N1, M1 define the portion of U to be plotted in the y-direction; all U(I, J) for which I falls outside this range will be ignored.

N2, M2 define the portion of U to be plotted, in the x-direction. By using these limits, any part of U, or all of it, may be displayed.

M3 is the number of contours to be plotted with a maximum of 21 different contour values.

LWIDTH is the maximum width of the plot expressed in printer spaces. It cannot exceed 130, and may not be smaller than (M2–N2). The number of spaces actually used will be the largest integer multiple of (M2–N2) smaller than LWIDTH.

IFLAG indicates whether the subroutine is to generate its own values for the array POT(21). If IFLAG=0, an externally supplied set of values is expected; if IFLAG=1, this subroutine finds the largest and smallest values of U, and plots M3 contours spaced equally between these limiting values.

IPRINT permits the potential values corresponding to the printed contours to be printed out. If IPRINT=0, this printout is suppressed; if IPRINT=1, a table of potential values is furnished.

The variable spacing feature has proved very useful in the construction of field maps. For example, if the width of the map, LWIDTH, is chosen to be 5*(M2–N2), the resulting field map is plotted so that it corresponds exactly to a half-inch grid. The capability to map only a portion of the field can be used to plot maps several printer pages wide which are then joined together to produce a large map of the entire region.

To illustrate the operation of the routine, a small equipotential map of a two-wire line is shown in Fig. 1. Note that the circular shape of the contours is preserved in spite of the linear interpolation. The map shown was produced from an array of potential values extending 50 points in the x-direction and 30 points in the y-direction. The width of the map, in printer spaces, was specified as 100.

Contributors

Werner Baechtold was born in Winterthur, Switzerland, on October 1, 1939. He received the Diploma and Ph.D. degree in electrical engineering from the Swiss Federal Institute of Technology, Zürich, in 1964 and 1968, respectively.

From 1965 to 1969 he was working in the Department of Advanced Electrical Engineering of the Swiss Federal Institute of Technology on noise measurements in the L and S bands. Since January, 1969, he has been at the IBM Research Center in Rüschlikon, Zürich.

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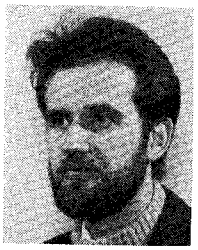

John W. Bandler (S'66–M'66) was born in Jerusalem, Palestine, on November 9, 1941. He received the B.Sc. (Eng.) degree of the University of London in electrical engineering from the Imperial College of Science and Technology, London, England, in 1963, and the Ph.D. degree of the University of London and the Diploma of the Imperial College in 1967. He held a Research Studentship from the Science Research Council at the Imperial College from 1963 to 1966. His work in the Department of Electrical Engineering concerned the stability and optimization of microwave tunnel-diode amplifiers.

He joined the Microwave Diode Applications Group at Mullard Research Laboratories, Redhill, Surrey, England, in 1966, and continued his research in the same field while also performing diode measurements. From 1967 to 1969 he was a Postdoctorate Fellow at the University of Manitoba, Winnipeg, Canada. He was with the Numerical Applications Group in the Electrical Engineering Department working on computer-aided optimization methods and their application to network design. As a Sessional Lecturer from 1967 to 1969 he also lectured on microwave circuits and optimization methods for computer-aided design. He is now an Assistant Professor with the Electrical Engineering Department at McMaster University, Hamilton, Ont., and also an Associate Member of the Applied Mathematics Department.

Dr. Bandler is an Associate of the City and Guilds of London Institute and an associate member of the Institution of Electrical Engineers (London). He is a member of the G-MTT Technical Committee on Computer-Oriented Microwave Practices. He is currently Associate Editor for Computer Program Descriptions of this TRANSACTIONS.

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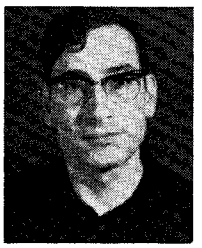

Ray Bulley (S'66–M'68) was born in Cheam, Surrey, England on July 28, 1940. He received the B.Sc. degree in physics from University College, London in 1962, the M.Sc. degree in physics from the University of London in 1965, and the Ph.D. degree in electrical engineering from the University of Sheffield, England, in 1968.

From October 1962 to January 1966 he was employed by Mullard Research Laboratories, Redhill, Surrey, where he worked on parametric amplifier development and the design of a system for the measurement of tensor permeability of ferrites at liquid helium temperatures. Since 1966 he has worked on computer techniques for the solution of waveguide problems and until August, 1969, was a Post Doctoral Fellow in the Department of Electrical Engineering, McGill University, Montreal, Canada. He is now with Bell Telephone Laboratories, Holmdel, N. J.

