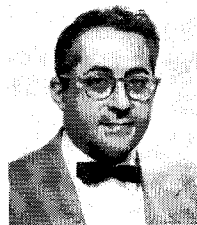


member of the U.S. Army, Antiaircraft Artillery, from May, 1943 to August, 1948. Since joining Bell Telephone Laboratories he has been engaged in transistor characterization and the application of solid-state devices to digital computer circuitry for military applications.

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



Morris Ettenberg (A'45-M'50-SM'51) was born in Canton, Ohio on May 22, 1916. He received the B.A. degree from College of the City of New York in 1935 and the M.S. degree in 1936. He received the Ph.D. degree from N.Y.U. in 1949.



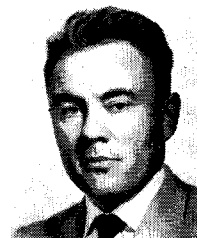
M. ETTEMBERG

From 1941 to 1945 Dr. Ettenberg was a radar engineer with the U.S.N. In 1945 he joined the Sperry Gyroscope Company as a project engineer in Microwave Tube Research and Development. During the years 1948 to 1949 he was in Israel starting a microwave research program at the Weizmann Institute. He rejoined Sperry Gyroscope Co. in 1949. He is presently Engineering Department Head for High Power Traveling-Wave Tube Research and Development.

Dr. Ettenberg was a lecturer in the Graduate School of Engineering of C.C.N.Y. from 1950 to 1956. He is presently a lecturer in the Graduate School of Engineering of Columbia University. Dr. Ettenberg is a member of Phi Beta Kappa and the American Physical Society.



Donald C. Forster (S '55—M '56) was born in Los Angeles, Calif., on September 28, 1928. He served in the U.S. Navy from 1946 to 1949 and from 1950 to 1952. He received the B.S.E.E. degree from the University of Southern California in 1955.



D. C. FORSTER

He has been working with problems in microwave electronics as a member of the Technical Staff in the Electron Tube Laboratory, Hughes Aircraft Company, since 1955. He is at present taking graduate work at the California Institute of Technology under the Hughes Cooperative Fellowship Program for Master of Science Degrees.

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

Lawrence J. Giacoletto (S'37-A'42-M'44-SM'48) received the B.S. degree in electrical engineering from Rose Polytechnic Institute, Terre Haute, Ind., in 1938 and the M.S. degree in physics from the State University of Iowa in 1939, while holding an appointment as research assistant there. From 1939 to 1941, he was a post-graduate student and teaching fellow in the department of electrical engineering at the University of Michigan and received the Ph. D. degree in 1952.



L. J. GIACOLETTO

Dr. Giacoletto was associated with the Collins Radio Company during the summers of 1937 and 1938 and with Bell Telephone Laboratories, Inc. in 1940. From 1941 to 1945 he was on military duty with the Signal Corps Engineering Laboratory concerned with development activities in the fields of radio, navigational, and meteorological direction-finding equipments. He returned to inactive status as a Major in the Signal Corps Reserve in May, 1946. From June, 1946 to June, 1956 he worked on electronic and semiconductor devices as a research engineer with the RCA Laboratories, Princeton, N. J. Since then, he has been with the Scientific Laboratory, Ford Motor Company, Dearborn, Mich. as Manager of the Electrical Department.

He is a member of the American Association for the Advancement of Science, Gamma Alpha, Iota Alpha, Phi Kappa Phi, Tau Beta Pi, and Sigma Xi.



Paul H. Gleichauf was born on August 27, 1916 in Brno, Czechoslovakia. He studied at the Masaryk University, Brno, Czechoslovakia, where he received the Ph.D. degree in experimental physics in 1939.



P. H. GLEICHAUF

After his immigration to the U.S.A. in 1946 and until 1952 he was with the Westinghouse Research Laboratories at Pittsburgh, Pa., where he conducted basic research on high voltage breakdown in high vacuum, especially on high voltage breakdown over insulators.

Since 1952 he has been with the General Electric Company, at the Electronics Laboratory in Syracuse, N. Y. Most of his work has been in the field of electron optics, principally in gun design. This included development of low voltage guns, multiple beam guns, high resolution guns, high transconductance guns, convergence schemes and electrostatic deflection systems. Dr. Gleichauf also has done work in the field of gas discharges.

He is a member of the American Physical Society and the American Institute of Electrical Engineers.



Leonard W. Holmboe was born in Chicago, Ill. on April 30, 1920. He was awarded the B.S.E.E. degree from the Illinois Institute of Technology in 1941 and the M.E.E. degree from the Polytechnic Institute of Brooklyn in 1946. He received the Ph.D. degree from the University of Michigan in 1950.



