



# THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

In recognition of professional distinction and notable contributions, the Officers and Board of Directors of the Institute certify that



E. D. Becken



A. H. Bobeck



W. S. Boyle



T. H. Crowley



C. A. Warren

has been elected to the grade of

# Fellow

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The IEEE

# Newsletter

The Magazine of the North Jersey Section

**ANNUAL DINNER DANCE HONORING NEW FELLOWS  
AND AWARD WINNERS  
Governor Morris Inn, February 13, 1971**

**SPECIAL ON PAGE 11: IEEE REDUCES DUES AND FEES OF UNEMPLOYED**

December 24, 1970

To The Editor:

For years I have been observing the avalanching Socio-Economic debate amongst engineers. Therefore, when our Section arranged for Dr. John Ullmann, Professor of Management at Hofstra University, to speak on this subject, I expected to see a fairly good attendance. I was not prepared for what I actually found in the Allied Chemical auditorium in Morristown. The nose count totaled fourteen; I repeat, fourteen—including the IEEE officials.

As a member of the Programs Committee, I was anxious to get to the bottom of this mystery. An investigation among my colleagues yielded an unexpected result—they had never heard of this lecture. "But don't you get the Newsletter?", I asked. "Oh sure," they answered, "but we immediately file it." Some said they never read the Newsletter.

What a waste of our precious funds, not to mention the manpower! Apparently we must have been broadcasting on the wrong frequency. May I suggest, therefore, that the Newsletter try something spectacular to catch the eye of that silent, tuned-out, turned-off majority, like an injection of some controversy, for instance.

I can assure you, it worked wonders for the PGMTT Newsletter—at least for the issue that contained the results of a questionnaire on IEEE involvement in socio-economy. I had never seen another one before, but this issue was read, quoted, passed around and xeroxed like the latest salary survey.

My wish for the New Year is that OUR publication find a similar interested audience.

*Max J. Schindler, SM  
R.D. 3, Box 77  
Boonton, N.J. 07005*

Wednesday, February 10

Magnetics Group — Ferrites for Partial Flux Switching-Ferrite Core Memories — Murray Hall, Room 217, Rutgers University, New Brunswick, New Jersey. 8:00 P.M. Pre-Meeting Dinner: Alumni Faculty Club, 199 College Avenue, New Brunswick, N.J. 6:00 P.M.

Saturday, February 13

North Jersey Section Annual Dinner — Governor Morris Inn, Whippany Road at the intersection of Columbia Turnpike (South Orange Ave.), Morristown, New Jersey. 6:00 P.M., Dutch Treat Cocktail Hour; 7:00 P.M., Dinner and Awards.

Wednesday, February 17

Comm-Tech Group — Field trip to the Communications Center of the New York City Police Department — Police Headquarters, 240 Center Street, New York City. 1:30 P.M.

Wednesday, February 17

New York Chapter, Group of Engineering in Medicine and Biology — Symposium on The Impact of Medical Device Legislation — Moderator: Dr. Harvey Solomon, Winter Associates. Rockefeller University, South Lab, Room 204, York Avenue and 66th Street, New York City. 8:00 P.M. Pre-Meeting Dinner: Abby Aldrich Hall, Rockefeller University, 6:00 P.M.

Wednesday, February 17

Power and Industrial Division — Designing for Improvement in Reliability of High Voltage Distribution Systems — Moderator: William H. Peace III, Westinghouse Electric Corporation — Consolidated Edison Company, 4 Irving Place, 19th Floor Cafeteria, New York City. 6:30 P.M. Refreshments: 6:00 P.M.

Wednesday, February 17

Computer and Communications Technology Groups — Teleprocessing Network Design — Mr. Thomas Puorro, Speaker. Bell Telephone Laboratories, Room 1H-009, Whippany, New Jersey. 8:00 P.M. Pre-Meeting Dinner: Llewellyn Farms (at intersection of Routes 10 and 202, Morris Plains, New Jersey (Dutch Treat). 6:00 P.M.

Wednesday, February 24

Multi-Group Joint Chapter Meeting — Artificial Intelligence — Leon D. Harmon, Speaker. Bell Telephone Laboratories, Auditorium, Whippany, New Jersey. 8:00 P.M.

Thursday, February 25

New York, North Jersey and Long Island Joint Chapter—Instrumentation and Measurement — Inspection Tour — ERE Laboratory, West Orange, New Jersey. 2:00 P.M.

Thursday, February 25

New York Metropolitan Chapter—Electron Devices Group — High Resolution Electron-Beam Fabrication — Michael Hatzakis, Speaker. International Telephone & Telegraph Labs, Nutley, New Jersey. Pre-Meeting Dinner: Copperhood Restaurant, South of Route 3 at Park Avenue Exit. 6:00 P.M.

Thursday, March 18

System Simulation of Elevators — Details next month.

Published monthly except July and August by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc. Office of Publication: 399 Howard Boulevard, Mount Arlington, N. J. 07856.

Volume 17 February 1971 No.6

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 Deadline for receipt of material is the 25th of the second month preceding month of publication.

All communications concerning the Newsletter including editorial matter, advertising, and mailing, should be addressed to: The NEWSLETTER, c/o Girard Associates, Inc., P. O. Box 111, Mt. Arlington, N. J. 07856, Phone: 398-5524.

Subscription: \$0.75 per year through dues for members; \$1.50 per year for non-members.

Application to mail at second-class postage rates is pending at Mount Arlington, N. J.

