# Contributors

Allan J. Altrubin (S'55–M'62) was born in Kitchener, Ontario, Canada, on September 14, 1933. He received a bachelor of applied science degree in engineering physics from the University of Toronto, Ontario, in 1956. He received both the S.M. and E.E. degrees from the Massachusetts Institute of Technology, Cambridge, Mass., in 1958 and 1962, respectively.

He joined the IBM Corporation, Poughkeepsie, N. Y., in 1958 as a Junior Engineer. He became an Associate Engineer in 1958 and was promoted to Staff Engineer in 1960. He transferred to the IBM Development Laboratory, Rochester, Minn., in 1962 into the Character Recognition Development Group.

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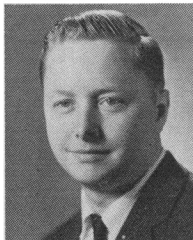
Howard R. Beelitz was born in Bayonne, N. J., on February 4, 1934. He received the B.S. degree in electrical engineering from Newark College of Engineering, N. J., in 1959 and has since done graduate work there and at Princeton University, Princeton, N. J.

He joined the Technical Staff of RCA Laboratories, Princeton, N. J., in June 1959. He was engaged in research on thin-film organic diode and thick-film resistor array associative memories. His current interests include monolithic sense circuitry for integrated ferrite memories.

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

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Arthur J. Bernstein (S'56–M'63) was born in New York, N. Y., on May 28, 1937. He received the A.B., B.S., and M.S.E.E. degrees, and the Ph.D. degree in electrical engineering, all from Columbia University, N. Y., in 1957, 1958, 1959, and 1962, respectively.

While at Columbia he was a Research Assistant and Instructor in the Department of Electrical Engineering. He has held summer consulting positions at the RAND Corporation, Santa Monica, Calif., and at Lockheed Missiles & Space Company, Palo Alto, Calif. Since 1962 he has been an Assistant Professor in the Department of Electrical Engineering at Princeton University, Princeton, N. J. His current interests include problems in digital systems and coding theory.

Dr. Bernstein is a member of Tau Beta Pi and Sigma Xi.

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Harrington C. Brearley, Jr. (S'46–A'48–M'55) was born in Greenville, S. C., on January 17, 1926. He received the B.E.E. degree from Georgia Institute of Technology, Atlanta, in 1946, and the M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1950 and 1954.

From 1947 to 1949 he worked for Bell Telephone Laboratories, Incorporated, as Liaison Engineer to the Western Electric Company, Burlington, N. C. In 1953, he joined the Electronics Laboratory, General Electric Company, Syracuse, N. Y., where he worked in the areas of time-division-multiplex television tape recording, a high-speed magnetic drum recording, and digital computers. Since 1959, he has been Research Assistant Professor of Electrical Engineering at the University of Illinois. He has worked in the Department of Computer Science, where he designed the high speed magnetic drum memory of ILLIAC II.

Dr. Brearley is a member of Sigma Xi, Tau Beta Pi, Phi Kappa Phi, Eta Kappa Nu, ACM, ASEE, and AAUP.

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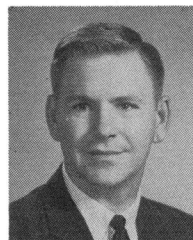
Chester C. Carroll (S'62–M'63) was born in Boothton, Ala., on April 23, 1937. He received the B.S.E.E. and M.S.E.E. degrees, both from the University of Alabama, Tuscaloosa, in 1961 and 1963, respectively.

He served in the Army from 1955 to 1958, attended the University of Michigan, Ann Arbor, during the summer of 1963, and has been teaching at the University of Alabama since 1962. He is presently pursuing further graduate study and teaching part-time at the University of Alabama while serving as Project Codirector of work related to the design of encoding devices which is sponsored by NASA.

Mr. Carroll is a member of A.S.E.E., Pi Mu Epsilon, and Eta Kappa Nu.

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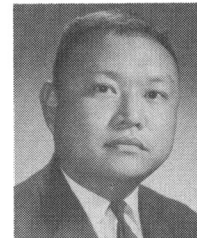
Donald M. Y. Chang (M'61) was born in Wahiawa, Hawaii, on May 13, 1933. He received the B.S.E.E. degree from the University of Kansas, Lawrence, in 1956, and the M.S.E.E. degree from Villanova University, Villanova, Pa., in 1962.

