Authors

Kie Y. Ahn

Thomas J. Watson Research Center, Yorktown Heights, New York

B.S. in Electrical Engineering, 1958, Oregon State College; M.E.E., 1959, and Ph.D. in E.E., 1963, Rensselaer Polytechnic Institute. Joined IBM at the Research Center in 1963, and worked in the field of magnetics. Is currently studying ferromagnetic rare-earth compounds. Member, American Physical Society, IEEE, American Vacuum Society and Sigma Xi.

Paul H. Bardell, Jr.

Components Division, East Fishkill, New York

B.S.E.E. (spec. hons.), 1956, University of Colorado; M.S., 1962, and Ph.D., 1965, both in Electrical Engineering, Stanford University. Joined IBM in 1956, and after two years military leave with the U. S. Navy in guided missile development, began working on cryogenic memory device development at the Poughkeepsie laboratories. Received IBM resident graduate study fellowship in 1961 for study at Stanford University. Presently, manager of an integrated device development activity in the Components Division laboratory. Member, IEEE, American Physical Society, American Association for the Advancement of Science, Research Society of America, Tau Beta Pi, and Eta Kappa Nu.

Norman Cail

Office Products Division, Lexington, Kentucky

A.B., 1958, Earlham College, Richmond, Indiana; B.S. in Mechanical Engineering, 1958, Purdue University; M.S. in. Engineering Mechanics, 1962, University of Arkansas. For five years was instructor in Mechanical Engineering at the University of Arkansas, and during that time worked three summers in the Vibrations Laboratory at the U. S. Naval Ordnance Laboratory, White Oak, Silver Spring, Maryland. Joined IBM at Lexington in 1963, where he worked on SELECTRIC Composer development as a representative of the Mechanical Analysis Department. Currently working in a mechanical analysis group. Member, ASEE and ASME.

Devendra S. Chhabra

Components Division, East Fishkill, New York

B.S., 1959, Banaras Hindu University, India; M.S., 1964, University of Rochester, both in Mechanical Engineering. Worked at the Atomic Energy Establishment in India as a scientific officer from 1959–63. Was a teaching assistant at the University of Rochester in 1964. Joined IBM in 1964 and is currently on educational leave from the Components Division Laboratory for studies at Stanford University.

B. Todd Crutcher

Office Products Division, Lexington, Kentucky

B.S.M.E., 1954; M.S.M.E., 1961, University of Kentucky. M.E. Professional Engineering License, 1961. Worked in aeronautical research at Lewis Flight Propulsion Laboratory, 1955 to 1957, while serving in the U. S. Air Force. Joined IBM in June, 1957 at Lexington to work on the development of the IBM SELECTRIC Typewriter. Continued work in the development of high speed mechanisms, which included development of mechanical clutches, noise reduction in mechanical mechanisms, and selection mechanisms for printers. Received IBM Invention Achievement Award, July, 1967.

James F. Freedman

Thomas J. Watson Research Center, Yorktown Heights, New York

B.E. in Metallurgy, 1955; M.E. in Physical Metallurgy, 1956; Dr. Eng. in Physical Metallurgy, 1960, all from Yale University. Joined IBM in 1959 at the Research Laboratory, then located in Poughkeepsie. Went from the T. J. Watson Research Center to the Systems Development Division Laboratory in Hursley, England in March, 1966 on a temporary assignment as manager of a memory devices and thin-film technology group. Since returning to the Research Center has been managing a group working in thin films and metallurgy. Member, Tau Beta Pi, Sigma Xi, American Society of Metals, and the American Institute of Metallurgical Engineers.

Adrian Frutiger

Atelier Frutiger, 23 Villa Moderne, 94 Arcueil, France

1949–52, High School of Art, Zürich. From 1952–62 worked at the Deberny et Peignot Type Foundry, Paris, first as type designer and later as art director. Has conducted his own design studio since 1962. His major contribution to type design is the UNIVERS sanserif family. Recently he designed the new typeface, OCR-B, an internationally standardized character set for optical recognition. He participated in the development of the IBM SELECTRIC Composer as a consultant for type design. Honorary member, Type Directors Club of New York, and Chevalier des Arts et Lettres.

George A. Holt

Office Products Division, Austin, Texas

B.S.M.E. 1950, Tufts University. Graduate work at University of Kentucky and at Syracuse University. Joined IBM in 1950 at Boston as a customer engineer. Transferred to Poughkeepsie in 1951 as a design engineer and worked on the development of the Model "B" typebar electric typewriter. Was transferred to Lexington in 1956 for mechanical analysis on the IBM SELECTRIC Typewriter. Worked on the development of the IBM SELECTRIC Composer since 1961; and in Composer product engineering since 1965. Is now Composer Product Engineering Manager at Austin, Texas. Was recipient of Outstanding Invention Award in 1964; IBM Corporate Outstanding Invention Award in 1965.