**REPORT ALL ADDRESS CHANGES TO:**

Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street  
 New York, N. Y. 10017

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

**NORTH JERSEY  
SECTION OFFICERS  
1970-1971**



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The North Jersey Section Annual Dinner Dance honoring the North Jersey Section newly-elected Fellows and recipients of field awards of the Institute will be held on Saturday evening, February 13, 1971 at the Governor Morris Inn, Morristown, New Jersey. Fellow award recipients are:

*Mr. Eugene D. Becken*, Executive Vice President, Operations, RCA Global Communications, Inc., for contributions to management of engineering and to the use of computers in international communications.

*Mr. Andrew H. Bobeck*, Member of the Technical Staff of Bell Telephone Laboratories, Inc., for contributions to fundamental magnetic memory and logic devices.

*Dr. Willard S. Boyle*, Executive Director, Solid State Devices, Bell Telephone Laboratories, Inc., for scientific contributions, inventions and technical leadership in semiconductor electronics.

*Dr. Thomas H. Crowley*, Executive Director of the SAFEGUARD Design Division, Bell Telephone Laboratories, Inc., for contributions to computing techniques, switching theory, machine-aided design and the development of large software systems.

*Mr. Clifford A. Warren*, Executive Director, SAFEGUARD Development Division, Bell Telephone Laboratories, Inc., for contributions to the development of radar and large-scale guided missile systems.

Field award recipients that are known at the publication deadline are Mr. David A. McLean, recipient of the 1970 Mervin J. Kelly Award and Mr. Andrew H. Bobeck, one of the co-authors of a paper that won the W. R. G. Baker Prize Award.

The guest speaker at the awards dinner will be Mr. Raymond W. Sears, Former Director of University Relations for Bell Telephone Laboratories.

A Dutch treat cocktail hour will begin at 6:00 P.M. and will be followed by dinner at 7:00 P.M. Following presentation of the awards there will be dancing to the music of John Saleeby and The Continentals until 1:00 A.M.

**About the Speaker**

Raymond W. Sears is a retired Member of Technical Staff of Bell Laboratories.



*R. W. Sears*

He is a member of the Board of Directors of the Institute of Electrical and Electronic Engineers and Corporate Treasurer.

He joined BTL as a research physicist in 1929. In 1939 he became involved in electronic device development and was active in this field until his transfer in 1962 to Bellcomm, Inc., a Bell System subsidiary in Washington, D.C. As Director of the Operations Studies Division he was responsible for communications engineering, operations planning, and man-machine studies for the Apollo Project. He returned to Bell Laboratories in 1965 as Director of University Relations and Employment.

A native of Cambridge, Ohio, he received his B.A. degree in physics from Ohio Wesleyan University in 1928 and his M.Sc. degree in physics from Ohio State University in 1929.

Please forward ..... tickets at \$8.00 each to: (Check payable to N.J. Section IEEE)

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I would like to share a table with the following:

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## Artificial Intelligence

At a Multi-Group joint chapter meeting on February 24, 1971 Leon D. Harmon will present a talk on "Artificial Intelligence."

Man's machines are behaving more and more like him in certain respects. In some cases like game playing and theorem proving, artificial-intelligence can at times outstrip natural stupidity. But differences between brains and computers are much more apparent than are similarities, in terms of both behavior and mechanism. Striking as some present machine performance is, human performance is for the most part vastly superior. However, if artificial intelligence ever grows to substantial proportions from its present infancy, a different and fascinating new branch of the evolutionary tree may well have been spawned.

### About the Speaker

Mr. Harmon received the B.S.E.E. degree from New York University in 1956. From 1950 to 1956 he was engaged in the research and development of high-speed digital computing systems with the engineering research staff of the Electronic Computer Project at the Institute for Advanced Study in Princeton, New Jersey. In 1956 he joined the Bell Telephone Laboratories at Murray Hill, New Jersey where he worked on visual pattern recognition by machines, sensory psychophysics and information processing in the nervous system. He is presently conducting research in the analysis of neurophysiological systems using electronic neural analogs, and automatic machine processing of visual and auditory patterns.

*Time:* 8:00 P.M., Wednesday, February 24, 1971.

*Place:* Bell Telephone Laboratories, Auditorium, Whippany, New Jersey.

## Electron-Beam Techniques

High resolution electron-beam fabrication will be the topic of the February 25 meeting of the Electron Devices Group. The speaker will be M. Hatzakis of IBM Research Labs, Yorktown Heights, N. Y.

The dimensions of many electronic devices have been drastically reduced in order to increase speed and/or packing den-

sity. This is true of bipolar and field-effect transistors, as well as a new class of devices, the acoustic surface wave transducer. Conventional photolithographic techniques are unable to meet the size requirements of these devices due to the limitations imposed by the wavelength of light. Electron-beam fabrication is not hampered by such limitations at the present level and it represents a promising technique for high resolution fabrication. Processes have been developed at IBM Research Laboratories which allow the fabrication of devices with minimum linewidths of 1000 Å or less. These processes, and their shortcomings, will be described.

Michael Hatzakis was born in Crete, Greece, on January 1, 1928. He received the B.S. and M.S. degrees in electrical engineering from New York University in 1964 and 1967, respectively. He joined IBM Research Center, Yorktown Heights, N. Y., in 1962, where he worked in the Electron-Beam Group. He participated in the development of the electron-beam recorder for the Photoscore Project and the Large-Scale Integration Program. He is presently working on the development of microfabrication techniques using electron beams, which includes fabrication of sub-micron transistors and other devices.