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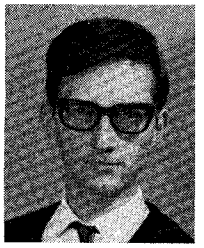

Gregory K. Cambrell (S'68) was born in Adelaide, South Australia, on February 27, 1943. He received the B.E. degree in electrical engineering in 1964 and the B.Sc. degree in mathematical physics in 1966 from the University of Adelaide. He is presently a Research Scholar at Monash University, Victoria, South Australia, where he is working towards the Ph.D. degree in electrical engineering.

He was employed briefly at the Weapons Research Establishment, Salisbury, South Australia, as a Scientific Officer before attending Monash University.

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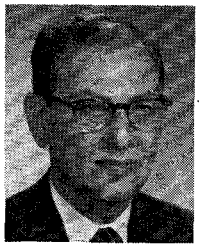
Herbert J. Carlin (M'47–SM'50–F'56) was born in New York, N. Y. He received the B.S. and M.S. degrees from Columbia University, New York, N. Y., and the D.E.E. degree in 1947 from the Polytechnic Institute of Brooklyn, N. Y.

From 1940 to 1945 he was with the Westinghouse Electric Company. He then joined the faculty of the Polytechnic Institute of Brooklyn, where he held the positions of Professor and Head of the Department of Elec-



trophysics. Since 1966 he has been Director of the School of Electrical Engineering, Cornell University, Ithaca, N. Y. His major work and publications have been in the fields of microwave techniques and network theory. He is coauthor of the book, *Network Theory: An Introduction to Reciprocal and Nonreciprocal Circuits*. He was a National Science Foundation Postdoctoral Fellow at the École Normale Supérieure, Paris, France, in 1964–1965.

Dr. Carlin is a member of the AAAS, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi. He is a past Chairman of the IEEE Group on Circuit Theory and is a member of the International Editorial Board of the IEE (London) publication, *Electronics Letters*.

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Cyril T. Carson (SM '61) was born in N. Ireland on April 19, 1928. He received the B.Sc. degree in electrical engineering in 1948, and a Post Graduate Certificate in radio engineering in 1949 at Queen University, Belfast, N. Ireland, and the M.S. degree in electrical engineering from the University of Pennsylvania, Philadelphia, in 1961.

From 1949–1952, he was employed by Marconi Wireless Company where he was engaged in research on CW radar and microwave optics. From 1952–1954, he was with A.W.A., Sydney, Australia, where he was engaged in the development of microwave test equipment. From 1954–1958 he was with the Weapons Research Establishment, Salisbury, South Australia, where he was engaged in research and development on microwave components and antennas. From 1958–1961, he was with the Antenna Division of I. T. E. Circuit Breaker Co. where he was engaged in the development of forward scatter antennas. Since 1961, he has been with the Weapons Research Establishment, where he is employed as a Principal Research Scientist. His professional interests are in the numerical solution of electromagnetic field problems and computer aided design.

Mr. Carson is a member of the Institution of Electrical Engineers (London).

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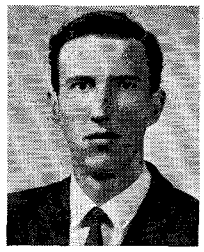
Ivan A. Cermak (S'68) was born in Povazska Bystrica, Czechoslovakia, on December 23, 1940. He received the B.Eng. and M.Eng. degrees in electrical engineering from McGill University, Montreal, Canada, in 1963 and 1967, respectively. He received the Ph.D. degree in electrical engineering in 1969.

From 1963 to 1966 he was with the Canadian Armed Forces, doing development and evaluation work in anti-submarine warfare airborne systems and equipment. He retired from the Forces in 1966 to enter graduate school at McGill University, where he was engaged in research pertaining to the numerical solution of field problems.



Mr. Cermak is a registered Professional Engineer in the Province of Quebec, Canada.

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Gerald H. Cohen (S'48 – A'52 – M'57) was born in Milwaukee, Wis., on October 11, 1922. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Wisconsin, Madison, in 1948, 1949, and 1950, respectively.

In 1943 he joined the M.I.T. Radiation Laboratories, Cambridge, Mass., as a Staff Member where he worked on relay radar. He then joined active service with the U. S. Army Signal Corps and was engaged in radar installation and repair with the 4th Floating Aircraft Repair Unit in the Pacific from 1944 to 1946. From 1948 to 1950 he served as a Research Assistant with the Naval Research Laboratories at the University of Wisconsin, working on the transmission of ultrasonic waves through plates. During the period 1950–1958 he was a Research Consultant for the Taylor Instrument Companies, Rochester, N. Y., where he performed research on the optimal control of processes with dead time and the development of electronic process instrumentation. Since 1958 he has been a Professor of Electrical Engineering at the University of Rochester, Rochester, N. Y. He has also been associated as a member with the System Science Center and the Visual Science Center at the University of Rochester. His recent research and published papers have been in the fields of optimal control, biomedical engineering, and the synthesis of distributed networks and systems.

