratories of Physics, where he is working in the area of time-variant microwave signal processing with surface acoustic waves.

Mr. Chao is a member of Sigma Xi.

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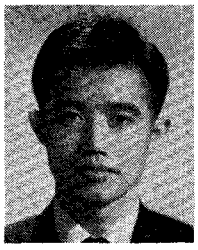

Chao-Chun Chen was born in Taiwan, China, on January 10, 1935. He received the B.S. degree in electrical engineering from National Taiwan University, Taiwan, China, in 1958 and the M.S. and Ph.D. degrees from the University of Michigan, Ann Arbor, in 1964 and 1968, respectively.

He was an Electronics Officer in the Chinese Air Force from 1959 to 1960 and a Plant Engineer at Taiwan Cement Company, Taiwan, from 1960 to 1963. He came to the United States in 1964 and was a part-time Research Assistant at the Radiation Laboratory, University of Michigan, from 1965 to 1968. He joined Hughes Aircraft Company, Culver City, Calif., in 1969.

Dr. Chen is a member of Sigma Xi.

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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. He has since been 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. His latest interests include active filters and computer-aided design.

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

Nikolai Eberhardt was born in Wesenberg, Esthonia, on July 2, 1930. He received the diploma in physics from the University of Munich, Germany, in 1957 and the degree of Dr. rer. nat. from the Munich Institute of Technology, Germany, in 1962.

From 1956 to 1962 he was with the Microwave Tube Department of the Siemens and Halske Laboratories, Munich, doing research work especially in connection with ionic effects in electron beams. Since 1962 he has been teaching in the Department of Electrical Engineering, Lehigh University, Bethlehem, Pa., where he is now Professor. His main areas of interest are field theory and the theory of ferrite microwave devices.

Dr. Eberhardt is a member of Eta Kappa Nu.

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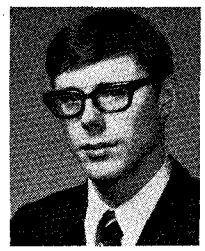
Leopold B. Felsen (S'47–A'53–M'54–SM'55–F'62) was born in Munich, Germany, on May 7, 1924. He received the B.E.E., M.E.E., and D.E.E. degrees from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1948, 1949, and 1952, respectively.

He came to the United States in 1940, and during World War II he was concerned with work on electronic ballistics calibration devices in the U. S. Army. Since 1948 he has been with the Polytechnic Institute of Brooklyn, first with its Microwave Research Institute and presently with its Department of Electrophysics where he holds the position of Professor. On a leave of absence during the academic year 1960–1961 he served as a Liaison Scientist with the London Branch of the Office of Naval Research. His research work has dealt with a variety of areas in electromagnetic radiation and diffraction theory, and his present interest is centered primarily on quasi-optic techniques and on wave problems in plasmas and plasma-like media. He has been teaching graduate courses on various topics in electromagnetic theory, and during the summer of 1967 he was a Visiting Professor at the University of Colorado, Boulder. During September 1967 he was in Russia as an invited guest of the Soviet Academy of Sciences for the purpose of lecturing and scientific discussion. He was an Associate Editor of *Radio Science.*

Dr. Felsen is a Vice Chairman of Commission VI of the International Union of Radio Science and a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi. From 1962 to 1965 he was an Adcom member of the IEEE G-AP.



Gary H. Glover (S'66–M'68) was born in Minneapolis, Minn., on August 4, 1942. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Minnesota, Minneapolis, in 1964, 1966, and 1969, respectively.

While he was at the University of Minnesota his research was concerned with millimeter wave propagation through solid-state magnetoplasmas. He is now with the General Electric Research and Development Center, Schenectady, N. Y., where his present interests are hot electron transport phenomena in GaAs.

Dr. Glover is a member of Eta Kappa Nu.

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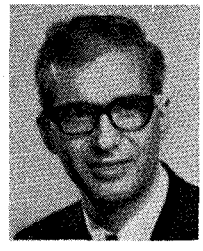

Joseph Helszajn (M'64) was born in Brussels, Belgium, in 1934. He received the Full Technological Certificate of the City and Guilds of London Institute from the Northern Polytechnic, London, in 1955, the M.S.E.E. degree from the University of Santa Clara, Santa Clara, Calif., in 1964, and the Ph.D. degree from the University of Leeds, Leeds, England, in 1969.