*Time:* Thursday, February 25; 8:00 P.M.

*Place:* ITT Labs, Nutley, N.J.

*Pre-Meeting Dinner:* Copperhood Restaurant, South of Route 3 at Park Ave. exit; 6:00 P.M.

## Police Field Trip

The Comm-Tech Group will sponsor a field trip to the Communications Center of the New York City Police Department on February 17 at 1:30 P.M. at Police Headquarters, 240 Center Street, N.Y.C.

The tour will consist of a lecture on the basic aspects of the telephone communications and computer systems; and the procedures of dispatching police assistance in response to "911" emergency calls. This will be followed by a tour of the center.

The tour will be free and limited to thirty people. Send reservation to: Mr. T. P. Moroney, c/o AT&T Co., Room 1641A, 130 John Street, New York, N.Y.

*Time:* Wednesday, February 17; 1:30 P.M.

*Place:* Police Headquarters, 240 Center Street, New York City.

## Ferrites for Partial Flux Switching Memories

"Ferrites for Partial Flux Switching Ferrite Core Memories" will be covered by H. E. van Bruck and T. H. Holtwijk of N. V. Philips, Eindhoven, The Netherlands, at the February 10 meeting of the Princeton Magnetic Chapter.

After a short historical introduction, attention will be given to materials optimization for partial flux switching ferrite core memory systems utilizing two-cores-per-bit. In particular the effects of coercive force, core size and mechanical resonances will be considered, as well as differential self heating of the cores. Experimental data on a 4K-word, 250-ns cycle system will be presented.

*Time:* Wednesday, February 10; 8:00 P.M.

*Place:* Murray Hall, Room 217, Rutgers University, New Brunswick, N. J.

*Pre-Meeting Dinner:* Alumni-Faculty Club, 199 College Avenue, New Brunswick, N. J.; 6:00 P.M.

*Reservations:* Mrs. Helen Yefko, Dept. of Electric Engineering, Rutgers University, 247-1766, ext. 6325.

## Teaching Machines

The New York, North Jersey and Long Island Joint Chapter--Instrumentation and Measurement will sponsor an inspection tour of the facilities of ERE Laboratory in West Orange, New Jersey. ERE Laboratory is owned and operated jointly by the McGraw-Edison Co. and Prentice-Hall Inc. The Laboratory has developed and is now producing the Edison responsive environment machine or talking typewriter. This instrument is capable of providing tutorial attention and audio-visual response that is related to the progress being made by the child. A number of smaller systems of "desk top technology" including the "talking page" and the voice mirror will also be discussed.

Registration will be limited to the first 25 people who apply. Those interested should call Mr. John J. Dietz at (201) 736-1000, Ext. 571. Acknowledgements and directions will follow.

*Time:* Thursday, February 25; 2:00 P.M.

*Place:* ERE Laboratory, West Orange, N.J.

## Joint Meeting: Teleprocessing Network Design

The Computer and Communications Technology groups will host a joint February meeting which should be of interest to the computer designer, programmer, or user, as well as those concerned with network planning. The speaker will be Mr. Thomas Puorro, IBM Systems Research.

### About the Talk

Some procedural approach or design steps are necessary to synthesize a geographically disbursed teleprocessing network. An approach must address the very difficult problem of choosing the myriad of system parameters. In some network designs, for instance, the number of these parameters can approach forty or fifty. These parameters are system elements such as: line control, polling, line speed, type of terminals, line organization, concentrators and multiplexors, response time criteria, and parameters concerning the front end of the computer and its line interface. Most of these parametric choices have many possible answers. Take, as an example, the choice of line speed which can be 75, 150, 1200 or 2400 baud. This parameter, as are most, is often independent of others. Each parameter does, however, affect the critical measurement of system performance in terms of throughput (transactions) versus dollars.

One approach in determining these parameters is to a number of parameters (by guess, experience or a quick calculation) and measure the resultant system throughput by some form of model. A number of tools are available for this measurement such as Communication Network Design Program (CNDP), General Purpose System Simulator (GPSS), and other simulation languages, as well as analytic techniques using tables and/or simplified queueing models.

A design approach to network synthesis which uses the above procedure of fixing a number of system parameters has been successfully developed. This technique incorporates queueing tools for determining parametric curves of throughput versus response-time and iterates until a near optimum solution is obtained.

A description of the problems encoun-

tered, the procedures used and the tools developed will be given plus a simplified case study for clarity of presentation.

### About the Speaker

Thomas A. Puorro received a B.S. degree from Tufts University and a Master's degree in Electrical Engineering from Northeastern University.

With IBM since 1949, Mr. Puorro has held a variety of positions on the SAGE Project, including assignment to the design of equipment and diagnostic programming for AN/FSQ-7 Group Leader of the XD-1 Center Computer, and liaison work with the MIT Lincoln Laboratory on future requirements for SAGE. In 1959, Mr. Puorro was in charge of a four-man study effort on the Satellite Intercept System; in 1960 he was appointed Manager of an advanced space systems study group in Bethesda; and in 1961 he was given technical responsibility for all IBM activities on Air Force Satellite Program 461, which included direction of the expanded systems analysis, equipment, and programming team assigned to the contract.

