Authors

Irving Ames

A.B., 1951, Syracuse University; Ph.D. in Physics, 1955, Cornell University. Joined IBM Research Laboratory in 1955. Has been engaged in ferroelectric, vacuum photoelectric and thin-film studies. Is presently working on thin-film cryotrons at the Thomas J. Watson Research Center at Yorktown, New York. Member of Phi Beta Kappa, Research Society of America and American Physical Society.

Samuel E. Blum

B.Sc., 1942; Ph.D., 1950, Rutgers University. Joined IBM Research Laboratory in 1959. Was previously employed at Battelle Memorial Institute, working in physical chemical research. Present interest is compound semiconductors, specifically GaAs, at the Thomas J. Watson Research Center, Yorktown, New York. Member of Sigma Xi, Phi Lambda Upsilon, Electrochemical Society and Physical Chemical Society.

Gerald Burns

B.S., 1954, Rensselaer Polytechnic Institute; A.M., 1957 and Ph.D., 1962, Columbia University. Joined IBM Research Laboratory in 1957. Has been working in the fields of nuclear magnetic resonance, electron spin resonance, optical energy levels and Mossbauer absorption at the Thomas J. Watson Research Center at Yorktown, New York. Member of the American Physical Society.

Robert L. Christensen

A.B., 1950; M.A., 1954; Ph.D. in Physics, 1957, Princeton University. Research in neutron physics, Brookhaven National Laboratory, 1953. Research Assistant, Princeton University, 1957-58. Joined IBM Research in Poughkeepsie in 1958, working in electron, vacuum, and optical physics. Presently Director, Government Technical Liaison, Corporate Research and Engineering Staff, at Yorktown. Member of Phi Beta Kappa, Sigma Xi, American Physical Society, Senior Member IRE.

Mason N. Crook

A.B., 1925, Marietta College; M.A., 1928 and Ph.D., 1930, Clark University. Instructor, Psychology, Dartmouth, 1930-31. Instructor, Psychology UCLA, 1931-35. Associate Professor, Psychology, Skidmore, 1935-45. Research Psychologist, Columbia, 1943-46. Research Associate, Tufts since 1946; Scientific Director, Institute for Psychological Research, Tufts since 1952. Current research interests are vision, legibility, form perception. Member of American Psychological Association, Optical Society of America, American Society of Photogrammetry, AAAS, Armed Forces-NRC Vision Committee (emeritus), Phi Beta Kappa, Sigma Xi.

Frederick H. Dill, Jr.

B.S. in Physics, 1954; Ph.D. in E.E., 1958, Carnegie Institute of Technology. Joined IBM in 1958. Since 1959, has been engaged in exploratory work on various devices made from III-V compound semiconductors at the Thomas J. Watson Research Center at Yorktown, New York. Member of I.E.E.E., Tau Beta Pi and Sigma Xi.

William P. Dumke

M.S., 1953 and Ph.D. in Physics, 1955, University of Chicago. Worked at Chicago Midway Laboratories 1955-58 as theoretical solid state physicist. Joined IBM in 1958 and is currently engaged at the Thomas J. Watson Research Center, Yorktown, New York in theoretical studies of optical absorption, emission of light in solids, ultrasonic amplification and active thin film devices. Member of the American Physical Society and Sigma Xi.

Pierre Essinger

B.S. and M.S. in E.E., 1956, Institute of Technology of the University of Lausanne. Joined IBM in 1957; now advisory engineer at the Advanced Systems Development Division, Mohansic Laboratories.

Frank F. Fang

B.S., 1952, Taiwan University; M.S., 1954, University of Notre Dame; Ph.D., 1959, University of Illinois, all in Electrical Engineering. Joined IBM in 1960 at Thomas J. Watson Research Center, Yorktown, New York, working in junction physics. Member of Sigma Xi, Institute of Radio Engineers and American Physical Society.

Evon C. Greanias

B.S. in Engineering Physics, 1944, University of Illinois; M.S. in Physics, 1951, Illinois Institute of Technology. Research physicist for the Standard Oil Company (Indiana), responsible for development of devices for automatic evaluation of petroleum products. Joined IBM in 1952 at Endicott; worked on original development of several new character recognition methods, including IBM 1210 Reader-Sorter and IBM 1418 Optical Character Reader. Joined Advanced Systems Development Division in 1959, where he headed the development of the experimental handwriting reader. Now Manager of Technical Development for the Advanced Systems Development Division's East Coast Laboratories in charge of advanced efforts in media handling, information accessing, scanning, and laser applications. Member of Tau Beta Pi, Pi Mu Epsilon, Sigma Tau and the American Physical Society.