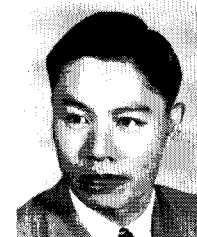
L. W. HOLMBOE

Dr. Holmboe, when employed by Westinghouse Corporation from 1941 to 1946, was concerned with the design of microwave magnetrons. From 1949 to 1953 he was with the Electron Tube Laboratory, National Bureau of Standards. He joined the Sperry Gyroscope Company in 1954, and is now Engineering Section Head for Traveling Wave Tube Development.

Dr. Holmboe is a member of the American Physical Society, Sigma Xi, Tau Beta Pi, and Eta Kappa Nu.



Hsiung Hsu (S '46—A '51—M '55) was born in Nantung, Kiangsu, China on January 24, 1920. He received the B.S.



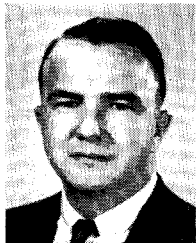
H. Hsu

degree in electrical engineering from the National WuHan University in 1941. From 1941 to 1945, he was employed as an engineer with the International Broadcasting Station (XGOY) in Chungking, China. In 1945 he attended the Moore School of Electrical Engineering, University of Pennsylvania. His graduate studies were continued at Harvard University where he obtained the M.S. degree in communication engineering in 1946 and the Ph.D. degree in engineering sciences and applied physics in 1950. While at Harvard, he was a teaching fellow and received a Gordon McKay scholarship.

During the summer of 1949, Dr. Hsu was employed by the RCA Laboratories in Princeton, N. J. After graduation, he worked in the Cyclotron Laboratory at Harvard University. In 1950, he joined the advanced development section of the General Electric Co. in Owensboro, Ky. His work has been concerned with the development of electron tubes. He was transferred to the Electronics Laboratory of the General Electric Co. in Syracuse in 1953, continuing his work on tubes.

Dr. Hsu is a member of Sigma Xi and the American Institute of Physics.

Joseph T. Maupin received the Bachelor of Science degree in electrical engineering at the University of Kentucky in 1947. He served three years in the U.S. Air Force during World War II.



J. T. MAUPIN

He was employed at Bell Telephone Laboratories, Inc., as a member of the technical staff from 1947 to 1955, where he did research and development work on cables for communications systems.

Since June, 1955 he has been employed by the Transistor Division of Minneapolis-Honeywell Regulator Company as a design engineer, where he has been primarily engaged in fundamental studies of circuit properties and applications of large area junction power transistors.

Mr. Maupin is a member of Tau Beta Pi, Eta Kappa Nu, and an associate member of AIEE.



Anthony E. Siegman (S '54—M '56) was born in Detroit, Mich., on November 23, 1931. After receiving the A.B. degree from Harvard College in 1952, he joined the Electron-Tube Laboratory of the Hughes Aircraft Company, while also studying at UCLA under the Hughes Corporative Plan.



A. E. SIEGMAN

In 1954 he received the M.S. degree in applied physics from UCLA. Since then he has been a

National Science Foundation Fellow in the Electrical Engineering Department at Stanford University where he is presently completing the Ph.D. work and serving as acting assistant professor. His research has concerned helix circuits for traveling-wave tubes, and random fluctuations in electron beams.

Mr. Siegman is a member of Phi Beta Kappa and Sigma Xi.



Leon Sperling (S '52—A '53) was born on February 14, 1929 in Cracow, Poland. In January 1953, he received the B.E.E. degree from the School of Technology, College of the City of New York.



L. SPERLING

Upon graduation, Mr. Sperling joined the Engineering Research Institute, University of Michigan, where he is engaged in circuits development.

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

Jerome J. Suran (A '52—SM '55) was born in New York, N.Y. on January 11, 1926. After having served for three years with the U.S. Army during World War II, he received the BSEE degree from Columbia University in 1949 and continued graduate studies there and at the Illinois Institute of Technology.



J. J. SURAN

From 1949 to 1952, Mr. Suran was employed in the field of control systems design and development by J. W. Meaker and Co. and in the field of fm communication research and development by Motorola, Inc. Since 1952, he has been active in the area of solid state circuits as a member of the Electronics Laboratory of the General Electric Company.

Mr. Suran has a professional engineering license in the State of New York and is a member of the AIEE and the Research Society of America.



Raymond W. Tackett (A '54) was born on July 18, 1916 in Clinton, Ill. Mr. Tackett has been engaged in the design and development of electronic equipment since 1938. His experience includes audio equipment and industrial electronic measuring devices (1938-41), Army Air Force radar and communications (1941-46), high fidelity audio systems and industrial electronics (1946-49), component test evaluation for the ORDVAC and ILLIAC, and regulated power supplies (1951-53).