He has held a number of positions in the microwave industry. From 1964 to 1966 he was Product Line Manager at Microwave Associates, Inc., Burlington, Mass. Currently, he is working as a consultant. He is the author of about 20 papers and the book, *Principles of Microwave Ferrite Engineering* (Wiley). In 1968 he was awarded the Insignia Award of the City and Guilds of London Institute.

Dr. Helszajn is a fellow of the Institution of Electronic and Radio Engineers (England).

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Vincent V. Horvath (S'61) was born in Bethlehem, Pa., on October 21, 1942. He received the B.S. and M.S. degrees in electrical engineering from Lehigh University, Bethlehem, Pa., in 1964 and 1966, respectively, where he is currently a candidate for his Ph.D. de-

gree. His specialization is in the area of optics and electromagnetics.

From 1966 to 1968 he was with the General Electric Research and Development Center, Schenectady, N. Y., where he was engaged in work in coherent optical data processing and holography.

Mr. Horvath is a member of Eta Kappa Nu.

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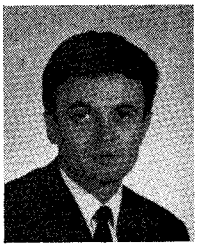

R. H. Knerr was born in Pirmasens, Germany, on February 18, 1939. He received an undergraduate degree from the Technische Hochschule, Aachen, Germany, in 1960, the Dipl.-Ing. degree from the E.N.S.E.E.H., Toulouse, France, in 1962, and the Ph.D. degree from Lehigh University, Bethlehem, Pa., in 1968.

He was a Graduate Assistant, NATO-Scholar, and Instructor in the Department of Electrical Engineering, Lehigh University, where he did research in wave propagation in nonuniformly biased microwave ferrites. From 1963 to 1965 he was concerned with the problem of plasma oscillations in solids. He is presently a member of the Solid State Microwave Device Department, Bell Telephone Laboratories, Allentown, Pa.

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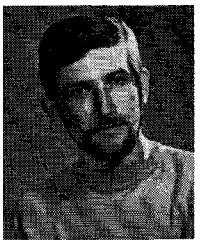

Jan G. Kretzschmar was born in Oostende, Belgium, on June 24, 1942. He received the Electrical Engineering degree and the certificate for Nuclear Physics from the Katholieke Universiteit Leuven (K.U.L.), Belgium, in 1965 and 1966, respectively. In 1969 he received the Doctor in Applied Sciences degree from the same University. His dissertation was on elliptical waveguides and cavities.

Since 1965 he has worked as a Research Assistant in the Microwave field at the Katholieke Universiteit Leuven.

Dr. Kretzschmar is a member of the Koninklijke Vlaamse Ingenieursvereniging (K.V.I.V.).

Ramesh C. Kumar was born in Rawalpindi, West Pakistan, on June 19, 1938. He received the B.Sc. degree from the University of Agra, Agra, India, in 1959 and the M.Sc. Technology degree in electronics and radio engineering from the J.K. Institute of Applied Physics and Technology, University of Allahabad, Allahabad, India, in 1962.

After serving briefly in the Indian Air Force as a Pilot Officer (Technical), he joined the National Physical Laboratory, New Delhi, as a Senior Research Fellow. Here he worked on microwave devices and techniques. Since early 1966 he has been working in the Central Electronics Engineering Research Institute, Pilani, India, as a Scientist. He is mainly engaged in the work relating to microwave devices and techniques and microwave components such as parametric amplifiers, ferrite stripline circulators, flexible corrugated waveguides, etc. Under his supervision more than twenty different microwave components are being batch-produced. He has a number of research papers to his credit, published in Indian and foreign journals.

Mr. Kumar is a member of the Society of Electronic Engineers, University of Allahabad, and also of the Group on Microwave Components (Government of India).

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John D. Larson, (S'61–M'63) was born in Klamath Falls, Ore., on January 28, 1940. He received the S.B.E.E. degree from Massachusetts Institute of Technology, Cambridge, and the M.S.E.E. degree from Stanford University, Stanford, Calif., in 1962 and 1964, respectively, and is now completing the Ph.D. degree at Stanford University.

From 1962 to 1967 he was employed as a Research Engineer with Varian Associates, where he worked in the development of klystron stabilizing cavities and EPR spectrometers. Since 1967 he has held the position of Research Assistant in the Microwave Laboratory, Stanford University, where he has carried on research in the generation and detection of bulk-mode and Rayleigh-mode acoustic waves at microwave frequencies.