Cleve M. Hart

B.S.E.E., 1962, San Jose State College. Joined IBM in 1960 as a student employee at the General Products Division

Laboratory in San Jose. Now at Kaiser Electronics, Palo Alto, California.

Webster E. Howard, Jr.

B.S. in Physics, 1955, Carnegie Institute of Technology; A.M. in Physics, 1956; Ph.D. in Physics, 1962, Harvard University. Joined IBM in 1961 at Thomas J. Watson Research Center, Yorktown, New York, working in junction physics. Member of Tau Beta Pi, Sigma Xi, and American Physical Society.

Frederick J. Hudson

B.S.E.E., 1958, University of Connecticut; M.S.E.E., 1961, University of Syracuse. Joined IBM in 1958 at the Federal Systems Division Space Guidance Center, Owego, New York. Working in navigation and guidance of missiles and space vehicles, digital computer applications and systems engineering. Member of IRE, American Rocket Society, Eta Kappa Nu, Tau Beta Pi, and Sigma Pi Sigma.

Louis A. Kamentsky

B.S. in E.E., 1952, Newark College of Engineering; Ph.D. in Engineering Physics, 1956, Cornell University. Was Research Assistant at Cornell University 1952-54; a member of the staff of the Columbia University Electronics Research Laboratory 1954-55, and Radio Corporation of America Fellow in Engineering Physics, Cornell University, 1955-56. From 1956 to 1960 was member of staff at Bell Telephone Laboratories. Joined IBM Research in 1960. Presently engaged in studies of image processing systems at the Thomas J. Watson Research Center, Yorktown, New York.

Donald S. Kellogg

B.S. in Electrical Engineering, 1937, M.S. in Electrical Engineering, 1938, Columbia University. Joined IBM in 1959. Currently engaged in new applications studies for advanced scanning technology at the Advanced Systems Development Division, Mohansic Laboratories. Member of Tau Beta Pi, Sigma Xi, AIEE, IRE.

Robert A. Laff

B.S., 1952, California Institute of Technology; M.S., 1954, University of Illinois; Ph.D. in Physics, 1960, Purdue University. Was Research Assistant at Purdue University from 1955 to 1960. Joined IBM Research Laboratory in 1960 and is presently working in junction physics at Thomas J. Watson Research Center, Yorktown, New York. Member of American Physical Society and Sigma Xi.

Gordon J. Lasher

B.S. in Physics, 1949, Rensselaer Polytechnic Institute; Ph.D. in Theoretical Physics, 1953, Cornell University. Was staff member of the University of California Radiation Laboratory at Livermore, California, 1953-54. Joined IBM Research in 1954 and worked on computing methods for physical problems. Is now with Thomas J. Watson Research Center at Yorktown, New York and has done re-

search in irreversible statistical mechanics and its application to quantum mechanics of information theory. Is currently engaged in research on optical properties of solids. Member of American Physical Society and Sigma Xi.

Chao-Ning Liu

B.S. in Electrical Engineering, 1956, South Dakota School of Mines; M.S., 1957; Ph.D., 1961, University of Illinois. Joined IBM Research in 1957. Worked on a random access memory file project in the Ossining Laboratory of IBM Research. Was on educational leave 1958-61. Worked on high speed computer design at the Digital Computer Laboratory, University of Illinois as Research Assistant, 1958-61. Is currently engaged in development of automatic design method of character recognition logic at the Thomas J. Watson Research Center, Yorktown, New York. Member of Eta Kappa Nu, Sigma Pi Sigma and Sigma Tau.

Philip F. Meagher

B.S. in Electrical Engineering, 1958, Notre Dame University; M.S. In Electrical Engineering, 1959, University of Illinois. Joined IBM in 1959. Now Project Engineer in charge of scanner development in the Advanced Systems Development Division, Mohansic Laboratory.

Alwin E. Michel

B.S. in Physics, 1953, LeMoyne College; Ph.D. in Physics, 1960, Cornell University. Joined IBM Research, Poughkeepsie, New York in 1960. Is presently in the semiconductor physics group at the Thomas J. Watson Research Center, Yorktown, New York. Member of Sigma Xi.

Marshall I. Nathan

B.S. in Physics, 1954, Massachusetts Institute of Technology; M.A. in Physics, 1956; Ph.D. in Applied Physics, 1958, Harvard University. Joined IBM in 1958 and is presently engaged in semiconductor and injection laser research at the Thomas J. Watson Research Center, Yorktown, New York. Member of Sigma Xi and American Physical Society.

Reini J. Norman

B.S. in E.E., 1957 and M.S. in E.E., 1958, Carnegie Institute of Technology. Joined IBM in 1959. Now Project Engineer in charge of handwritten character readers in the Advanced Systems Development Division, Mohansic Laboratory. Member of Eta Kappa Nu.