From 1956 to 1959 he served as a Communications Officer in the U. S. Air Force. Since 1959 he has been doing work in digital logic and circuit design for RCA—first at the Missile and Surface Radar Division, Moorestown, N. J., and at present at the AeroSpace Systems Division, Van Nuys, Calif.

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

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Yaohan Chu (M'56–SM'57) was born in China, on January 16, 1920. He received the B.S. degree in mechanical engineering from Chiao-Tung University, China, in 1942, the M.S. and Sc.D. degrees, both from Massachusetts Institute of Technology, Cambridge, Mass., in 1945 and 1953, respectively.

Since 1953 he was associated with the Scientific Laboratory, Ford Motor Company, Dearborn, Mich., in developing feedback control systems, and with the Westinghouse Electric Corp., Baltimore, Md., in system analysis of airborne radar system and fire control system, and later in digital system design, display system, and integrated

logic circuits. He later joined the Research Division, Melpar, Inc., Falls Church, Va., working on microelectronic computers using matrix logic, digital memories, learning network, digital frequency system, and data system design. He then joined the RCA Data Systems Center, Bethesda, Md., and was responsible for computer implementation aspects of advanced data system design, and worked in associative memories, programming language, multiple-user systems, cryoelectric memory computer, and non-numerical processor. He has also been teaching courses on electronic analog computers and digital computers since 1953. At present, he is associated with the Electrical Engineering Department, University of Maryland, College Park, and is also associated with Control Data Corp., Rockville, Md.

Dr. Chu is a member of ACM.

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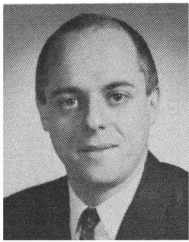
Martin Cohn was born in New York, N. Y., on August 5, 1934. He received the B.A. degree in mathematics in 1956, the M.A. and Ph.D. degrees in applied mathematics in 1958 and 1961, all from Harvard University, Cambridge, Mass.

In 1956–1958 he was a Teaching Fellow and in 1958–1960 a Research Assistant at the Harvard Computation Laboratory, Cambridge. In 1961 he was a Visiting Lecturer in Applied Mathematics at Harvard. Since 1961 he has been a Research Staff Member of the Sperry Rand Research Center, Sudbury, Mass.

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Thomas M. Cover (S'59–M'65) was born in San Bernardino, Calif., on August 7, 1938. He received the B.S. degree in physics from the Massachusetts Institute of Technology, Cambridge, Mass., in 1960, and the M.S. and Ph.D. degrees, both in electrical engineering, from Stanford University, Stanford, Calif., in 1961 and 1964, respectively.

Following employment with the Ballistics Department of the Grand Central Rocket Company in the summers of 1959 and 1960, he became a Consultant to the RAND Corporation in the fields of radar and communication theory from 1961 to 1964. In the summer of 1963 he was a Research Assistant at the Stanford Research Institute, Menlo Park, Calif., engaged in the mathematical study of classification capabilities of networks of linear threshold devices. At present, he is an Assistant Professor in the Department of Electrical Engineering

of Stanford University where he teaches communication theory and is conducting research on statistical data processing and pattern recognition.

Dr. Cover is a member of Sigma Xi.

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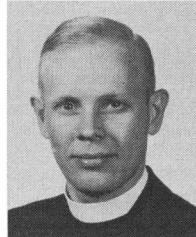
Robert M. Deiters (S'64) was born in Cincinnati, Ohio, on November 26, 1924. As a member of the U. S. Marine Corps he studied electrical engineering at the University of Notre Dame, Ind., from 1943 to 1945. In 1958 he was ordained to the priesthood and received the M.A. degree in theology from Sophia University, Tokyo, Japan in 1959. He completed undergraduate studies in electrical engineering at St. Louis University, Mo., in 1962 and received the M.S. degree in electrical engineering from Marquette University, Milwaukee, Wis., in 1964.