Dr. Cohen is a member of Sigma Xi, Eta Kappa Nu, and the New York Academy of Science.

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James E. Dalley (S'56–M'57) was born in Kanab, Utah, on June 27, 1922. He received the B.S. degree in radio technology from the Utah State University, Logan, in 1944, and the M.S. and Ph.D. degrees in electrical engineering from the University of Utah, Salt Lake City, in 1957 and 1963.

From 1949 to 1958 he was Head of the Department of Electronics, Weber State College, Ogden, Utah. From 1958 to 1961 he was an Instructor of electrical engineering at the University of Utah, and from 1961 to 1963 he was engaged in microwave research at the same institution. In 1963, he became a Member of the Technical Staff at Bell Telephone Laboratories, Reading, Pa., where he has been engaged in research and development work on microwave transistor amplifiers utilizing thin-film circuits and IMPATT diode oscillator circuits.

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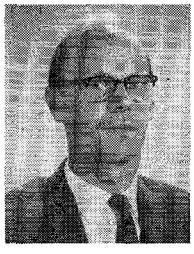

J. Brian Davies was born in Liverpool, England, on May 2, 1932. He received the B.A. degree in mathematics from Jesus College, Cambridge, England, in 1955, and the M.Sc. degree in mathematics in 1957, and the Ph.D. degree in mathematical physics in 1960, both from the University of London, London, England.

From 1955 until 1963 he worked at the Mullard Research Laboratories, Salfords, Surrey, England, except for the period 1958–1960 spent at University College, London. In 1963 he joined the staff of the Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, England. Since October, 1967, he has been on the staff at University College, London, in the Department of Electrical Engineering. His work has been concerned with problems of electromagnetic field theory, and he is currently interested in computer methods of solving such problems.

Dr. Davies is a member of the Institution of Electrical Engineers (London).

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René J. M. Govaerts (S '68) was born in Louvain, Belgium, on January 30, 1937. He received the electrical engineering degree from the Catholic University of Louvain in 1961.

In 1963 he joined the Electronic Research Laboratories of Louvain University as a Research Assistant. Since 1965 he has been doing research work in the microwave field and is preparing for the Ph.D. degree in applied sciences on computer approximations for loaded waveguide structures.

Mr. Govaerts is a member of the Union of Engineers from the University of Louvain and of the Royal Federation of Flemish Engineers.

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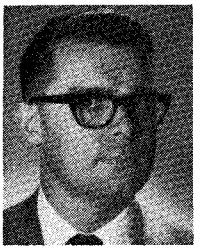

Harry E. Green was born in Adelaide, South Australia, on February 11, 1935. He received the B.E. degree, with first class honors, in electrical engineering, and the M.E. degree from the University of Adelaide, Adelaide, South Australia in 1957 and 1964, respectively. In 1968 he received the Ph.D. degree from the Ohio State University, Columbus.

He served as a Communications Engineer with the Australian Post Master General's Department from 1957 to 1958 when he transferred to the scientific staff of the Weapons Research Establishment, Salisbury, South Australia. In 1966 he was awarded an Overseas Post-Graduate Scholarship by the Australian Commonwealth Public Service Board for study at the Ohio State University. He has now returned to the Weapons Research Establishment where he is currently employed as a Senior Research Scientist. His professional interests are in antennas, microwave optics, and the application of numerical methods to microwave circuit problems.

Dr. Green is a member of the Institution of Engineers (Australia), the Institution of Electrical Engineers (London), and Sigma Xi.

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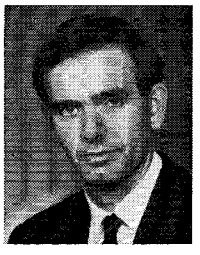

Peter E. Green (M'67) was born in Buckingham, England, on June 1, 1942. He received the B.Sc(Hons.) and the Ph.D degrees in electrical engineering from the University of Leeds, Yorkshire, England, in 1963 and 1966, respectively.

From 1963 to 1964 he was Technical Director of KRS (electronics) England. He then returned to Leeds University as a Research Assistant to work on leaky waveguide microwave antennas. The results of this work were submitted for his Ph.D thesis. From 1966 to 1968 he was employed by Microwave Assoc., Burlington, Mass., as a Research Engineer working primarily on the computer-aided design of microwave components. Since 1968 he has been with Sanders Associates, Inc., Nashua, N.H. Initially he was with the Microwave Division, where he was responsible for providing computer-aided design and fabrication support for the division. Since early 1969 he has provided this support on a company wide basis, now being a member of the Corporate Computing Sciences Division. His principal interest is computer-aided circuit analysis.

Dr. Green is an associate member of the Institution of Electrical Engineers (London).