In June 1965 Mr. Puorro was made technical assistant to the Houston Operations Manager responsible for RTCC technical evaluation and customer liaison; he was named RTCC Project Office Manager shortly thereafter.

Mr. Puorro was assigned as Manager of the Special Police Radio Inquiry Network (SPRINT) in December 1967 to work with the New York City Police Department in the design, development and implementation of a teleprocessing system for city-wide dispatching of mobile police equipment. Mr. Puorro joined the staff of the IBM Systems Research Institute in December 1969, and has been teaching a number of subjects in the area of network systems design.

*Date:* Wednesday, February 17, 1971.

*Time:* 8:00 P.M.

*Place:* Room 1H-009, Bell Telephone Laboratories, Whippany, N.J.

*Pre-Meeting Dinner:* Llewellyn Farms (at intersection of Routes 10 and 202, Morris Plains, N.J.), 6:00 P.M. (Dutch treat).

*For dinner reservations, contact Mr. J. Kampschoer (201) 386-4135. For further information about the talk, contact Dr. R. Shively (201) 386-4715.*

## The Impact of Medical Device Legislation

At the February meeting of the New York Chapter, Group on Engineering in Medicine and Biology, a group of prominent physicians will present a symposium of great interest to both medical equipment manufacturers and users concerning minimum standards for medical devices. The symposium will be moderated by Harvey Solomon, M.D. of Winter Associates.

### Panel Members


Theodore Cooper, M.D., one of the participants in the panel, chaired a committee for the Department of Health, Education and Welfare. The Cooper Committee Report has been used as a basis for legislation introduced.

Dr. Cooper is also Director of the National Heart and Lung Institutes. Other participants include: Wilson Greatbach, Director of Mennen-Greatbach, Ltd., and prominent in the design of cardiac pacemakers and other medical devices; Andrew Bassett, M.D., Professor of Orthopedic Surgery, Columbia Presbyterian Medical Center, member of the HEW ad hoc Committee on Devices, and other device regulation committees; and Bernard Falk, National Electrical Manufacturing Association.

*Time:* Wednesday, February 17; 8:00 P.M.

*Place:* Rockefeller University, Welch Hall, Faculty Dining Room, York Ave. and 66th Street, New York City.

*Pre-Meeting Dinner:* 6:00 P.M. at Abby Aldrich Hall, Rockefeller University.

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## Basics of Electrical System Protective Devices

An eight-session study course to aid engineers in the commercial, industrial and utility fields. The course will cover the basic principles of operation, application, selection and coordination of electrical protective devices in common use today. The course will include data on fuses, motor overload relays, molded case and low-voltage power circuit breakers, and protective relays. The sessions will be presented by C. K. Blizard, Assistant Director, MULTI-AMP Institute.

### March 9, 1971—INTRODUCTION

Importance of Electrical Protection - Continuity of Service - Integrated Operations - Available Short Circuit Currents are High - Magnitudes of Fault Currents - What are Electrical Protective Devices - Basic Theory of Operation - Ideal Selection of Electrical Protective Devices.

### March 16—FUSES AND MOLDED CASE CIRCUIT BREAKERS

Theory of Operation - Interpretation of Manufacturers Time Current Curves.

### March 23—LOW VOLTAGE POWER CIRCUIT BREAKERS

Theory of Operation - Interpretation of Manufacturers Time Current Curves.

### March 30—PROTECTIVE RELAYS (Overcurrent)

Theory of Operation and Application - Use of Current Transformers - Interpretation of Manufacturers Time Current Curves.

### April 6—PROTECTIVE RELAYS (Undervoltage and Percentage Differential)

Theory of Operation and Application - Use of the Time Characteristic Curves for Undervoltage Relay.

### April 13—MOTOR PROTECTION

Types - Selection of Protection; Overload, Short Circuit - Use of Heater Selection Tables.

### April 20—GUIDE LINES FOR COORDINATION

### April 27—PROBLEMS AND SUMMARY

Discussion of Problems - Good Design - Coordination - Maintenance

**TIME:** 7:00-9:00 P.M., Tuesday evenings starting March 9, 1971

**PLACE:** MULTI-AMP Institute, 61 Myrtle Street, Cranford, New Jersey

**FEE:** \$40 to Members (IEEE, ASME, NJSSPE, etc.); \$50 to Non-Members. A \$5.00 discount for early registration applied to both applications if received prior to March 1, 1971.

**COORDINATOR:** For any information concerning course or location, contact: C. K. Blizard, MULTI-AMP Corporation, 61 Myrtle Street, Cranford, New Jersey 07016, (201) 276-8200.

### REGISTRATION FORM—BASICS OF ELECTRICAL SYSTEM PROTECTIVE DEVICES

Send to: *Mr. Bernard Geertsma*  
*Jersey Central/New Jersey Power & Light Company*  
*Madison Avenue @ Punch Bowl Road*  
*Morristown, N. J. 07960* Phone: (201) 539-6111

Name \_\_\_\_\_ Tech. Society \_\_\_\_\_  
Firm \_\_\_\_\_ Position \_\_\_\_\_  
Business Address \_\_\_\_\_ Phone \_\_\_\_\_  
Home Address \_\_\_\_\_ Phone \_\_\_\_\_

Check or Money Order Enclosed:

Member: \$35.00.....; \$40 after March 1.....

Non-Member: \$45.00.....; \$50 after March 1.....