From 1953 to 1954 he was an Instructor of mathematics at Sophia University. In 1964 he joined the Electrical Engineering Department, Sophia University, as a Lecturer, but is now on a temporary leave of absence to complete doctoral studies in electronic engineering at Tokyo University, Japan. There he is doing research on analog and hybrid computing systems under Dr. T. Nomura in the Hybrid Computing Laboratory, Institute of Space and Aeronautical Science, Tokyo.

Reverend Deiters is a member of the Society for Analog Technique (Japan), the Association Internationale pour le Calcul Analogique, and Simulation Councils, Inc.

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Shimon Even (S'60–M'61) was born in Ramat Gan, Israel, on June 15, 1935. He received the B.S. degree in electrical engineering from the Technion, Haifa, Israel, in 1959; the M.A. degree in mathematics from the University of North Carolina, Chapel Hill, in 1961; and the Ph.D. degree in applied mathematics from Harvard University, Cambridge, Mass., in 1963.

In 1959–1960 he was a Laboratory Assistant and Research Engineer at the University of North Carolina. In 1961–1962 he was a Teaching Fellow and Research Assistant at the Harvard Computation Laboratory, Cambridge. In 1963–1964 he was a Research Staff Member of the Sperry Rand Research Center, Sudbury, Mass., and a Visiting Lecturer in Applied Mathematics at Harvard. He is presently a member of the Department of Mathematics at the Technion, Haifa, Israel.

Herbert A. Glucksman was born in New York, N. Y., on March 26, 1917. He received the B.S. degree from the College of the City of New York, N. Y.; the M.A. degree from Columbia University, New York; and the M.A. degree from Harvard University, Cambridge, Mass., in 1939, 1940, and 1947, respectively.

From 1940–1941 he was with the Mathematics Branch of the Ballistic Research Laboratory, Aberdeen Proving Ground, Md. From 1942–1946 he served as a Radar Countermeasures Officer in the Army Air Forces. Since 1946 he has been associated with the Air Force Cambridge Research Laboratories, Bedford, Mass.

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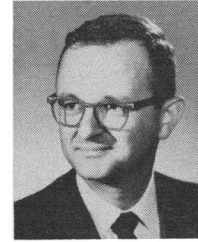
Jacob Goldberg (S'50–A'50–M'56) was born in San Francisco, Calif., on June 4, 1926. He received the B.S.E.E. degree in 1950 from the University of California, Berkeley, and the M.S.E.E. degree in 1954, from Stanford University, Stanford, Calif. In 1958 he was a Research Fellow at the Weizmann Institute of Science, Rehovoth, Israel.

Since 1951 he has been a Staff Member of Stanford Research Institute, Menlo Park, Calif., where he is presently a Senior Research Engineer. His major interest is the design of digital computer systems. He was one of the logical designers of the ERMA computer, and he conducted a study of special memory techniques for information retrieval which led to the construction of the MIRF document-index searching machine. He has also conducted studies of methods of applying logical redundancy to improve the reliability of digital systems. He is currently active in the development of logical design techniques suitable for digital systems under conditions of appreciable delays in the interconnecting structure, and also in the study of cellular logic networks.

Mr. Goldberg is a member of the Scientific Research Society of America and the Association for Computing Machinery.

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G. F. Graber (S'56–M'60) was born on June 17, 1931. He received the B.S. degree in electrical engineering from Rutgers University, New Brunswick, N. J., and did graduate work at Princeton University, Princeton, N. J., where he specialized in control engineering.

He joined the Princeton Computation Center, Princeton, of the Electronics Associates, Inc. (E.A.I.), where he was an Application Engineer primarily concerned with simulation. During this period he was also a saleman for the computational service offered by the Center. He was transferred to the Long Branch, N. J. plant of E.A.I. where he became Sales Manager, dealing with such varied products as analog-to-digital and digital-to-analog linkage equipment, process-control equipment, on-line signal processors, and range-instrumentation systems. At present, he is Vice-President in charge of marketing at Applied Dynamics, Inc., Ann Arbor, Mich., heading the domestic sales program.