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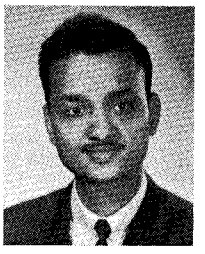

Om P. Gupta (S'66) was born in Delhi, India, on April 1, 1940. He attended Birla College of Engineering, Pilani, India, and received the B.E. degree in telecommunication engineering and the M.E. degree in electronics engineering in 1963 and 1964, respectively. Since 1965 he has been working toward the Ph.D. degree in electrical engineering at Cornell University, Ithaca, N. Y.

From 1964 to 1965 he worked at the Solid State Physics Laboratory, Delhi, India. During the summer of 1967, he worked in the Microwave Technology Group of Bendix Research Laboratories, Southfield, Mich. His research interests are the design of lumped and distributed, mixed parameter networks.

Mr. Gupta is a member of the Institution of Telecommunication Engineers (India).

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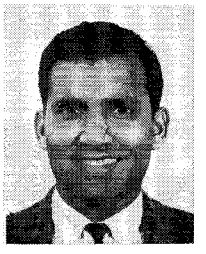

R. R. Gupta (M'68) was born in Mathura, India, on November 1, 1933. He received the B.Sc. degree in electrical engineering from Banares Hindu University, Banares, India, in 1956. He received the M.Sc. and Ph.D. degrees in electrical engineering from Syracuse University, Syracuse, N. Y., in 1962 and 1965, respectively.

He was associated with Radio Lamp Works Ltd., Bombay, India, from 1956 to 1957 where he worked on the design and development of power equipment. From 1957 to 1960, he was employed by the consulting engineers, SERETE, Paris, France, planning and designing electrical power systems for various industries. He was a Graduate Assistant from 1960 to 1962 at Syracuse University. As an Instructor in the Department of Electrical Engineering at Syracuse University from 1962 to 1965, he contributed to research on the interactions of ferrites and plasmas with electromagnetic fields. Since joining the Research Laboratories of the Bendix Corporation, Southfield, Mich., in 1966, he has been engaged in the analysis of antenna arrays and the design and development of microwave components.

Dr. Gupta is a member of Sigma Xi.

Theodore W. Houston was born in Brooklyn, N. Y., on October 4, 1940. He received the B.S. degree in physics from the Polytechnic Institute of Brooklyn, N. Y., in 1961, and the M.S. and Ph.D. degrees, also in physics, from the University of Pennsylvania, Philadelphia, in 1962 and 1966, respectively.

In 1961 he held a summer position with Bell Telephone Labs., Inc., Murray Hill, N. J. From 1964 to 1966 he held an NSF Coop Graduate Fellowship for graduate studies at the University of Pennsylvania. In 1966 he joined Texas Instruments Inc., Dallas, Tex., where he has applied optimization techniques to electronic circuit design.

Dr. Houston is a member of the American Physical Society and Sigma Pi Sigma.

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David W. Kammler was born in Belleville, Ill., on October 29, 1940. He received the B.S. degree in physics in 1962 and the M.A. degree in mathematics in 1964 from Southern Illinois University, Carbondale. During the 1964–1965 academic year he studied mathematics and physics at the University of Sheffield, England, under a Rotary Foundation Fellowship. In 1969 he received the M.S. degree in physics from Southern Methodist University, Dallas, Tex. At present, he is studying applied mathematics at the University of Michigan, Ann Arbor, under a NSF Fellowship.

Since 1965 he has been a member of the technical staff of the Equipment Group Research and Development Laboratory of Texas Instruments Inc., Dallas, Tex., where he has worked on a number of problems arising in the development of broad-band microwave couplers. He is currently on an educational leave of absence.

Mr. Kammler is a member of Phi Kappa Phi, the American Mathematical Society, and the Society for Industrial and Applied Mathematics.

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Avinash R. Karnik was born in Bombay, India, on May 31, 1940. He received the B.E. degree from the University of Bombay in 1961, the M. Tech. degree from the Indian Institute of Technology, Bombay, in 1963, and the Ph.D. degree from the University of Rochester, Rochester, N. Y., in 1969, all in electrical engineering.

During 1963 and 1964 he was employed at the Siemens Company, India. Since February, 1969, he has been with the Xerox Corporation, Webster, N. Y.

Dr. Karnik is a member of Sigma Xi.

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Willi Kotyczka (S'68) was born in Bern, Switzerland, on June 14, 1943. After technical experience as an exchange student at Western Electric's Research Center, Princeton, N. J., in 1966, he received the Diploma in electrical engineering from the Swiss Federal Institute of Technology, Zürich, in 1967.

Since 1967 he has been with the Department of Advanced Electrical Engineering of the Swiss Federal Institute of Technology, working on noise measurements and small signal behavior of microwave transistors.

