



The IEEE

Newsletter

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to maintain a mailing list or addressing
plates. Section membership records are
changed when Headquarters notifies us.

SECTION OFFICERS 1973-1974

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NEWLY ELECTED FELLOWS From The North Jersey Section

- | | |
|----------------------------------|---|
| <i>Lawrence K. Anderson</i> | <i>For contributions in the field of holographic optical memories.</i> |
| <i>James E. Beehler</i> | <i>For leadership in improving the design and performance of high-speed circuit breaker technology.</i> |
| <i>Edgar N. Gilbert</i> | <i>For contributions to information theory, and for applications of probability theory and combinatorial analysis to electrical engineering.</i> |
| <i>John Granlund</i> | <i>For developments in communications and radar systems and related electronic circuitry, and for leadership of scientific efforts in satellite communications.</i> |
| <i>Henry Kressel</i> | <i>For contributions to the development of semiconductor devices.</i> |
| <i>Kaneyuki Kurokawa</i> | <i>For contributions to microwave solid-state circuits, oscillators, and devices.</i> |
| <i>Lawrence J. Varnerin, Jr.</i> | <i>For contributions to electronic and magnetic devices and materials.</i> |
| <i>Wilhelm H. von Aulock</i> | <i>For leadership in the codification of the theory and application of microwave ferrites, and for contributions to the theory of phased array antennas.</i> |

Liebmann Award

The 1974 Morris N. Liebmann Award will be shared by two Bell Labs engineers — George E. Smith and Willard S. Boyle. Smith is head of the unipolar design department at Murray Hill while Boyle is executive director of Bell's Pennsylvania laboratories division.

Boyle and Smith will share the Liebmann Award for their "invention of the charge-coupled device (CCD) and

leadership in the field of Metal Oxide Semiconductor (MOS) device physics." Their developments have broad communications technology potential.

Charge-coupled devices — invented in 1970 — have already made a new solid-state color television camera possible, and show promise for applications in low-cost memory units and signal processing. MOS transistor technology is used for the memories of some new Bell System electronic switching systems, and for logic circuits such as those in TOUCH-A-MATIC® telephones.

FELLOWS NIGHT, DINNER-DANCE

North Jersey Section IEEE
Saturday, February 23, 1974
7:00 P.M. (cocktail hour 6:00-7:00)
Dancing 9:00 P.M.-1:00 A.M.
Governor Morris Inn
Morristown, NJ



J.A. CASAZZA

John A. Casazza, General Manager—Planning and Research, Electric Department of Public Service Electric and Gas Company, graduated from Cornell University with a degree in electrical engineering in 1944. He served in the U.S. Navy from 1944 to 1946. He commenced his employment with PSE&G in 1946 and served in various assignments in the Distribution Department, Planning Department, and inter-Company planning projects. In 1968, he was placed in charge of Planning. His duties include responsibility for forecasting, development of expansion plans, capital budgeting, economic and financial evaluations, long-range planning, and research and development.

He is a Senior Member of the IEEE in which he is a member of the Management, Systems Science and Cybernetics, and Power Groups. He is past Chairman of the Edison Electric Institute System Planning Committee, Vice Chairman of the U.S. Technical Subcommittee of CIGRE (International Conference on Large Electric Systems), and a member of the Inter-regional Review Subcommittee of the National Electric Reliability Council. He is licensed Professional Engineer in the State of New Jersey, and a Member of the Regional Plan Association.

Mr. Casazza is the author of many papers and articles on technical, economic, and management subjects.

"People, Energy and the Profession" is the title of the talk to be presented by J. A. Casazza at this year's North Jersey Section Annual Dinner at which the new IEEE Fellows will be honored.

Mr. Casazza, General Manager, Planning and Research, Public Service Electric and Gas Co., will cover the inter-relationships of our human and energy problems, and the responsibilities of those of us in the electrical engineering profession.

Use the form below for reservations enclosing a stamped, self-addressed envelope. Reservations received after February 16 or without an enclosed envelope will be held at the door along with telephoned reservations by calling (201) 386-4191 or (201) 543-4220.