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

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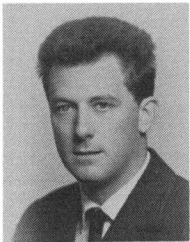
Antonio Grasselli (A'59–M'61) was born in Milan, Italy, on June 23, 1931. He received the dr.ing. degree in chemical engineering from the Politecnico di Milano in 1957, and a degree in applied mathematics from the Institut Polytechnique de Grenoble, France, in 1958.

In 1958 he was a Research Fellow in the Department of Electrical Engineering, University of California, Berkeley, where he worked on computer technology and logical design. In 1959 he worked on bubble chamber data reduction and pattern recognition at the Lawrence Radiation Laboratory of the U. S. Atomic Energy Commission. During 1960 he was a Lecturer in the Department of Electrical Engineering at Princeton University, Princeton, N. J., working on computer system design and switching theory. He returned in 1961 to the Politecnico di Milano, where he is currently an Associate Professor in Electrical Engineering. During the summer of 1964 he was a Research Associate in the Department of Electrical Engineering at Princeton University. In 1964, he got the "libera docenza" in electronic computers. His current fields of interest are switching theory and nonnumerical information processing.

Dr. Grasselli is a member of Sigma Xi, the Association for Computing Machinery, the Associazione Elettrotecnica Italiana, and the Associazione Italiana Calcolo Automatico.

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Joseph Guarracini was born in Brooklyn, N. Y., on January 25, 1920. He received the B.S. degree in mechanical engineering from the University of Oklahoma, Norman, and the M.S. degree in physics from Georgetown University, Washington, D. C., in 1948 and 1954, respectively.

From 1949–1956 he was with the National Bureau of Standards, and the Harry Diamond Laboratories, both in Washington, D. C. working on the design of computer output memory devices, ultrahigh-speed memory devices, and ordnance components. At the RCA facility for Airborne Systems Development in Camden, N. J., which he joined in 1956, he worked on the design and testing of hydraulic components. In 1958 he joined the Astro-Electronics Division of RCA where he has designed electro-optical components for satellites and information retrieval systems. His present work concerns the information storage and retrieval with associative memories and the design of integrated circuitry.

Mr. Guarracini is a member of the American Physical Society and the American Society of Mechanical Engineers.

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Morton H. Lewin (S'58–M'60) was born in New York, N. Y., on August 20, 1931. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from Princeton University, Princeton, N. J., in 1957, 1958, and 1960, respectively.

From 1955 to 1958 he worked at the Plasma Physics Laboratory, Forrestal Research Center, Princeton, where he was engaged in the design of control and timing circuitry associated with the early Stellarator machines. Since June 1958, he has been a member of the Technical Staff at RCA Laboratories, Princeton, where he has been working on digital applications of new solid-state devices, notably the avalanche transistor, the tunnel diode, evaporated diode arrays, and other fixed memory elements. His current interests relate to the realization and utilization of associative memories and to the development of graphic input-output devices. He holds the rank of Adjunct Professor in Electrical Engineering at Drexel Institute of Technology, Philadelphia, Pa., and has also been a Visiting Lecturer in Electrical Engineering at Princeton University.

Dr. Lewin is a member of the ACM and Sigma Xi.

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Fabrizio Luccio was born in Tripoli, Libya, on June 20, 1938. He received the dr.ing. degree in electrical engineering from the Politecnico di Milano, Italy, in 1962.

During 1962, he was associated with the Laboratorio Ricerche Elettroniche, Soc. Olivetti, Borgolumbardo, where he worked on the logical and system design of digital computers. In 1964, he joined the staff of the Politecnico di Milano,

where he is currently an Instructor in Electrical Engineering. His special fields of interest are switching theory, pulse circuits, and programming languages.

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Harold Mott (M'54–SM'60) was born in Harris, N. C., on June 16, 1928. He received the B.E.E., M.S.E.E., and Ph.D. degrees, all from North Carolina State College, Raleigh, in 1951, 1953, and 1960, respectively.