Please make check or money order payable to: *North Jersey Section IEEE.*



## Effective Technical Presentations

This course is intended to help the individual become more skillful in the art of oral communication or public speaking, whether the presentation is a prepared speech or an informal talk before a large or a small audience. A partial list of subjects to be explored includes platform composure, determining how long to hold forth, introductions — speaker and speech, effective use of words, speech organization — beginnings and endings, the importance of knowing the audience, and sensitivity to audience reaction as a guide in putting a point across.

The need for such training can, perhaps, be better understood by the following thought, paraphrased from G. H. Lorimer's "Letters from a Self-made Merchant to His Son":

It's one thing to have a carload of miscellaneous facts sloshing around loose in one's head and getting all mixed up in transit; it's quite another thing to carry that same assortment of facts properly boxed and crated for convenient handling and immediate delivery.

**DATES:** Eight Monday evenings, March 1 through April 19

**TIME:** 7:15—9:15 P.M.

**PLACE:** Room 1H-009, Bell Telephone Laboratories, Whippany Road, Whippany, New Jersey

**INSTRUCTOR:** Roy D. Tolliver, graduate of Dickinson College and, presently, employed by the Bell Telephone Laboratories in the Methods and Standards Department, Whippany, New Jersey.

For several years, Mr. Tolliver has taught this course in the Laboratories at Whippany and in various adult schools in the county.

For additional information contact K. Grace, Jr., (201) 386-6030.

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### Registration Form — EFFECTIVE TECHNICAL PRESENTATIONS

Send to: *Mr. Kenneth Grace, Bell Telephone Laboratories, Inc.  
Room 5D-240  
Whippany, New Jersey 07981*

Name \_\_\_\_\_ Tech. Society \_\_\_\_\_

Firm \_\_\_\_\_ Position \_\_\_\_\_

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Section  
IEEE  
FELLOWS

**EUGENE D. BECKEN**

Mr. Becken, currently Executive Vice President, Operations, has been with RCA Global Communications, Inc. for thirty-five years. He is responsible for the Company's world-wide operations and its overseas district activities.

Mr. Becken joined RCA Communications in 1935 as Transmitting Engineer at the Rocky Point transmitting station. The following year he was transferred to the New York headquarters.

He became Plant Operations Engineer in 1948 and Assistant Vice President in 1953. He was elected Vice President, Operations Engineering in 1959, Vice President and Chief Engineer in 1960 and Vice President, System Operations in 1968.

Following his graduation from the University of North Dakota with a Bachelor of Science degree in Electrical Engineering, Mr. Becken received a Master's degree in Electrical Engineering with a major in Communications from the University of Minnesota. In 1952, he received a Master of Science degree in Business and Engineering on a Sloan Fellowship at the Massachusetts Institute of Technology.

Mr. Becken is a registered Professional Engineer in New York State and a member of the Institute of Electrical and Electronics Engineers, the Society of Sloan Fellows of M.I.T., the Newcomen Society of North America, Bankers Club of America, the RCA Institutes Board of Technical Advisors, the American Association for the Advancement of Science, the New York Academy of Sciences and the Armed Forces Communications and Electronics Association. Mr. Becken has been Chairman and member of the Radio Communications Committee and Space Communications Committee and a member of the Communications Committee of the Institute of Electrical and Electronics Engineers. He has had several technical papers published.

**A. H. BOBECK**

Andrew H. Bobeck joined the technical staff of Bell Telephone Laboratories in 1949. His early work concerned the design of communication and pulse transformers, and later the development of one of the first solid-state digital computers. Since 1956, he has specialized in the development of magnetic logic and memory devices.

He was responsible for the conception and development of the twistor memory device and most recently has been investigating the properties of cylindrical domains found in uniaxial magnetic materials, such as the orthoferrites. He has been granted 34 patents with 32 patents pending and is the author of 10 published technical articles.

Born in Tower Hill, Pa., Mr. Bobeck was graduated from Rayen High School in Youngstown, Ohio. He received B.S. and M.S. degrees in electrical engineering from Purdue University in 1948 and 1949, respectively. He was honored by Purdue as a Distinguished Engineering Alumnus in 1968.

He is a member of the Institute of Electrical and Electronics Engineers, Tau Beta Pi and Eta Kappa Nu.

**W. S. BOYLE**

Willard S. Boyle is executive director of the Semiconductor Components Division at Bell Telephone Laboratories, Murray Hill, N.J. This work is carried on at the company's Murray Hill, New Jersey; Allentown, Pennsylvania; and Reading, Pennsylvania Laboratories. Dr. Boyle's headquarters are at the Murray Hill Laboratory.

Dr. Boyle joined Bell Laboratories in 1953 and initially engaged in various studies related to solid-state spectroscopy research. He later was appointed head of a department which did some of the early work on solid-state lasers.

In 1962, Dr. Boyle was named Director of Space Science and Exploratory Studies at Bellcomm, Inc., in Washington, D.C. This work was in support of the manned lunar program and was aimed at obtaining early information on the radia-



tion environment and lunar surface conditions. He returned to Bell Laboratories in 1964 and was appointed director of the Semiconductor Device Development Laboratory. He was promoted to executive director of the Electronic Materials and Processes Division in 1968 and assumed his present post in 1969.

A native of Canada, Dr. Boyle received B.Sc., M.Sc., and Ph.D. degrees from McGill University in Montreal in 1947, 1948, and 1950, respectively.

He is the author of a number of published technical articles, holds eleven patents and is a member of the American Physical Society, and of the IEEE.