John H. Gerth, Dinner Chairman
Bell Telephone Laboratories, Whippany,
NJ 07981

Please forward _____ tickets at \$11.00 each (make checks payable to North Jersey Section IEEE) to:

Name _____

Address _____

City _____

State _____ ZIP _____

I would like to share a table (seating 10) with the following:



Anderson



Beehler

L. K. ANDERSON

Lawrence K. Anderson was born in Toronto, Canada, on October 2, 1935. He received the B. Eng. degree in engineering physics from McGill University, Montreal, Canada, in 1957 and the Ph.D. degree in electrical engineering from Stanford University, Stanford, California, in 1962.

In 1961 he joined Bell Telephone Laboratories, Murray Hill, New Jersey, where he worked on magneto-optical interactions, microwave ferrite devices, high-speed semiconductor photodetectors, acousto-optical deflectors, holographic optical memories, and display devices. Until December, 1973, he was Head of the Mask Technology Department engaged in the development of optical inspection systems and lithographic techniques. At that time he transferred to the Allentown, Pennsylvania, facilities of Western Electric where he heads a joint Bell Labs/ Western team responsible for photomask development and production.

Dr. Anderson is a member of the Optical Society of America.

JAMES E. BEEHLER

James E. Beehler was born in Indiana. He received his BS degree in electrical engineering from Purdue University in 1944 and his MS degree in the same field in 1948. He served as an electronics technician with the U.S. Navy during World War II. He is a registered professional engineer in Indiana.

Mr. Beehler is Consulting Electrical Engineer for the American Electric Power Service Corporation, with the engineering responsibility for the installation and operation of all switchgear on the seven-state American Electric Power System. Included in this responsibility is work now



Gilbert



Granlund



Kressel



Kurokawa



Varnerin



von Aulock

under way on the AEP System's pioneering 765 kV transmission network and the guiding of long-term research and development activities.

He joined the AEP System's Indiana & Michigan Electric Company in 1948, performing relay engineering work. He was transferred to the AEP Service Corporation in New York in 1957 as a senior engineer in the Relay Section of the Electrical Engineering Division. In 1959 he was transferred to the Switchgear Section and in 1972 was promoted to his present position.

Jim is Past Chairman of the IEEE Switchgear Committee, a member of its Power Circuit Breaker Subcommittee, and its working groups. He is a Past member of the IEEE Standards Board, Past Chairman of the Power Engineering Society Standards Coordinator's Committee, and Chairman of the Power Engineering Society Technical Operations Department.

He is also a member of the Association of Edison Illuminating Companies Committee on Electric Power Apparatus, Vice Chairman of the American National Standards C37 Committee on high-voltage circuit breakers, and Chairman of the Electric Light and Power Group of the C37 Committee.

E. N. GILBERT

E. N. Gilbert was born in Woodhaven, N.Y. on July 25, 1923. He received the B.S. degree in Physics from Queens College of the City of New York in 1943. During 1944-1945 he was engaged in linear array radar antenna design as a member of staff of the Massachusetts Institute of Technology Radiation Laboratory. In 1946-1948 he was an

Applied Mathematics Fellow at Massachusetts Institute of Technology. He received the Ph.D. in Mathematics there in 1948. Since 1948 he has been a member of the Mathematics Research Center at Bell Telephone Laboratories, Murray Hill, N.J., where his mathematical specialties are probability, geometry, and combinatorial analysis. His research includes problems in information coding, switching, antennas, noise statistics, mobile radio systems, and cryptography. He is a member of the American Mathematical Society.

JOHN GRANLUND

John Granlund received the S.B. degree in Electrical Engineering from MIT in 1944. Following radar duty in the U.S. Navy, he returned to MIT for graduate study and to work in the MIT Research Laboratory of Electronics on multipath transmission of FM signals. He received the S.M. degree in 1947 and the Sc.D. degree in 1950 in the course of this work. After a year in England conducting transatlantic H.F. tests of his FM receiver, he joined MIT Lincoln Laboratory, where he was involved in ionospheric, and later, tropospheric scatter propagation experiments and in the development of one of the first pulse-compression radars. Between 1956 and 1959 he was an assistant professor of electrical engineering at MIT. In 1959 he joined ITT in Nutley, N.J., where he is presently Manager of the Systems Analysis Group of ITT Defense Communications Division. Among the many projects he has worked on at ITT are a study of the concept of a large synthetic aperture radio telescope of the sort now being assembled by the National Radio Astronomy Observatory, the invention of a diversity combiner that

maximizes signal-to-noise ratio in the presence of jamming, and the development of a design procedure for microwave phase equalizers. Dr. Granlund is a member of Sigma Xi and Eta Kappa Nu.