In 1952–1953 he was a Research Assistant in the Engineering Research Department, North Carolina State College, studying low-frequency navigation systems. In 1953–1954 he was with Wright Machinery Company, Durham, N. C., working on high-speed automatic weighing equipment. From 1954 to 1960 he was an Instructor in the Electrical Engineering Department, North Carolina State College. Summer positions since 1951 have been in the radio broadcast industry; with the Western Electric Company, Winston-Salem, N. C.; with Oak Ridge National Laboratory, Oak Ridge, Tenn.; and with Boeing Company, Seattle, Wash. Since 1960 he has been Associate Professor of Electrical Engineering at the University of Alabama, Tuscaloosa.

Dr. Mott is a member of A.S.E.E., Eta Kappa Nu, Phi Kappa Phi, and Sigma Xi.

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Thomas H. Mott, Jr. (SM'60) was born in Houston, Tex., on January 24, 1924. He received the B.A. degree from Rice University, Houston, in 1948, and the Ph.D. degree in philosophy from Yale University, New Haven, Conn., in 1956.

He taught mathematical logic at Yale University for a year before joining the Mathematics Research Department of Remington Rand Univac, St. Paul, Minn., in 1956. He was a member of the technical staff of the RCA Laboratories, Princeton, N. J., from 1958 to 1961, doing research in switching theory and artificial intelligence. He joined Rutgers University, New Brunswick, N. J., in 1962 as an Associate Professor of Information Processing, and in 1963 became full Professor. In addition to his teaching and research activities at Rutgers, he is Visiting Professor of Mathematics at Stevens Institute of Technology, Hoboken, N. J. He has lectured at summer programs of the University of Michigan, Ann Arbor, and the University of Pennsylvania, Philadelphia, and is a former member of the Electrical Engineering and Mathematics Departments of Villanova University, Villanova, Pa.

Dr. Mott is a member of Phi Beta Kappa and Sigma Xi.
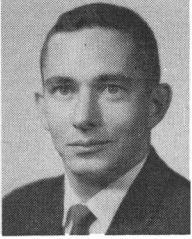
Andrew J. Nichols, III (SM'63) was born in Erie, Pa., on May 10, 1935. He received B.S. degrees in electrical engineering and in business from the University of Colorado, Boulder, in 1960, and the M.S. and Ph.D. degrees in electrical engineering from Stanford University, Calif., in 1962 and 1965, respectively.

He joined Lockheed Missiles & Space Company, Palo Alto, Calif., under their graduate study program in 1960. From 1960 to 1962 he was engaged in the design of microminiaturized circuits and the analysis of distributed parameter networks. In 1962 he joined Lockheed's Computer Research Group where he has been investigating various problems in switching theory.

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

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James H. Pugsley (S'58–M'63) was born in Berea, Ky., on March 28, 1936. He received the A.B. degree in physics from Oberlin College, Oberlin, Ohio, in 1956, and the M.S. and Ph.D. degrees in electrical engineering from the Universtiy of Illinois, Urbana, in 1958 and 1963, respectively.

He is presently an Assistant Professor of Electrical Engineering at the University of Maryland, College Park, Md., where he is teaching courses in sequential machine theory and logical design of digital computers. His current interests are in the structure of sequential machines and in time sharing systems.

Dr. Puglsey is a member of ACM, Sigma Xi, and the American Society for Engineering Education.

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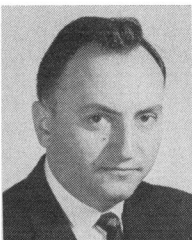
Arthur I. Rubin (M'57) was born in New York, N. Y., on December 3, 1927. He received the B.S. degree from the College of the City of New York, N. Y., in 1949 and the M.S. degree from Stevens Institute of Technology, Hoboken, N. J., in 1953.

From 1950 to 1955 he was a Research Physicist at Picatinny Arsenal, Dover, N. J., where he was associated with a variety of research and development projects in propellants and explosives. This work included high-pressure high-temperature phenomena, gas kinetics, reaction rates theory, heat and thermodynamics and the application of analog computers to problems in

these areas. In 1955 he joined Electronics Associates, Inc., and was appointed Director of its Princeton Computation Center, Princeton, N. J., in 1959. In this capacity he was responsible for analog-computer study projects in the fields of heat transfer, ballistic devices, guided missiles, fire control systems, chemical and nuclear reactor studies, and statistical studies. He has been with the Baltimore Division, Martin Company, Baltimore, Md., since 1962. As Head of the Analog Computing Section, he directs analytical studies of aerospace vehicle systems.