Ta-Cheng Ku

Systems Development Division, Endicott, New York

B.S.M.E., 1946, National Pei Yang University; M.S.M.E., 1950, and Ph.D., 1953, University of California. Joined IBM in 1953 at the development laboratory in Endicott, where he is now manager of the physical technology group. His professional interests are in the fields of photoelasticity, vibration, friction, wear, and metal fatigue.

Raymond D. Mathews

Office Products Division, Austin, Texas

B.S.M.E., 1956, University of Missouri. Was employed by General Electric for five years, during which time completed three-year advanced engineering program in creative engineering; worked in applied research (heat transfer) at the G.E. Flight Propulsion Laboratory; did combusion research (fluid flow) at the G.E. Knolls Atomic Power Laboratory; vibration analysis and application at the G.E. Jet Engine Division; and servomechanism research at G.E.'s Heavy Military Electronic Equipment Division and Aircraft Nuclear Propulsion Division. Joined

IBM in 1961 at Lexington. First significant assignment was the design of an automatic paper roll-in/roll-out device with page-end indication. Now staff engineer working on refinement of print quality control of the IBM SELECTRIC Composer.

Buddy W. Miles

Office Products Division, Austin, Texas

B.S.M.E., 1960, University of Nebraska; graduate work at University of Kentucky. Worked with General Electric prior to joining IBM in 1961 as a designer on the IBM SELECTRIC Composer development project. Now project engineer in SELECTRIC Composer production engineering at Austin. Member, Pi Tau Sigma and Sigma Tau.

Joseph S. Morgan

Office Products Division, Austin, Texas

B.S.M.E., 1959, University of Tennessee; graduate work at University of Kentucky. Joined IBM in 1960 at Lexington. Worked on the Model "C" Typewriter typebar drive and the Model "D" Typewriter half-space mechanism before joining the SELECTRIC Composer group. Now in production engineering at Austin.

Wayne E. Nickola

Photolastic Inc., Malvern, Pennsylvania

B.S., 1952, and M.S. in Engineering Mechanics, 1955, Pennsylvania State University. Worked on mechanical component evaluation at the General Electric Company, 1955–60, and with the Instrument Division of the Budd Company, 1960–62. He spent five years at IBM's System Development Division laboratory in Endicott, where he performed experimental analyses of mechanical devices and worked on the development of new methods for analysis. He recently joined Photolastic, Inc. as manager of research and contract services. Member, Society for Experimental Stress Analysis, Tau Beta Pi, and Chi Epsilon.

J. Robert Norwood

Office Products Division, Austin, Texas

B.S.M.E., 1964, University of Arkansas; completing M.S.M.E., University of Kentucky. Worked at IBM Lexington for two summers prior to permanent employment on the IBM SELECTRIC Composer in 1964. Now in production engineering at Austin.

Hans Pijlman

IBM World Trade Corporation, Amsterdam, Netherlands

B.S.M.E., 1966, University of Kentucky. Joined IBM in 1962 at Amsterdam as an engineer in mechanical analysis and product engineering. Came to IBM Lexington in 1964 as liaison engineer for the IBM SELECTRIC Composer. In 1966 was assigned to World Trade Product Planning at Lexington to establish a program for worldwide character compatibility with the IBM SELECTRIC Typewriter fonts. Retuned to Holland early in 1967 to continue activities on the IBM SELECTRIC Composer as product engineer at the Amersterdam plant.

Mike Prewarski

Office Products Division, Lexington, Kentucky

B.A.Sc. in Mechanical Engineering, 1956, University of British Columbia; M.S.M.E., 1963 Yale University. Worked for New York Air Brake Company, and Sikorsky Division of United Aircraft Company prior to joining IBM at Lexington, in 1963. Was assigned to the IBM SELECTRIC Composer development group with responsibility for alignment quality of the printed copy. Now working in typehead manufacturing area of the IBM SELECTRIC Typewriter.

James M. Ratajski

Federal Systems Division, Owego, New York

B.S.E.E., 1932, and M.S.E.E., 1937, Technical University of Danzig. From 1937–39 was responsible for aircraft engine instruments at the Aeronautical Technological Institute, Warsaw. Served in the Polish, French and Royal Airforces, 1939–42. From 1942–57 contributed to the development and standardization of servo components and analog miniature devices in the Research Division of the Royal Aircraft Establishment. From 1957–60 was with the Oster Manufacturing Company working on analog aircraft computers, and from 1960–63 was Director of Research and Development at the Kearfott Components Division of General Precision, Inc., responsible for development of Hall-effect devices and solid-state analog and digital sensors. Joined IBM at Owego in 1964, where he contributed to studies on A/D conversion, crystalline quartz phenomena, and digital force sensors. Presently responsible for technical liaison and engineering of the inertial measurements set of an airborne computer development program. Associate member, IEE (England) and Chartered Professional Electrical Engineer, Great Britain.