HENRY KRESSEL

Henry Kressel received the B.A. degree in 1955 from Yeshiva University, the M.S. degree in 1956 from Harvard University, the M.B.A. degree in Industrial Management and the Ph.D. degree in Materials Science and Metallurgy from the University of Pennsylvania in 1959 and 1965, respectively.

From 1959 to 1963 and from 1965 to 1966, he was with the RCA Solid State Division where he worked initially on the development of high frequency planar silicon transistors and later supervised a group responsible for the development of high power microwave diodes subsequently used for the Lunar Excursion Module Communication System. From 1963 to 1965 he was a David Sarnoff Fellow at the University of Pennsylvania. He transferred to the RCA Laboratories, Princeton, N.J., in 1966 and became Head of the Semiconductor Optical Devices Research Group in 1969. He pioneered in the field of (AlGa) As-GaAs heterojunction devices, in particular laser diodes, and has been actively engaged in the study of luminescent processes in various III-V compound materials. He is the recipient of three RCA Achievement Awards, two for contributions to the microwave diode field, including the high power avalanche diodes and the third for the invention of the single-heterojunction laser. He is presently Head of the Semiconductor Device Research Group with responsibility in the area of silicon power and III-V compound devices.

KANEYUKI KUROKAWA

Kaneyuki Kurokawa was born in Tokyo, Japan on August 14, 1928. He received his B.S. degree in Electrical Engineering in 1951 and his Dr. of Engineering degree in 1958, both from the University of Tokyo, Japan.

In 1957, he became Assistant Professor at the University of Tokyo. In 1963, he joined Bell Laboratories, Murray Hill, N.J., where he had worked from 1960 to 1961 on leave from the University. His early work was in microwave cavities, waveguides, parametric amplifiers, transistor amplifiers and high-field domain devices. He played a leading role in the development of microwave balanced transistor amplifiers and their hybrid integration using suspended ceramic substrates. More recently, he supervised a group responsible for the development of mm-wave path length modulators for use in the Waveguide Transmission Systems. In connection with this work, he studied microwave solid-state oscillator circuits and p-i-n diode switch circuits. Since its completion, he has shifted his group's emphasis to the field of optical communication subsystems. He is now studying GaAs injection lasers as a possible power source for future optical communication systems. Among the concepts and theories which he has developed or clarified are the dynamic quality factor Q of varactors and the quality factor Q of switching diodes both invariant to lossless transformations, power waves, operating noise measure, the unequal area rule of high-field domains, the noise and stability of injection-locked oscillators, and stable multiple-device oscillators. He has written a book "An Introduction to the Theory of Microwave Circuits" first in Japanese (Maruzen, 1963) and later translated into English (Academic Press, 1969).

Dr. Kurokawa is a participant in the 1954 Foreign Students Summer Project of MIT and a recipient of 1956 OKABE Memorial Prize from the IECE of Japan, 1959 Progress Award from the IEE of Japan and 1965 ISSCC Certificate of Appreciation.

He is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan.

L. J. VARNERIN, JR.

Lawrence J. Varnerin, Jr. is head of the Optical and Magnetic Materials Department at Bell Laboratories, Murray

Hill, New Jersey. He is responsible for growth of magnetic bubble epitaxial garnets used for bubble memory application and gallium arsenide microwave materials and devices such as GaAs FETs.

Mr. Varnerin joined Bell Laboratories in 1957 initially working on gaseous electronic devices. He then became supervisor of a Semiconductor Device group involved in the development of microwave germanium transistors. In 1960, he was appointed head of a department engaged in the development of semiconductor passive devices and thin film tantalum integrated circuits. His responsibilities also have included development of ferromagnetic microwave garnet limiter used in the first Telstar satellites.

Previous to joining Bell Laboratories, he was with Sylvania Electronics Division (1949-1952) and Westinghouse Research Laboratories (1952-1957).

Mr. Varnerin received the SB and PhD degrees from the Massachusetts Institute of Technology in physics in 1947 and 1949, respectively. He is a Fellow of the American Physical Society, Associate Editor of the International Journal of Magnetism, and a member of the Administrative Committee of the Magnetics Society of the IEEE.