Mr. Rubin is a member of Phi Beta Kappa, Simulation Councils, Inc., and the Association Internationale Pour Le Calcul Analogique. He has served on the ADES subcommittee of the Computing Devices Committee of the AIEE, the Technical Program Committee of SJCC 1964, as Chairman of the Library Committee of SCI, and as member of the Editorial Board of Simulation.

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Roy L. Russo (S'57–M'62) was born in Kelayres, Pa., on November 6, 1935. He received the B.S. and M.S. degrees in electrical engineering and the Ph.D. degree, all from The Pennsylvania State University, University Park, Pa., in 1957, 1959 and 1964, respectively.

From September 1959 to September 1962 he was an Instructor in Electrical Engineering at The Pennsylvania State University. During this period he was responsible for the design and installation of the Pennstac Digital Computer output system and was associated with many thesis projects in the digital area. Having received the IBM Fellowship, he then took a leave of absence to June 1964 to study for the Ph.D. degree at a full-time rate. He is currently an Assistant Professor of Electrical Engineering at The Pennsylvania State University. In addition to teaching and research in logic design, he has supervisory and technical responsibilities in the Pennstac Digital Computer Facility.

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

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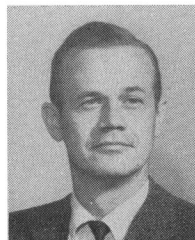
Robert A. Short (S'51–A'53–M'53) was born in Dayton, Wash., on November 7, 1927. He received the B.S. degree in mathematics in 1949 and the B.A. degree in electrical engineering in 1952, both from Oregon State University, Corvallis. He received the M.S. degree from the Stevens Institute of Technology, Hoboken, N. J., in 1956 and the Ph.D. degree from Stanford University,

Stanford, Calif., in 1961, both in electrical engineering.

From 1952 to 1956 he was associated with the Bell Telephone Laboratories, Murray Hill, N. J., and worked principally on naval weapons control systems. He was also an Instructor of a circuit theory course for their communications development program. In July 1956 he joined the staff of Stanford Research Institute, Menlo Park, Calif., where he has developed mathematical models for simulating automatic numeral reading machines. He has developed decoding techniques and studied noise problems for a similar project that has as its goal the reading of the alphabet as well as of numerals and has worked with digital code conversion and correlation techniques. Currently, he is participating in investigations in the analysis and synthesis of digital systems.

Dr. Short is a member of the Association for Computing Machinery and RESA.

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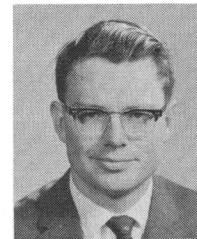
Robert O. Winder (M'63) was born in Boston, Mass., on October 9, 1934. He received the A.B. degree from the University of Chicago, Ill., in 1954, the B.S. degree in mathematics from the University of Michigan, Ann Arbor, in 1956, and the M.A. and Ph.D. degrees in mathematics from Princeton University, N. J., in 1958 and 1962, respectively.

He worked as a Research Assistant and as a Teaching Assistant while still a student. In 1957 he joined RCA, Camden, N. J., to work on small-computer design and automatic programming, and came to the RCA Laboratories, Princeton, N. J., in 1958. Since that time he has worked in various areas of switching theory, and has published several papers on threshold logic.

Dr. Winder is a member of the Association for Computing Machinery, Phi Beta Kappa, and Phi Kappa Phi.

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Michael S. Zucker (S'52–A'54–M'59) was born in Washington, D. C., on October 24, 1931. He received the B.S. degree in electrical engineering from the Worcester Polytechnic Institute, Mass. Since joining the IBM Corporation in 1953, he has completed various engineering assignments concerning machine organization. Among these were the SAGE (AN/FSQ-7) and preliminary models of the SACCS AN/FSQ-32. His most recent efforts have been applied to the development of techniques for designing and evaluating interpretive systems in the Engineering and Management Information System Department of the Advanced Systems Development Division of IBM, Yorktown Heights, N. Y.

Mr. Zucker is a member of the ACM.