Manesh J. Shah

B.Sc., 1951, B.Sc. (Tech.), 1953, M.Sc. (Tech.), 1955, University of Bombay; M.S. in Chemical Engineering, 1957, University of Michigan; Ph.D., 1961, University of California. Joined IBM in 1960 at the General Products Division Laboratory in San Jose. Member of Phi Lambda Upsilon and the American Institute of Chemical Engineers.

Hugh M. Sierra

B.Sc. in E.E., 1950, University of Havana, Cuba. Worked for Canadian Westinghouse Electric Corp. in the design of the ASDIC anti-submarine detector. Joined IBM in 1955

at Endicott, New York. Worked on development of floating decimal arithmetic for the IBM 650, arithmetic for the IBM 305 RAMAC, and statistical automatic indexing. Presently an advisory engineer at the General Products Division, San Jose Laboratories. Member of IRE.

Reuben S. Title

B.A., 1951; M.A. in Physics, 1952, University of Toronto; Ph.D., 1956, Cambridge University. From 1957-58, associated with Bell Telephone Laboratories designing "twistor" magnetic memories. Joined IBM Research Laboratory in 1958 at Poughkeepsie, New York. Is presently engaged in paramagnetic resonance studies on luminescent materials

such as photoconductors and laser materials at the Thomas J. Watson Research Center, Yorktown, New York. Member of American Physical Society and the Scientific Research Society of America.

Edward J. Walker

B.S.E. in Physics, 1949, University of Michigan; M.S. in Physics, 1957, Yale University; Ph.D. in Physics, 1960, Yale University. Joined IBM in 1960 and has been investigating electron-phonon interactions in studies of the transmitted phonon drag effect at the Thomas J. Watson Research Center, Yorktown, New York. Member of American Physical Society and Sigma Xi.

April 1962	/ol. 6, No. 2	April 1962 (cont'd)
• Regular Articles: Some New High-Speed Tunnel- Diode Logic Circuits by M. S. Axelrod, A. S. Farber and D. E. Rosenheim	158-169	Application of Differential Interferometry with Two Polarized Beams by C. LeMéhauté
of Merit and Circuit Time Constant by L. Esaki	t 170-178 <i>b</i>	Concerning the Possibility of a Cooperative Information Exchange by M. Kochen and E. Wong 270-271
Charge Transport Mechanisms in the Transfer of Latent Electrostatic		July 1962 Vol. 6, No. 3
Images to Dielectric Surfaces by R. M. Schaffert	192_199	• Articles:
The Use of Triple Modular Redundancy to Improve Computer Reliability by R. E. Lyons and W. Vanderkulk		Rectification of Satellite Photography by Digital Techniques by R. E. Mach and T. L. Gardner
Multiplication Processes by J. E. Meggitt	210-226	by B. B. Tasini and S. Winograd 306-328 Diffusion of Gas from a Liquid into an
Minimization Over Boolean Graphs by J. P. Roth and R. M. Karp	227-238	Expanding Bubble by E. J. Barlow and W. E. Langlois 329-337
Generalizations of Horner's Rule for Polynomial Evaluation by W. S. Dorn	239-245	Spin Absorption Spectra by L. S. Brown
Approximate Methods for a Multiqueueing Program	237-243	tation on Peak Shift in Magnetic Tapes by G. Bate, H. S. Templeton and J. W. Wenner . 348-352 A "Logical Pattern" Recognition Program
by G. Schay, Jr	246-249	by R. E. Bonner
Articles on Superconductivity:		
Superconductivity and Ferromagnetism by B. T. Matthias	250-255	 Letters to the Editor: Optical Mixing of Coherent and
Isotope Effects in Low Temperature Superconductors by T. H. Geballe and B. T. Matthias		Incoherent Light by A. W. Smith and N. Braslau
Letters to the Editor:		by R. E. MacDonald, M. J. Vogel and J. W. Brookman
On the Influence of Free Path on the Meissner Effect		A Note on the Nature of RNA Codes by S. A. Bernhard and W. L. Duda 365-367
by D. C. Mattis	258	Partial-Switching Processes in Thin Magnetic Films
Comment on "A Network Minimization Problem" by M. Tideman	259	by W. Dietrich
A Theoretical Solution for the Magnetic Field in the Vicinity of a Recording Head Air Gap	260.252	by G. E. Brock and C. F. Aliotta 372-374 Electron Beam Microanalysis of Germanium Tunnel Diodes
by E. E. Francis and T. C. Ku	. 260-262	by M. I. Nathan and S. H. Moll 375-377

100