WILHELM H. von AULOCK

Dr. Wilhelm H. von Aulock is head of the Installation Studies Department at Bell Telephone Laboratories, Whippany, N.J., and engaged in systems studies of communications facilities. He joined Bell Labs in 1954 to work on microwave ferrite devices for radar applications. His publications include papers on definition and measurement of ferrite material characteristics, phase shifter design and performance, properties of phased arrays, and books on ferrite materials and linear ferrite devices. From 1962 to 1970 he headed a department concerned with studies of the effects of nuclear radiation in antiballistic missile systems.

Dr. von Aulock was born in Pirna, Germany. He received Dipl. Ing. and Dr. Ing. degrees from Institutes of Technology in Berlin in 1937 and Stuttgart in 1953. His contributions to the development of acoustic homing torpedoes for the German Navy in WW II led to an invitation from the U.S. Navy in 1947 to work at the Bureau of Ships in Washington, D.C. He is a member of the IEEE Magnetic Society and of its Editorial Review Committee.

Laser Communications Tutorial Scheduled

The February 13th meeting of the North Jersey Chapter of the IEEE Communications Society will feature a tutorial presentation on lasers in communications. The speaker will be Roy M. Leavesley of the ISOMET Corporation, Oakland, New Jersey, manufacturers of laser devices. The meeting will be held at Teleprocessing Industries, Incorporated, Mahwah, New Jersey.

The use of lasers in communications equipment has been tried almost since the first laser was developed in 1959. However, it is only now that practical laser communications devices have appeared. Many communications engineers have little experience with lasers and are unfamiliar with the optics technology governing their application. To remedy part of this situation, the presentation of lasers and communications will be in the form of a tutorial with five areas to be covered:

A—A short history and brief description of the laser.

B—Types of lasers.

C—Laser devices, modulators, deflection and scanners, etc.

D—Potential applications for the laser in the communications industry.

E—A demonstration of an intensity modulator laser by means of an extracavity acousto-optic modulator.

Roy M. Leavesley received his mechanical engineering education at Leicester Technical College, England. He came to the United States with the J. Arthur Rank Organization in 1966, and since then has been involved with nearly every facet of optics technology with Rank, Perkin-Elmer (Conn.) and now with the ISOMET Corporation. At present, Mr. Leavesley is Eastern Regional Sales Manager for ISOMET.

Time: Wednesday, February 13, 1974, 8 P.M.

Place: Teleprocessing Industries, Inc., 82 McKee Drive, Mahwah, NJ 07430 (The Island Road Exit of N.J. Route 17, north of the Ramsey traffic lights — follow the Western Union signs from the Island Road Exit.)

Directions: Call 529-4600.

PLEASE POST ON BULLETIN BOARD — ALL GROUPS ARE OPEN TO THE PUBLIC

N. Y. Section, IEEE

Metropolitan Section



Power and Industrial Div.



EDUCATIONAL PROGRAM — SPRING 1974

SPECIAL STUDY GROUPS

The Spring Educational Program consists of the following subjects, which are described in detail within this bulletin:

STUDY GROUP NO. 6 - INTRODUCTION TO FORTRAN IV PROGRAMMING

STUDY GROUP NO. 7 - FUNDAMENTALS OF ELECTRICAL DESIGN—PART I

STUDY GROUP NO. 8 - YOUR NEXT MEETING—SUCCESS OR ?

STUDY GROUP NO. 9 - ELECTRICAL DISTRIBUTION SYSTEM PROTECTION

STUDY GROUP NO. 10 - SOLID STATE PROTECTIVE RELAYS

NOTE: Review Study Groups timed for the April 1974 Professional Engineering License Examinations are already in progress.

Complete information for Review Study Groups timed for the November 1974 Examinations will be published at a later date.