R. W. TACKETT

In 1953, Mr. Tackett joined the staff of the Engineering Research Institute of the University of Michigan, where he was engaged in research and development of radars, radar displays, and communications. Since October 1955, he has been employed by the Burroughs Corporation, Detroit, as a design engineer.



Chao C. Wang received the Bachelor of Science degree in electrical engineering from Chiao-Tung University in Shanghai, China in 1936. During the period of 1937 and 1940, he studied radio communication at Harvard University under the Tsing-Hua University fellowship. He received the S.M. and Sc.D. degrees in radio communication from Harvard in 1938 and 1940, respectively.



C. C. WANG

After a year of study in radio tube manufacturing at the Radio Corp. of America, Harrison, N.J., he was employed as a research engineer in the Electronic Tube Engineering Department of Westinghouse Electric Corp., Bloomfield, N. J., remaining until 1945. His principal work during this period was in the research and development of microwave tubes.

Since 1946, he has been affiliated with the Electronic Tube Division of the Sperry Gyroscope Company, Great Neck, N.Y., engaged in research of microwave tubes. He is now leading the electronic tube research work at Sperry, consisting of electromagnetic circuit, electron beam control, beam-circuit interaction, physical electronics, and computer applications to electronic tube problems.

He is a member of Phi-Tau-Phi, the American Association for the advancement of science, and the American Physical Society.



William E. Waters, Jr. (M '55) was born in Lexington, Ky. on July 16, 1923. He attended the University of Kentucky where he received the B.S. degree in electrical engineering in 1947 and the M.S. degree in physics in 1949.



W. E. WATERS, JR.

Mr. Waters is attending the University of Maryland, doing graduate work in physics; he expects to receive the Ph.D. degree in February, 1957.

Mr. Waters has been employed at the Electron Tube Branch of the Diamond Ordnance Fuze Laboratories since September, 1948 and has done work in R and D in microwave tubes.



Dean A. Watkins (A '47—M '48—S '49—A '51—SM '55) was born in Omaha, Nebraska, on October 23, 1922. He specialized in electrical engineering, receiving the B.S. degree from Iowa State College in 1944, the M.S. degree from California Institute of Technology in 1947, and the Ph.D. degree from Stanford University in 1951, where he was a Gerard Swope Fellow from 1950 to 1951.



D. A. WATKINS

In World War II, Dr. Watkins was an army engineer unit commander in the European and Pacific Theaters. He was employed by the Collins Radio Company from 1947 to 1948, and at the Los Alamos Scientific Laboratory from 1948 to 1949. From 1951 to 1953, he was employed by the

Hughes Aircraft Company, where he was a member, and then head of the microwave-tube section of the research and development laboratories. Since 1949, Dr. Watkins has been engaged in microwave-tube research, specializing in traveling-wave tubes and backward-wave oscillators. In March, 1953, he returned to Stanford University, where he is now professor of electrical engineering and associate director of the electronics laboratories in charge of the electron-tube program.

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



Stanley E. Webber (S '41—A '43—SM '49) was born June 8, 1919, in Boston, Mass. He received the B.S. and M.S. degrees in electrical engineering from Massachusetts Institute of Technology, Cambridge, Mass., in 1941 and 1942

respectively. He joined the General Electric Research Laboratory in Schenectady, N.Y., in 1942 and has been engaged in research work on microwave tubes of the magnetron, klystron, and traveling-wave type.



S. E. WEBBER

Mr. Webber has served as member and chairman of several IRE technical and conference committees and is a member of Sigma Xi.



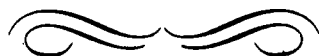
Jakob Zawels (M'53) was born on December 12, 1924. He served an apprenticeship with the South African Iron and Steel Industrial Corporation prior to obtaining the B.Sc. degree in engineering from the University of Capetown.

In 1950 he joined General Electric's Advanced Engineering Program through its international organization. In 1952, he received the M.S. degree from the Massachusetts Institute of Technology. From 1952-1953 he was with RCA Victor, engaged in transistor circuit development. In 1952 he obtained the Ph.D. degree at the University of Capetown.



J. ZAWELS

At present Dr. Zawels is head of the engineering research section of the South African Iron and Steel Industrial Corporation in Pretoria. He is coauthor of the textbook "Transistor Electronics," a corporate member of the South African Institute of Physics, and a member of Sigma Xi.



## Prospectus for TRANSACTIONS on Active Networks

The September, 1957 issue of the IRE TRANSACTIONS ON CIRCUIT THEORY will emphasize the subject of *active networks*. For the purposes of this issue, the term *active networks* will be interpreted to include not only those networks in which the terminal characteristics actually place the activity in evidence, but also passive structures in which active elements (such as tubes or transistors) play a key role in the realization of the specified characteristics.