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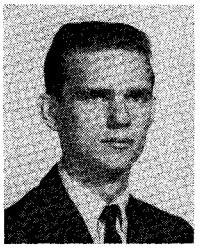

Edward B. Kozemchak was born in Dover, N. J., on April 19, 1944. He received the B.S. degree in electrical engineering from the Moore School of the University of Pennsylvania in 1966, and the M.S. degree in electrical engineering from Stanford University, Stanford, Calif., in 1967. He is presently studying for the Ph.D. degree at Columbia University, New York, N. Y., under the Bell Telephone Laboratories Doctoral Support Plan. His area of research is computer-aided network design.

Since joining Bell Telephone Laboratories in 1966, he has been engaged in work on transversal filters for radar systems, hybrid integrated circuits, and computer-aided circuit analysis and design.

Mr. Kozemchak is a member of Eta Kappa Nu and Tau Beta Pi.

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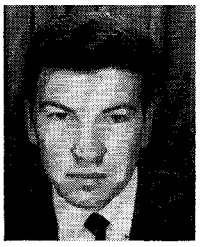

Auguste A. Laloux (S'67–M'68) was born in Charleroi, Belgium, on May 31, 1945. He received the degree of Electrical Engineer from the Catholic University of Louvain, Belgium, in 1968. For his thesis, he worked out a computer-analysis of three-port circulators. Since October, 1968, he has held an assistantship at the Electronic Research Laboratories of the Catholic University of Louvain, working towards the Ph.D. degree in applied sciences. He is especially interested in the problem of propagation in loaded waveguides.

During the academic year 1967–1968 he was Chairman of the IEEE Student Branch of the University of Louvain.

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Patrick A. Macdonald was born in Winnipeg, Canada, on June 10, 1942. He received the B.Sc. (Hons.) and M.Sc. degrees in mathematics from the University of Manitoba, Winnipeg, in 1964 and 1969, respectively. His graduate work concerned studies on nonassociative algebras.

He joined the Numerical Applications Group in the Department of Electrical Engineering of the University of Manitoba in 1967 as a Mathematical Programmer. His current areas of activity are numerical analysis, optimization methods, and computer software.

Mr. Macdonald is a member of the Society for Industrial and Applied Mathematics, and an associate member of the Association for Computing Machinery.

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Alan B. Macnee (S'42–A'45–M'52–SM'55–F'64) was born in New York, N. Y., on Septemper 19, 1920. He received the S.B. and S.M. degrees in 1943 and the Sc.D. degree in 1948, all from the Massachusetts Institute of Technology, Cambridge.

He was a Staff Member at the M.I.T. Radiation Laboratory from 1943 to 1945, and spent a post-doctoral year as Research Associate at the Chalmers Technical University, Gothenburg, Sweden. He joined the faculty of the University of Michigan, Ann Arbor, in 1951, where he is currently Professor of Electrical Engineering. He spent the academic year 1961–1962 at the Chalmers Technical University as a Visiting Associate Professor of Computing Techniques.

Dr. Macnee is a member of Tau Beta Pi, Sigma Xi, Phi Kappa Phi, Eta Kappa Nu, and the Royal Society for Science and Literature in Gothenburg.

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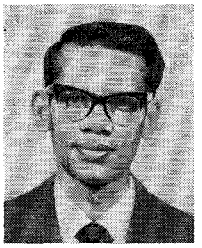
Solaimanul Mahdi (S'68) was born on August 20, 1940 in Sandwip, East Pakistan. He received the B.Sc. degree from the University of Dacca, East Pakistan, in 1961, and the M.E. degree from the Texas A & M College, College Station, in 1963, both in electrical engineering. He is currently a candidate for the Ph D degree in electrical engineering at the University of Michigan, Ann Arbor.



He was a Lecturer in the Department of Electrical Engineering, East Pakistan University of Engineering and Technology, during 1965 and 1966.

Mr. Mahdi is a member of Phi Kappa Phi.

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Michael K. McPhun was born in Hornchurch, England, in 1934. He attended King's College, Newcastle upon Tyne, and received the B.Sc degree in electrical engineering from Durham University in 1959.

From 1951 to 1956, he served an Engineering Apprenticship at the Royal Radar Establishment, where he became interested in microwaves. Until 1961, he worked on the application of silicon transistors to instrumentation with the United Kingdom Atomic Energy Authority. He then joined the Central Electricity Research Laboratories at Leatherhead, where he worked on negative resistance radio repeators and UHF tunnel diode amplifiers. In 1964, he joined Mullard Research Laboratories, Redhill, where he worked on *X*-band T.D.A.'s, and on microwave circuit analysis programs. After starting work on microwave integrated circuits, he joined the staff at the University of Warwick, England, where he is presently a Lecturer. His research interests include microwave integrated circuits, and computing.