#### T. H. CROWLEY

Thomas H. Crowley is Executive Director of the SAFEGUARD Design Division at Bell Telephone Laboratories, Whippany, N.J.

Since joining Bell Laboratories in 1954, Dr. Crowley has engaged in research on magnetic logic devices, switching theory, sampled-data systems, and computer-aided logic design. He was appointed Head of the Computer Utilization Department in 1962, Head of the Computer Research Department in 1963, Director of the Computing Science Research Center in 1965, and Director of the NIKE-X Programming Laboratory in 1967. He assumed his present position in 1968.

Dr. Crowley received the Bachelor's degree in electrical engineering in 1948 and the M.A. and Ph.D. degrees in mathematics in 1950 and 1954, respectively, all from Ohio State University. He worked in the university's Antenna Laboratory from 1948 to 1954. In March of 1970 he received the College of Engineering Distinguished Alumnus Award from Ohio State University.

Dr. Crowley has been granted three patents on magnetic devices and digital circuits and has written a number of books and articles on computers and magnetic devices for several technical journals. He is a member of the Institute of Electrical and Electronics Engineers and the honor societies Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

#### C. A. WARREN

Clifford A. Warren is Executive Director of the SAFEGUARD Development Division at Bell Telephone Laboratories and is responsible for research and development work on the tactical SAFEGUARD System.

Mr. Warren joined Bell Laboratories in 1931 and first worked on aircraft radio communication equipment. Since 1939, he has devoted his career primarily to military projects. During World War II he engaged in radar design for Navy fire control and was Project Engineer for Navy submarine search radar. For this effort he was given the Naval Ordnance Development Award. In 1951 he first began work on the NIKE Project when he supervised some of the earliest NIKE-AJAX test firings at White Sands Missile Range and later became Project Engineer during early development of NIKE-HERCULES. He was appointed Director of the NIKE-ZEUS Project in 1957 and has had development responsibility for this project through 1963 when the program was re-oriented to NIKE-X and now SAFEGUARD.

Mr. Warren received the B.S. degree from Cooper Union and the M.S.E.E. degree from Stevens Institute of Technology. He has been a Senior member of the Institute of Electrical and Electronics Engineers and is a member of the Engineers Club of Plainfield, N.J. He also is a member of the Technical Committee on Management of the American Institute of Aeronautics and Astronautics.

He has recently been awarded the Army's Outstanding Civilian Service Award for his leadership on the SAFEGUARD Program.

He was elected to the grade of Fellow in I.E.E.E. on December 4, 1970.

## 1970 Recipient of the Mervin J. Kelly Award

#### DAVID A. MCLEAN

Mr. McLean has an outstanding record of achievement in developments of capacitor processing, chemical stabilizers for capacitors, metallized paper capacitors and tantalum solid capacitors. He is best known, however, as the originator of tantalum film microcircuitry, a contribution of fundamental importance to electronics technology. He has 39 patents, and has published numerous articles (37 of which included in nomination form).

In addition to his many outstanding contributions as a scientist and engineer, Mr. McLean is a skilled technical leader and manager. As the Director of the (Electronic) Components Laboratory at Bell Telephone Labs, he has advanced the technology of tantalum film circuitry from the laboratory stage to where it is one of the mainstays of hybrid integrated circuits. To illustrate this point, his laboratory has developed a tantalum thin film precision RC oscillator for use in TOUCH-TONE telephone sets. Several million of these hybrid integrated circuits will be manufactured annually for this application. Tantalum thin film circuits for application in telephone switching and transmission systems are also in manufacture. This rapid fanout of tantalum thin film technology is due in large measure to the inspirational leadership of Mr. McLean.

## The Editor's Corner



In January's issue, we requested the assistance of our members in telling us how the Newsletter might be improved. Due to the time overlap between the deadline date and the mailing of this month's issue, no letters have been received as we go to press.

However, an unsolicited letter was received in December from one of our more active members, Dr. Max J. Schindler. So, with this issue, a LETTERS TO THE EDITOR column has been inaugurated, with Max's letter as the first to be published. It should make interesting, and timely, reading.

We agree with Max that in view of all the work that goes into arranging meetings, it's regrettable that the turnout is so poor at many of these functions. We're puzzled, too, since the September Newsletter gave prominence to the announcement of this particular meeting. It's hard to believe that there was general lack of interest in Dr. Ullmann's talk since he touched upon a subject that should be of interest to all of us. The very title of his lecture was provocative—"Recent Developments Affecting the Engineering Profession—the impact of reduced defense expenditures, increased technical activity abroad, and how the profession can cope with ensuing dislocations."

We haven't quite decided on how responsive we might be to his request that some controversy be injected in succeeding issues. Your editorial staff is hoping that our readers will submit some ideas, along with constructive comments on how the Newsletter may better serve your IEEE professional needs.

Let's hear from you. And, please, mail early in the month, to give us a chance to read all those letters we're expecting.

*Raymond Dusault, Editor*

## Report From: The North Jersey Chapter of the Power Engineering Society

*The status of the Power Group has recently been changed to that of Society. With the change in status has come a change in name, to "Power Engineering Society," a title which is preferred by a plurality of the membership.*

The former Power Group is the first group in the IEEE to be elevated to this status. It has been brought about by the concerted and continued efforts of devoted Power Group Officers, and by their associates in the Institute who cooperated with them to obtain their objective—a Power Engineering Society.