Mr. Larson is a member of Sigma Xi.

Stewart J. Maurer (S'64–M'68) was born in N. Y., on November 21, 1933. He received the B.E.E. and M.E.E. degrees from New York University, New York, N. Y., in 1956 and 1958, respectively, and the Ph.D. degree in electrical engineering from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1968.

From 1954 to 1956 he was in the U.S. Army Signal Corps as a radar repairman at White Sands Proving Grounds, New Mex. He was a Research Engineer at Hazeltine Research Corporation, Plainview, N. Y., from 1958 to 1960, investigating signal compression and parametric devices. From 1960 to 1963 he was a Lecturer in the Department of Electrical Engineering, City College of New York, N. Y. Since 1963 he has been with the Department of Electrical Engineering, Polytechnic Institute of Brooklyn, and is at present an Assistant Professor there.

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

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John McStay was born in Lisburn, Northern Ireland, on February 21, 1939. He received the B.Sc. degree in physics and the M.Sc. degree in electrical engineering from Queen's University, Belfast, Northern Ireland, in 1960 and 1962, respectively.

During 1962 and 1963 he was a microwave engineer at Short Brothers and Harland, Belfast. Since then he has been a Lecturer in Electronic Engineering at the University of Leeds, England, where he is currently supervising research on aspects of nonlinear microwave ferrites and also microwave instabilities in bulk negative-resistance semiconductors.

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Thomas M. Reeder (S'59–M'69) was born in Elmhurst, Ill., on April 17, 1938. He received the B.S.E.E. degree from the University of Illinois, Urbana, in 1960 and the M.S.E.E. and Ph.D. degrees from Stanford University, Stanford, Calif., in 1961 and 1965, respectively.

From 1962 to 1965 he was a Research Assistant at the Stanford Microwave Laboratory, where he did research on the amplitude and phase characteristics of high-power traveling wave tubes. In 1965 he joined the Electron Devices Group, Standard Telecommunications Laboratory, Harlow, England, as a Research Engineer. There he was in charge of the microwave acoustics program, setting up facilities for thin-film transducer fabrication and experimental analysis. After returning to the United States in 1967, he continued his studies in microwave acoustics at Microwave Electronics Corporation, Palo Alto, Calif., where he was responsible for research and development of low-loss broad-band matching networks for thin-film transducers. In the fall of 1968 he rejoined the Stanford Microwave Laboratory as a Research Associate, and since that time has been engaged in research on acoustic surface wave delay lines and amplifiers.

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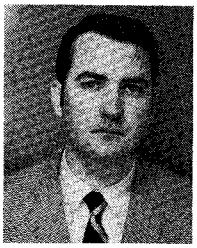

James M. Roe (M'69) was born in Little Rock, Ark., on February 27, 1943. He received the B.S. degree in physics from the University of Oklahoma, Norman, in 1964 and the M.S. degree in electrical engineering from Washington University, St. Louis, Mo., in 1969.

He joined the U. S. Naval Weapons Laboratory, Dahlgren, Va., in 1964, where he worked on electromagnetic compatibility problems in the surface-to-air missile systems. In 1965 he joined McDonnell Douglas Corporation in St. Louis, Mo., where he worked on varactor frequency multipliers in millimeter wavebands. He has also worked with avalanche and Gunn/LSA microwave oscillators. Currently, he is investigating high-power RF effects on semiconductor devices.

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Fred J. Rosenbaum (S'57–M'63–SM'70) was born in Chicago, Ill., on February 15, 1937. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1959, 1960, and 1963, respectively.

While at the University of Illinois he conducted research on ferrites and Cerenkov radiation. In 1963 he joined the Research Division of McDonnell Aircraft Corporation, St. Louis, Mo., where he worked on masers and dielectric resonators. In 1965 he became a member of the faculty of Washington University, St. Louis, Mo., where he is now an Associate Professor of Electrical Engineering. At the university he directs graduate research in the areas of microwave circuit design, the Gunn effect, microwave acoustics, optical demodulation, and microwave ferrites.