Mr. McPhun is a corporate member of the Institution of Electrical Engineers (London).

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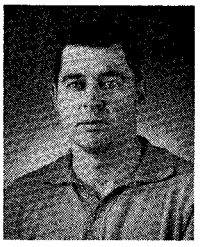

James R. Molberg (S'61–M'68) was born in Vancouver, B.C., Canada, on April 9, 1936. He received the B.S.E.E., M.S.E.E., and Ph.D. degrees from the University of Washington, Seattle, in 1962, 1964, and 1968, respectively. While at the University of Washington, he held a number of research and teaching assistantships.

From 1954 to 1959, he worked for the B.C. Telephone Company as an Electronics Technician. He is now employed by the Boeing Company, Seattle, Wash.

Marco A. Murray-Lasso (M'62) was born in Mexico City, Mexico, on September 1, 1937. He received the Mechanical-Electrical Engineer Degree from the National University of Mexico in 1960, and the M.S. degree in electrical engineering and the Sc.D. degree from the Massachusetts Institute of Technology, Cambridge, in 1962 and 1965, respectively. While at M.I.T. he held the Pan American Fellowship, the Grass Instrument Company Fellowship, and a UNAM Fellowship.

He was Research Assistant at M.I.T.'s Electronic Systems Laboratory under a National Science Foundation grant. From 1965 to 1968 he was a Member of the Technical Staff of Bell Telephone Laboratories where he did research on communication systems, control system design and data reduction of rockets, and integrated-circuit computer-aided design. He also served as Consultant for NASA on integrated circuits for space missions. His academic positions have been Associate Professor of Engineering at the National University of Mexico, Adjunct Professor of Mathematics at Newark College of Engineering, Newark, N. J., and Associate Professor of Engineering at Case Western Reserve University, Cleveland, Ohio, where he is presently doing research in control of complex industrial systems and heading the computer-aided control system design effort at the Systems Research Center.

Dr. Murray-Lasso is a member of Summit Association of Scientists (RESA), Sigma Xi, Association of Mechanical-Electrical Engineers of Mexico, Association of University Professors of Mexico, and is serving a two year term as Alternate Vice President and Head of the U.S. delegation of the Pan American Congress of Mechanical-Electrical Engineers.

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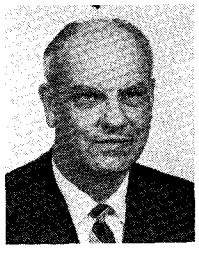

William N. Parker (A'35–SM'56) was born in Aurora, Ill., on May 9, 1907. He received the B.S.E.E. degree from the University of Illinois, Urbana, in 1928. He participated in the Advanced Course in engineering and in the testing of developmental power tubes at General Electric Co., Schenectady, N. Y.

From 1929 to 1941 he pioneered in television development with Stewart Warner and the Western Television Corp., Chicago, Ill., and with Philco Radio and Television Corp. in Philadelphia, Pa. At Philco he directed the television development and experimental broadcasting using novel high-fidelity modulation and single sideband transmission. After two years with the U. S. Government Army-Navy Expediting Agency, Philadelphia, Pa., he joined the Radio Corporation of America at Lancaster, Pa., in 1943, to assist in the development of super-power tubes and equipment capable of generating up to a megawatt of CW power, and high power UHF tubes. In 1953 he became Manager of the super power department. As a Staff Engineer, starting in 1955, his investigations included anode thermal stresses, design of the ultra high vacuum system for the "C" Stellarator, and the microwave processing and freeze-drying of foods. He was also directly responsible for the design of the first coaxitron, a UHF triode whose bandpass circuitry is inside the vacuum envelope and whose dimensions are determined by computer. He holds 20 patents and is the author of numerous technical articles.

Mr. Parker is a member of Eta Kappa Nu, Sigma Xi, Pi Mu Epsilon, and Theta Tau, and is a registered Professional Engineer in the state of Pennsylvania.

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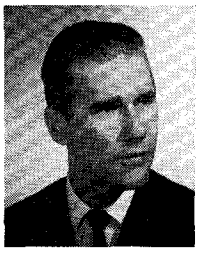

Leslie W. Read (S'58–M'62) was born in Alexandria, La., on September 5, 1937. He received the B.A. degree from Southwestern at Memphis, Tenn., and the B.E.E. and M.S.E.E. degrees from Georgia Institute of Technology, Atlanta, in 1960, and 1962, respectively.

From 1961 to 1963 he was an Applications Engineer for Philco's Lansdale Division. In 1963 he joined Texas Instruments' Semiconductor Research and Development Laboratories, Dallas, Tex. He is now in Texas Instruments' Microwave Products Department, specializing in low noise transistor microwave amplifier design.

Mr. Read is a member of Eta Kappa Nu, Phi Kappa Phi, Tau Beta Pi, and Sigma Xi.