It is desired to direct emphasis toward: 1) basic properties of active networks; 2) analysis techniques to evidence basic characteristics of active networks; 3) design techniques; and 4) synthesis techniques. Here 1) includes such considerations as realizability criteria with specified types of stability and representation in terms of gyrators and negative resistances, or other basic elements. Objective 2) includes general methods of analysis, interpretations, and manipulations of such descriptive characterizations as the sensitivity function, and techniques for stability analysis of multiloop systems; and 3) includes techniques for the logical design of tube and transistor circuits based on appropriate incremental models, and the significance of these models in terms of realizable network characteristics. Finally, 4) embraces attempts to extend passive-network-theory concepts and techniques to the synthesis of active networks, synthesis techniques based on block-diagram or signal-flow-diagram manipulations, etc.

Primary emphasis will be placed on the properties and design of active networks which are linear and time-invariant, or which can be analyzed or designed by quasilinearization methods.

Information concerning possible contributions for the issue should be forwarded to The Guest Editor, John G. Truxal, Polytechnic Institute of Brooklyn, 55 Johnson Street, Brooklyn 1, N. Y. Although the deadline for the acceptance of papers is May 15, 1957, prospective authors are urged to contact The Guest Editor at an earlier date so as to assist in the planning of the issue.

William H. Huggins, *Editor*

IRE TRANSACTIONS ON CIRCUIT THEORY

## INFORMATION FOR AUTHORS

The PGED TRANSACTIONS is published quarterly and will bear date-lines of January, April, July, and October. Abstracts of papers appearing in the TRANSACTIONS will appear also in IRE PROCEEDINGS. The PGED publication schedule requires about one month for review and correction of all accepted manuscripts. The professional IRE Editorial Staff requires an additional two months' production time from receipt of manuscripts to completion of the printed journal.

**MANUSCRIPTS:** Two copies of the manuscript should be submitted. They should be typewritten (original and one carbon copy), and double spaced on only one side of each sheet. References should appear as footnotes, numbered consecutively, and include in the following order the author's name (including initials), title of reference work, journal name, volume, initial and final page numbers, and date of publication. Footnotes should be listed on a separate sheet and not inserted in text. Each paper must be accompanied by two copies of an abstract not more than 200 words in length.

**ILLUSTRATIONS:** Only original illustrations should be submitted. Photostatic copies of originals are not acceptable, except where they are exceptionally clear, with sharp black and white contrasts. All line drawings (graphs, charts, diagrams, etc.) should be prepared on drafting cloth or white drawing paper in India ink. It is preferable that only the coordinate lines show in graphs. All lettering must be large enough to be legible when reduced 50 to 75 per cent in size. Photographs should be glossy prints. Figure numbers should be indicated on the back of each illustration. Figure numbers and captions should be listed on a separate sheet accompanying manuscript. All drawings, photographs, and other manuscript material should be not larger than 8½ by 11 inches for ease in handling.

Please submit all manuscripts to

Dr. Earl L. Steele, PGED Editor

Motorola, Inc., 5005 East McDowell Road, Phoenix, Arizona

## **INSTITUTIONAL LISTINGS**

The IRE Professional Group on Electron Devices is grateful for the assistance given by the firms listed below, and invites application for Institutional Listing from other firms interested in the Electron Devices field.

HUGHES AIRCRAFT COMPANY, Culver City, Calif.

Res., Dev., Mfr.: Radar Systems, Guided Missiles, Antennas, Radomes, Tubes, Solid State Physics, Computers

RCA TUBE DIVISION, 415 South Fifth Street, Harrison, N. J.

Receiving, Transmitting, Industrial, Cathode-Ray, Camera, and Storage Tubes; Phototubes and Multiplier Phototubes

RCA SEMICONDUCTOR DIVISION, Somerville, N. J.

Transistors and Semiconductor Diodes

RCA COMPONENTS DIVISION, Front and Cooper Streets, Camden, N. J.

Deflection Yokes and Transformers, Speaker, Relays, and Ferrite Products

TEXAS INSTRUMENTS INCORPORATED, 6000 Lemmon Ave., Dallas 9, Texas

Silicon and Germanium Semiconductor Devices, Transformers and Capacitors, Electronic Apparatus and Systems

The charge for an Institutional Listing is \$25.00 per issue or \$75.00 for four consecutive issues. Applications for Institutional Listings and checks (made out to the Institute of Radio Engineers) should be sent to Mr. L. G. Cumming, Technical Secretary, Institute of Radio Engineers, 1 East 79th Street, New York 21, N. Y.