Now that the Society has been accomplished, it is time for each member of the Society to reassess what his part has been in the former Power Group and what it will be, or should be in the Society.

This year, do a little more than pay your dues. Probably some of the people you work with could be IEEE members. Maybe they have even said they should join but haven't gotten around to it. Give them a little push. About one-third of the people who attend the technical meetings are not IEEE members. Their attendance is encouraged, but they might also be encouraged to join the Institute. If you know someone you think should be a member encourage him to join the IEEE.

The subject of attendance at meetings is another point where you can help. If it wasn't for that one-third component of non-members who take an interest, the attendance at some meetings would be pretty bad. Arranging a meeting takes a lot of work—picking the subject, making the room arrangements, obtaining speakers, preparing the publicity and distributing it, seeing that the meeting runs smoothly.

Meetings are arranged for membership. They are an additional benefit which you can use if you so desire. A good turnout is very gratifying to the chapter officer, particularly to the sponsors who have to make an equal or greater effort for the next meeting.

Finally, there is a definite need for more people to serve as program sponsors for meetings, to help members of the Power Group committee and to gain experience to serve on other committees. There is need in the North Jersey Power Society for people to represent industrial and commercial power systems and people to represent the engineering consultants in the electrical power industry. These fields are lacking completely now in representation.

Power Group meetings, education meetings, and special meetings are all arranged by IEEE members who volunteer their time and effort. The "Instrument Panorama," held recently in Morristown required a tremendous amount of work. It took members with an interest, and with experience to bring it about.

You can help.

Help to the extent of your interest in the organization by:

1. Getting others to join the IEEE.
2. Attending more meetings yourself.
3. Giving your ideas and suggestions—pro and con.
4. Volunteering—put your ideas and opinions into actions!

The IEEE is your organization and to a very great extent it depends on the continued interest shown by the members. If you want low membership dues, interesting meetings and continued or expanded group and chapter activities, do something about it! Participate or at least make your opinions known.

If you have some ideas about what time meetings should be held, where they should be held, meeting topics, or anything else relevant to IEEE give me a call after 6:00 P.M. at: 267-1828, or write:

Mr. Peter Jackson  
81 Woodland Avenue  
Morristown, New Jersey 07960

*Peter F. Jackson, Chairman  
Power Engineering Society Chapter*

## High Voltage Systems

The February 17 meeting of the Power and Industrial Division will cover the "Designing for Improvement in Reliability of High Voltage Distribution Systems."

Speakers will be: Mr. Charles Moskow, Engineer, Electric Distribution Department, Public Service Electric & Gas Company of New Jersey; Mr. Roch Cappelli, Division Engineer, Distribution Procedures Division, Consolidated Edison Company of New York; Mr. Verlin J. Warnock, Head of Distribution Engineering Section, American Electric Power Service Corporation, New York City.

The moderator will be William H. Peace, III, District Manager Power System Sales, Westinghouse Electric Corporation.

The speakers will discuss the present day concepts of high voltage distribution systems primarily in the 13 Kv and 34 Kv range with special emphasis on designing for reliability of electric service. Designing to minimize interruptions and to shorten the outage time will be discussed. Equipment available and the need for more equipment for switching distribution circuits of this higher voltage class in an economic manner will also be presented.

*Time:* Wednesday, February 17; 6:30 P.M.

*Place:* Consolidated Edison Co., 4 Irving Place, NYC. (19th Fl. cafeteria).

*Refreshments:* 6:00 P.M.

### LATE NOTICE

The Metropolitan New York Chapter of the Aerospace Electronics Group will hold a meeting Thursday, February 25, 1971, at 8:00 P.M. in the auditorium, ITT Defense-Space Group, 500 Washington Avenue, Nutley, New Jersey. (Main lobby entrance near base of Microwave Tower). The subject, "Evaluation of Military Airborne-Digital Computer," will be presented by Gerald P. Zemlin, Director-Advanced Systems, ITT Avionics Division. A pre-meeting dinner will be held at the Copperhood Restaurant, 1 Park Ave., Lyndhurst, N. J. at 6:15 P.M.

### USE "DATE" SERVICE

Twenty-one technical education subjects are available through IEEE's Dial Access Technical Education (DATE) Service. Call (212) Plaza 2-7290 to use this special service.

### FELLOW SECTION MEMBER

The IEEE Board of Directors, at their January 6, 1971 meeting, have taken two important steps to try to meet your needs during these chaotic economic times. I thought you would like to know at least some sketchy details of those actions dealing with reduction in dues for unemployed members and a special cooperative program with the National Society of Professional Engineers.

The procedure for unemployed members is as follows: **UNEMPLOYED MEMBERS** – If you are currently unemployed through involuntary termination and are actively seeking re-employment, you may continue your IEEE membership through December 1971, with all privileges, publications and services covered by membership dues (and by Group or Society fees, and subscription fees, if any) *by payment of one-half of the established dues and fees.* If you wish to take advantage of this arrangement, you must submit a signed statement to IEEE Headquarters that you are involuntarily unemployed and seeking re-employment. *No action to reduce the dues or to rebate payments already made can be taken until you notify Headquarters of your unemployed status.*

One of the often repeated mandates has been to reduce Headquarters costs. When feasible, you can assist IEEE to reduce its costs by sending the one-half payment with your unemployment notification. If you do not submit the payment with your unemployment notification, IEEE will bill you for the half payment prior to the due date of July 1, 1971.