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Donald K. Reynolds (S'41 – A'48 – SM'51 – F'67) was born in Portland, Ore., on December 9, 1919. He received the B.A. and M.A. degrees in electrical engineering from Stanford University, Stanford, Calif., in 1941 and 1942, respectively, and the Ph.D. degree in engineering sciences and applied physics from Harvard University, Cambridge, Mass., in 1948.

From 1942 to 1945 he was employed as a Research Associate at the Radio Research Laboratory, Harvard University, and at their branch laboratory in England. From 1948 to 1953 he was with the Stanford Research Institute, Menlo Park, Calif., serving as a Senior Research Engineer in the Engineering Division. From 1953 to 1956 he served as Associate Professor of Electrical Engineering at the Instituto Tecnológico de Aeronáutica, State of São Paulo, Brazil. From 1956 to 1959 he was Chairman of the Department of Electrical Engineering, Seattle University, Seattle, Wash., and since 1959 he has been with the University of Washington, Seattle, where he is a Professor of Electrical Engineering.

Dr. Reynolds is a past Chairman of the Seattle Section of the IRE, and past IRE 7th Region Director. He is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi.

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P. Silvester (S'60–M'64), for a photograph and biography, please see page 239 of the April, 1969, issue of this TRANSACTIONS.

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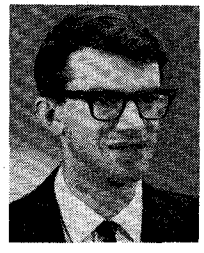

Donald H. Sinnott (M'68) was born in Melbourne, Australia, on March 17, 1944. He received the B.E. and M. Eng. Sc. degrees from the University of Melbourne in 1966 and 1967, respectively.

Since 1967 he has been with the Weapons Research Establishment, Salisbury, South Australia where he is working on the application of finite difference techniques to the solution of electromagnetic problems.

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Allen E. Smoll (M'49–SM'57) was born in Wichita, Kansas, on June 7, 1969. He received the B.S.E.E. degree from Kansas State University, Manhattan, in 1941, the M.S.E.E. degree from Syracuse University, Syracuse, N. Y., in 1959, and the Sc.D. degree from the Massachusetts Institute of Technology, Cambridge, in 1960.

He was with the General Electric Electronics Laboratory, in the Antenna and Microwave Unit from 1948 to 1955. He then joined the staff at Philco-Ford Development Laboratories, Palo Alto, Calif., where he was Manager of the Microwave Section from 1962 to 1966, engaged in the development and design of antennas and microwave components for earth stations and space vehicles employed in communications and telemetry. While at the Aeronutronic Division of Philco-Ford and Stewart Warner Electronics, he was involved in radar applications to missile and aircraft guidance and control. He is presently Senior Staff Scientist at Philco-Ford Development Laboratories.

Max J. O. Strutt (SM'46–F'56) was born in Surakarta, Java, on October 2, 1903. He has attended the University of Munich, Germany, and the Institute of Technology, Munich. He received the M.Sc. degree and the D.Sc. degree (cum laude) in 1926 and 1927, respectively, from the Institute of Technology, Delft, The Netherlands.

He was a Research Engineer at the N. V. Philips Company, Ltd., Eindhoven, The Netherlands, from 1927 to 1948. Since 1948 he has been Professor and Director of the Department of Advanced Electrical Engineering, Swiss Federal Institute of Technology, Zürich, Switzerland, and from 1958 to 1960, he was Chairman of the Division of Electrical Engineering. In 1961, 1962, and 1963 he was Visiting McKay Professor of Electrical Engineering at the University of California, Berkeley.

Dr. Strutt holds more than seventy United States patents on electron tubes and circuits, especially VHF and UHF. Among his awards are the Doctor Honoris Causa, conferred by the Institute of Technology, Karlsruhe, Germany, in 1950, and the Karl Friedrich Gauss Medal of the Society of Sciences, Brunswick, Germany, received in 1954. He was awarded a Senior Foreign Scientist Fellowship by the National Science Foundation in Washington D.C., in 1966. In addition, he is a member of the Swiss Society of Electrical Engineers, the German Society of Electrical Engineers, the Swiss Society of Sciences at Berne, the German Physical Society, the Swiss Mathematical Society, and the Zürich Physical Society. He is an honorary member of the Society of Sciences at Brunswick (1955), of the International Television Committee (1956), of the Electronics Association of Japan (1966), and of the Institute of Electrical Communication Engineers of Japan (1967).

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David T. Thomas (S'54–M'56) was born in Barnesville, Ohio, on December 13, 1937. He received the B.S.E.E. and M.S. degrees in mathematics from Carnegie Institute of Technology (now Carnegie-Mellon University), Pittsburgh, Pa. in 1959 and 1960, respectively. In 1962, he received the Ph.D. degree from The Ohio State University, Columbus.