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Allan W. Snyder was born in Philadelphia, Pa., on November 23, 1940. He received the B.S. degree in electrical engineering from Pennsylvania State University, University Park, in 1963, the S.M. degree in electrical engineering from Massachusetts Institute of Technology, Cambridge, in 1965, and the M.S. degree in applied mathematics and physics from Harvard University, Cambridge, Mass., in 1967. He is working toward the Ph.D. degree from the University of London, University College.

From 1960 to 1961 he was employed by Peter Kiewitt & Sons for a communications Study on the Dew Line Ice Cap Project in northern Greenland. During 1962 and 1963 he worked with the Ionospheric Research Laboratory of Pennsylvania State University on problems of ionospheric inhomogeneity and its relation to wave propagation. He joined the Applied Research Laboratory of Sylvania Electronic Systems, Waltham, Mass., in 1963 where until 1968 he investigated a variety of electromagnetic theory problems including a theoretical study of the electromagnetic properties of visual receptors and their relationship to color vision. He was a Consultant to the Applied Research Laboratory during 1968 and has been a Consultant to the Post Office Research Department of Great Britain, Dollis Hill, London, and the Standard Telecommunications Laboratory, Harlow, England, on the long distance fiber optic communication project. At present he is with Yale University, New Haven, Conn.

Mr. Snyder is a member of Sigma Xi.

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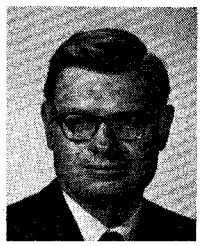

Timothy N. Trick (S'63–M'65) was born in Dayton, Ohio, on July 14, 1939. He received the B.S. degree in electrical engineering from the University of Dayton, Dayton, Ohio, in 1961 and the M.S. and Ph.D. degrees in electrical engineering from Purdue University, Lafayette, Ind., in 1962 and 1966, respectively.

From 1961 to 1962 he held a Sloan Foundation Fellowship and from 1962 to 1963, an IBM Fellowship. From 1963 to 1965 he was an Instructor in the Department of Electrical Engineering, Purdue University, and from 1965 to 1970 he was Assistant Professor of Electrical Engineering and Research Professor of the Coordinated Science Laboratory, University of Illinois, Urbana. Presently he is an Associate Professor, University of Illinois and a Consultant for the Interscience Research Institute. His research interests include the computer-aided design of circuits and the stability of circuits.

Dr. Trick is a member of Sigma Xi, Tau Beta Pi, and Pi Mu Epsilon.

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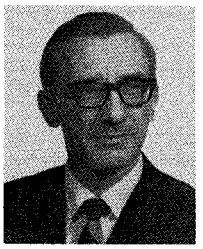

Jiri Vlach (SM'67) was born in Prague, Czechoslovakia, on October 5, 1922. He received the equivalent of the M.S. and Ph.D. degrees in electrical engineering from Prague Technical University, Prague, Czechoslovakia, in 1947 and 1957, respectively.

He joined the Research Institute of Radiocommunications, Prague, in 1948 and has been involved in the areas of antenna design, direction finding, multiplex communication, and network theory. He taught at Prague Technical University for several semesters. From 1967 to 1969 he was Visiting Professor in the Department of Electrical Engineering at the University of Illinois, Urbana. He is presently Professor at the University of Waterloo, Waterloo, Ont., Canada.

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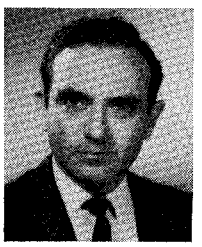

Jerald A. Weiss (SM'61) was born in Cleveland, Ohio, on June 9, 1922. He received the A.B. and M.A. degrees in physics in 1949, and the Ph.D. degree in physics in 1953 from the Ohio State University, Columbus.

From 1953 to 1960 he was a Member of the Technical Staff at the Bell Telephone Laboratories, Inc., Murray Hill, N. J., engaged in ferrite-device development. In 1958 he was made Supervisor of his ferrite-device group. In 1960 he joined in the founding of

Hyletronics Corp. at Burlington, Mass., engaged in the development and manufacture of microwave solid-state components and subsystems. In 1962 he was appointed to the faculty of the Department of Physics at Worcester Polytechnic Institute, Worcester, Mass., where he now holds the position of Professor of Physics. Since 1962 Dr. Weiss also has served as consultant to the Array Radars Group at the Massachusetts Institute of Technology Lincoln Laboratory, Lexington, where he is concerned with ferrite components and other problems relating to phased-array system design.