J. Charles Rogers

Office Products Division, Lexington, Kentucky

B.S.M.E., 1964, University of Tennessee. Joined IBM 1965 at Lexington to work on IBM SELECTRIC Composer development. Now in a mechanical analysis group. Member, Tau Beta Pi, Pi Tau Sigma, Phi Eta Sigma, Phi Kappa Phi, and ASME.

Douglas E. Sederholm

Office Products Division, Austin, Texas

M.E., 1948, Mohawk College. Worked on mechanical development of automation equipment for radio and television tube production prior to joining IBM at Poughkeepsie in 1952. Worked on typewriter development there and at Lexington, where he also participated in development of dictation equipment and the SELECTRIC Composer. Now in product engineering at Austin.

Glenn E. Siemer

Office Products Division, Lexington, Kentucky

M.S.M.E., 1964, Ohio State University. Joined IBM 1964 at Lexington. Worked on dead key design for the IBM SELECTRIC Composer and is now engaged in new design projects for development engineering. Member, ASME.

G. Thomas Slaughter

Office Products Division, Lexington, Kentucky

B.S.M.E. (magma cum laude), 1960; M.S.M.E., 1963, University of Kentucky. National Science Foundation Scholar 1960-1961. Instructor College of Engineering, University of Kentucky. Joined IBM in 1962 to work on development of the IBM SELECTRIC Composer. Now project manager for typewriter supplies development. Recipient IBM Outstanding Contribution Award, 1966. Member, Tau Beta Pi, Pi Tau Sigma, and Sigma Xi.

Samuel S. So

Systems Development Division, Endicott, New York

B.S. in Physics and Mathematics, 1962, Duke University; M.S. in Nuclear Physics, 1964, Florida State University. On joining IBM in 1964, he worked on a number of programming tasks in scientific computation. He later transferred to the physical technology department in Endicott, where he has recently been involved in analyses of diffusion techniques, holography methods, and data produced by electron probes. He is now on educational leave from IBM working on a Ph.D. in Physics at the Pennsylvania State University.

Jesse W. Spears

Office Products Division, Lexington, Kentucky

B.S.M.E., 1964, University of Kentucky. Joined IBM in 1964 at Lexington as member of the IBM SELECTRIC Composer development group. Now working on SELECTRIC Composer features. Member, Tau Beta Pi, Pi Tau Sigma and ASME.

Charles N. Van Avery

Office Products Division, Austin, Texas

B.S.M.E., 1960, University of Michigan. Graduate work University of Kentucky. Designed and tested special construction equipment prior to joining IBM in 1961 at Lexington for work on the design of velocity control for the Composer. Now in production engineering of the Composer and liaison in factory services for related SELECTRIC groups. Associate Member, ASME.

Raymond J. Wilfinger

Components Division, East Fishkill, New York

B.S. in Electrical Engineering, 1958, University of Illinois. Employed by the University of Illinois in the Semiconductor Laboratory until joining IBM at Endicott, New York in 1958. Has worked on mathematical modelling of semiconductor devices and computer circuit simulation. Transferred to the Components Division in 1962, working in semiconductor device and optical applications. Presently Manager of Special Semiconductor Development at the East Fishkill Laboratory. Member, IEEE.

Clement C. Wilson

Office Products Division, Lexington, Kentucky

B.S. in Mechanical Engineering, University of Tennessee, 1956; M.S., University of Tennessee, 1959; Ph.D., Purdue University, 1964. Instructor in the Mechanical Engineering Department at the University of Tennessee during the academic years from 1956–61. During this time, he was involved in experimental stress analysis research projects. He joined IBM full-time in June, 1961 after having spent the summer of 1960 at IBM while on leave from the University of Tennessee. After an educational leave at Purdue University where his research work was in vehicle dynamics, he returned full-time to IBM in February, 1964, where he was Mechanical Analysis Representative for the Composer program. He has been manager of the Mechanical Analysis Department since 1966. Member, ASME, Sigma Xi, American Society of Engineering Education, Tau Beta Pi and Pi Tau Sigma.

September 1967 Vol. 11, No. 5

November 1967 Vol. 11, No. 6

IBM

The IBM Journal of Research and Development is regularly indexed and abstracted by Science Abstracts (I.E.E.-Britain), Chemical Abstracts, The Engineering Index, Physikalische Berichte, ASM Review of Metal Literature, Mathematical Reviews, Computing Reviews, Computer Abstracts (Technical Information Co. Ltd.-Britain), Bulletin Signaletique (C.N.R.S.-France), Solid State Abstracts, Instrument Abstracts (British Scientific Instrument Research Association), Psychological Abstracts, Computer Abstracts on Cards, Automatic Subject Citation Alert, and American Documentation Institute. *Reproductions of the magazine by years are available on positive microfilm from University Microfilms, 313 N. First Street, Ann Arbor, Michigan.*