From 1961 to 1963 he was employed by the Antenna Laboratories (now Electroscience Laboratories) of The Ohio State University Research Foundation, and served as Assistant Professor of Electrical Engineering for the academic year 1962–63. From 1963 to 1968 he was Assistant Professor of Electrical Engineering, Carnegie-Mellon University. Since 1968, he has been a Member of the Technical Staff at Bell Telephone Laboratories, Whippany, N. J. His current interests include approximate solutions of boundary value problems, propagation and scattering of electromagnetic waves, and depolarization and attenuation of microwaves by rainstorms.

Dr. Thomas is a member of Sigma Xi, Tau Beta Pi, Phi Kappa Phi, and Pi Mu Epsilon.

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Hans-Norbert Toussaint was born in Koenigsberg/Ostpr., Germany, on December 28, 1928. In 1952 he received the Dipl.-Ing. degree, and in 1968 the Dr.-Ing. degree, both from the Technische Hochschule, Muenchen, Germany.

In 1953 he joined the Central-Lab of Siemens AG, Munich, Germany, where he was engaged in the research of solid state devices. Presently he is working on the development of microwave integrated circuits.

Mr. Toussaint is a member of the VDE/NTG.

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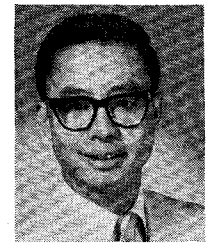

Peter J. Tu (S'65–M'67) was born in Kiangsi, China, on January 1, 1938. He received the B.S.E.E. degree from the National Taiwan University, Taipei, Taiwan, and the M.S. and Ph.D. degrees from the University of Denver, Denver, Colo., in 1960, 1963, and 1966, respectively.

He was a mathematics teacher at Tak Yan College, Hong Kong, from 1960 to 1961. From 1962 to 1964 and also during the summers of 1965 and 1966, he was a Research Assistant at Denver Research Institute, Denver, Colo. He was a Teaching Assistant in the Department of Electrical Engineering, University of Denver, from 1965 to 1966. Since June 1966, he has been a Member of the Technical Staff of Bell Telephone Laboratories, Holmdel, N. J. He is presently in the Microwave and Millimeter Wave Design Department.

Dr. Tu is a Member of Eta Kappa Nu.

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Andre S. Vander Vorst (M'64–SM'68) was born in Schaerbeek, Brabant, Belgium on October 22, 1935. He received the degree of Electrical and Mechanical Engineer from the Catholic University of Louvain, Belgium, in 1958, the Ph.D. degree in applied sciences (electrical engineering) from the same University in 1965, and the S.M. degree in electrical engineering from the Massachusetts Institute of Technology, Cambridge, Mass., in 1965.

From 1958 to 1962, he held an Assistantship at the University of Louvain, Belgium. In 1962 he became Assistant Professor at the same University, working on fast switching of magnetic cores. During the 1964–1965 academic year, he specialized in microwaves at M.I.T. under a NATO fellowship. During the 1965–1966 academic year, he was engaged as a Research Associate at the Stanford Radio-Astronomy Institute, Stanford, under the same fellowship. In 1966 he returned to the University of Louvain, to start a microwave laboratory. The main field of interest of this laboratory is the study of propagation in inhomogeneous media, especially waveguides, both by exact and approximate techniques with the emphasis on computer-aided solutions. Since 1968, he has been an Associate Professor in Electrical Engineering at the University of Louvain, Belgium.

Dr. Vander Vorst is Counselor of the IEEE Student Branch at the University of Louvain, Vice-Chairman of the Student Activity Committee, IEEE Region 8, and a member of the Société Belge des Ingénieurs de Télécommunication (SITEL) and of the Association Belge des Ingénieurs et Techniciens en Aéronautique (ABITA).

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Alvin Wexler (S'57-M'66) was born in Winnipeg, Manitoba, Canada, on July 14, 1935. He received the B.Sc. degree in electrical engineering from the University of Manitoba, Winnipeg, in 1958. He attended Imperial College, London, England, on an Athlone Fellowship and a Metropolitan Vickers Bursary and received the Diploma of Imperial College and the Ph.D. degree from the University of London in 1966. His research concerned propagation in waveguides loaded with resistive films and ferrites.

While in the United Kingdom, he was an Assistant Editor of *Science Abstracts* and later worked for International Computers and Tabulators Ltd., London, as a Consultant. He returned to the University of Manitoba in August, 1966, as a Ford Foundation Fellow and is now an Associate Professor there with the Numerical Applications Group.

Dr. Wexler is a member of the Association of Professional Engineers of the Province of Manitoba. He is President of Tasc (Computing) Ltd. and is a member of the G-MTT Technical Committee on Computer-Aided Design of Microwave Circuits.