Dr. Weiss is a member of the American Physical Society, Phi Beta Kappa, and Sigma Xi.

Donald K. Winslow (SM'57) was born on September 25, 1914, in Hanford, Calif. He received the A.B. and M.A. degrees in mathematics from the University of California, Berkeley, in 1936 and 1939, respectively; the M.S. degree in meteorology from California Institute of Technology, Pasadena, in 1943; and the M.S. and Ph.D. degrees in physics from Stanford University, Stanford, Calif., in 1954 and 1957, respectively.

From 1938 to 1947 he taught in high schools and junior colleges in California, except from 1942 to 1946, when he was an Officer in the United States Navy. From 1947 to 1951 he was an Assistant Professor of Physics at Fresno State College, Fresno, Calif. From 1951 to 1957 he was a graduate student in physics and a Research Assistant in the Microwave Laboratory, Stanford University. Since 1957 he has been a Research Associate and Research Engineer at the Microwave Laboratory doing research in high-power traveling-wave tubes, microwave properties of ferrites, the interaction of the acoustic waves with laser beams, and microwave acoustics.

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

Microwave Abstracts

Based on technical merit and timeliness, microwave papers in journals published outside the United States have been selected and compiled below, generally with brief abstracts. Reprints of the papers may be obtainable by writing directly to the author or to the source quoted.

—F. G. R. Warren, *Associate Editor for Abstracts*
RCA Limited, Montreal, Canada

Papers from Journals Published in Japan

Compiled by Prof. T. Okoshi, Department of Electronic Engineering, University of Tokyo. Prof. Okoshi points out that, where articles in J. IECEJ *or* Trans. IECEJ, *in Japanese, are referenced, these may be available in English translation, with a few months' delay, in* Electronics and Communications in Japan.

42
Dielectric-Surface-Loaded GaAs Bulk Element, by S. Kataoka (Electronic Device Division, Electrotechnical Laboratory, Tanashi-shi, Tokyo); *J. IECEJ*, vol. 52, pp. 1388–1392, November 1969.

By coating the surface of a planar-type GaAs Gunn device with a dielectric material (e.g., $BaTiO_3$), one suppresses the traveling high-field domain which is usually observed in Gunn oscillators. Such a device can be used as a special-waveform generator or as an amplifier. Basic phenomena and potential applications are discussed. (In Japanese.)

43
Injection-Synchronized Amplifier Circuits, by T. Isobe (Fujitsu Laboratories, Ltd., Kawasaki-shi, Kanagawa); *J. IECEJ*, vol. 52, pp. 1416–1419, November 1969.

An injection-synchronized oscillator can be used as an amplifier for FM or PCM signals. It is especially useful in the microwave region where solid-state amplifiers are available only at small-signal levels. The basic theory, an experimental IMPATT amplifier, and a proposal for an integrated version are described. (In Japanese.)

44
Traveling-Wave-Type Semiconductor Amplifiers, by J. Koyama (The Electrical Communication Laboratory, N.T.T., Musashinoshi, Tokyo); *J. IECEJ*, vol. 52, pp. 1420–1423, November 1969.

Experiments on traveling-wave amplifiers using the growing wave in a GaAs sample are described. The typical characteristics are sample dimensions $0.6 \times 1 \times 0.1$ mm, applied voltage 540 volts, center frequency 1.2 GHz, gain 14 dB, saturation power 2 mW, and 3-dB bandwidth 40 percent. In a capacity-loaded version, a 30-dB gain and a 3.5-mW saturation power are obtained. (In Japanese.)

45
Amplifier and Converter Circuits in Distributed or Constant-*K*-Type Configurations, by J. Nishizawa (Solid State Electronics Research Division, Research Institute of Electrical Communication, Tohoku University, Sendai-shi, Miyagi); *J. IECEJ*, vol. 52, pp. 1423–1426.

Distributed or constant-*K*-type tunnel-diode amplifiers and parametric devices are discussed. The history of the investigations is reviewed, and design theory is presented. (In Japanese.)

46
The Planar Circuit, by T. Okoshi (Department of Electronic Engineering, University of Tokyo, Bunkyo-Ku, Tokyo); *J. IECEJ*, vol. 52, pp. 1430–1432, November 1969.

The planar circuit is a new circuit concept proposed by the author which should be