If you are unemployed and have already paid the full dues and fees for 1971, a rebate will be sent to you for the excess paid upon receipt of your unemployment notification and request for rebate.

In a cooperative program with the National Society of Professional Engineers, membership in the NSPE by IEEE will be available at a reduced cost. Under one of several plans you may elect to take part in NSPE publications, legislative activities, employment referral, salary survey and retirement-pension services of NSPE on either a national or state level. It is not necessary to be a licensed professional engineer in order to participate in this program. This cooperative program was effective January 14, 1971 when it was approved by the Board of Directors of NSPE.

A formal announcement of these actions will appear in the February issue of Spectrum and the full details will be in the March issue.

This action is an attempt by the Board of Directors to respond to your needs. If you have any suggestions of other programs which will benefit you as a member of North Jersey Section or the membership of IEEE as a whole, please let me know.

H. E. Blaicher, Jr.

Chairman  
North Jersey Section IEEE

# STUDENT AFFAIRS

## Annual Student Paper Prize Contest

Now is the time for student members to start on that Prize Paper for the Metropolitan Student Council Prize Paper Contest. Each year the Metropolitan Student Council sponsors a Student Prize Paper Contest. The contest will be on Saturday, April 24, New York University, Bronx Heights Campus.

Students attending schools in the New York, North Jersey, and Long Island Sections of the IEEE with Student or Student Associate Branches of IEEE are eligible.

The prizes to be presented are: First—\$200; Second—\$100; Third—\$75; Fourth—\$50.

A \$25.00 prize will be presented to the author of the paper judged best in each local Student Branch that is a member of the MSC.

Winners of this contest become eligible for the national contest sponsored by the IEEE. In the past three, New York regional winners have won this national contest.

Papers should cover technical and engineering aspects of a subject reasonably within or related to the areas with which the IEEE is concerned, and with which the author is familiar, either from his courses, his hobbies, his summer work, etc. The work need not be original in engineering content but should be original in treatment and concise in coverage of the author's contribution to that subject.

The deadline for submission of papers is 4 P.M., March 17, and should be submitted to the Contest Secretary: Mr. Daniel C. Casellar, General Telephone & Elec. Labs, 208-20 Willets Point Blvd., Bayside, N.Y. 11360, (212) 225-5000, Ext. 327. For further details consult your Branch Counselor.

## IEEE "Student Night"—A Success Story

The Seniors that graduate this year will do so in troubled times . . . but times laden with opportunity for those who are willing to gamble on themselves.

This was one point hit upon at the Annual North Jersey Section IEEE Student Night. Students and professors from Stevens Institute of Technology, Fairleigh-Dickinson University, and NCE met here

Tuesday night, Dec. 8, to discuss opportunities for the Electrical Engineering graduate in today's job market.

Speakers in the fields of Consumer Products, Computer Science, Communications, Power, and Bio-medical Engineering "shot from the hip" in answering questions from the audience. Glamour fields, such as bio-med, are actively producing hospital hardware for use all over the world, but the graduating senior is wrong if he thinks the industry is begging for applicants.

Seniors are warned that in spite of the fact that a graduate degree is supposed to be a broadening experience the masters and doctorate degree holders rarely find jobs that they truly like. The extra education has, in fact, a limiting effect on the number of jobs that are offered to graduate degree holders. Employers are loath to hire a high-salaried engineer unless his experience matches their requirements very closely. Those seniors who enter the job market in June were urged by Charles Lundeen of Hewlett Packard's Bio-medical Division to acquire as broad a base of experience as they can to achieve success in electrical engineering.

The field of Communications was represented by Mr. Sam Bayer of Micro Power Devices. Mr. Bayer, who never graduated from high school, is the president of a fast growing electronics firm on Long Island. It should be noted that very few established electronics firms have done well in the last few years, yet Mr. Bayer's corporation has flourished since its conception two years ago. In spite of the state of the economy, Bayer stated unequivocally that the engineer can succeed in today's financial climate. The prerequisites for success is involving oneself in a pastime that is more than a job. "When a man is so devoted to his job that a little voice wakes him up Monday morning to tell him that it is time to go to work, that man will be a success. In today's market, the man who is looking for nine to five security and guaranteed overtime does not have the attitude that we need," stated Mr. Bayer.

Never before has science and technology had to answer to the social conscience of the nation like today. These sentiments were offered by Maurice Norton of General Electric's Consumer Products Office and Joseph O'Grady of the Public Service Electric Company.

Mr. Norton claimed that the consumer



products market will need the men who can competently handle the mass production techniques required by today's society. The consumer can best be served and protected by the engineer who can fill this role.

Mr. O'Grady's line is delivering electric power to the consumer. He admitted that power companies are adversely affecting the environment, but that they do recognize their responsibilities to the public, and they will solve their problems. O'Grady stated that manpower is needed to supply energy to the public, and engineers are needed to help straighten out the situation that exists at this time.

IBM and the computer industry was represented by Mr. Alan Schucher. Mr. Schucher expressed the need for the "interface" engineer in the computer industry. That is, the man who can adequately communicate the needs of the customer to the design engineer, and convey the capabilities of the computer to the customer. Computer technology has progressed so rapidly with respect to the rest of industry that this type of man is urgently needed, according to Schucher.

The speakers were preceded by an excellent buffet dinner which was served in the snack bar.

The IEEE Student Night was financed partially by the school and by the IEEE. It will be held next year either at Fairleigh-Dickinson or at Stevens.