REGISTRATION INFORMATION FOR SPECIAL STUDY GROUPS

FEE PER GROUP

\$35 each for members, IEEE, ASME;
\$45 each for all others

PAYABLE TO

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GROUP N.Y.
SECTION IEEE"

MAIL TO

Gary Golinski, Educational
Committee, IEEE
501 Doremus Avenue
Glen Rock, N.J. 07452
Phone: (212) 267-1466

Fill out one registration form for each group and mail with payment

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Date _____ By _____

Note: See Registration Information for Checks

Registrations will be accepted at first and second sessions to the limit of room capacity



STUDY GROUP NO. 6

**INTRODUCTION
TO FORTRAN IV PROGRAMMING**

MONDAYS, 6:30-8:30 P.M., Starting February 25, 1974

Consolidated Edison Co., Room 3415, 4 Irving Pl. New York, N.Y.

Group Sponsor: David Hawkins, Con Edison
& Coordinator: Tel. (212) 460-2650

Instructor: Jack Driscoll, Consolidated Edison Co.

This is a basic FORTRAN programming series and no previous Computer experience is necessary. Homework problems and class problems will be used to aid the student in mastering the language.

1. February 25 — Introduction to Digital Computer Systems
2. March 4 — Digital Arithmetic and Flow Charting Techniques
3. March 11 — Arithmetic Statements
4. March 18 — Control and Decision Statements
5. March 25 — Boolean Algebra and Complex Numbers
6. April 1 — Input, Output, and Format Statements
7. April 18 — Additional Types of Format Statements, Data Statements, and Basic System Subroutines
8. April 15 — Subprograms and Arrays
9. April 22 — Sequential and Direct Access Files
10. April 29 — Program Debugging and Computational Errors. Job Control Language

STUDY GROUP NO. 7

**FUNDAMENTALS OF ELECTRICAL DESIGN—
PART I**

TUESDAYS, 6:30-8:30 P.M., Starting February 26, 1974

Roger Smith Hotel, 47th St. & Lexington Ave., N.Y., N.Y.

Group Sponsor: John Domorski, Automatic Switch Co.
Tel. (212) 349-3530

Group Coordinator: William Perlman, Roytran Co.
Tel. (212) 782-1505

These ten sessions are for people who are interested in the design or construction of electrical equipment for commercial building installations.

1. February 26 — Introduction to Commercial Power Design
Dr. C. Tsung, Syska & Hennessey
2. March 5 — Short Circuit Study
Mr. Gary Golinski, Bussman Mfg. Co.
3. March 12 — Short Circuit Study and Coordination
Mr. Gary Golinski, Bussman Mfg. Co.
4. March 19 — Switchboard Design Part I
Mr. Thomas Jenssen, ITE Empire Switchboard Co.
5. March 26 — Switchboard Design Part II & Pressure Switches
Mr. Thomas Jenssen, ITE Empire Switchboard Co.
6. April 2 — Commercial Lighting Design and Layouts
Mr. Willard C. Warren, Lighting Unlimited
7. April 9 — Lighting Controls and Stage Dimming
Dr. Joel Ruben, Kliegal Brothers
8. April 16 — Fire Alarm and Controls, System Operation as required by Local Law No. 5 for the City of New York.
Mr. R. Demritt, Acme Fire Alarm Co.
9. April 23 — New York City Electrical Code
Mr. M. Duetscher, Chief Electrical Inspector, City of New York
10. April 30 — Ground Fault Protection
Mr. Arthur Freund, Caretsky Assoc.

GROUPS ARE OPEN TO THE PUBLIC

A — Special Study Groups



SPRING 1974

STUDY GROUP NO. 8

YOUR NEXT MEETING — SUCCESS OR ?

TUESDAY, 6:30-8:30 P.M., Starting February 26, 1974

Consolidated Edison Co., Room 1425, 4 Irving Pl., New York, N.Y.

Group Sponsor & Coordinator: *Kent Weitzel, Westinghouse
Tel. (212) 692-3613*

Instructors: *Dorothy I. Tucker: Training Consultant for Bankers Trust Co.
Joseph E. Cosby: Associate Director of AMACOM, American Management Associations*

Conferences, meetings, seminars and exhibits are an integral part of the business routine. Success in these areas is an asset to business. Planning for such activities is important. How to motivate and direct participants. How to create an atmosphere conducive to the smooth flow of ideas. How to obtain maximum value and analyze feedback from participants.

The concepts and professional techniques involved will be discussed with the aid of case histories and the experiences they afford. Your next meeting can be a success, it depends on YOU.

1. **February 26 — Introduction and Topic Analysis**
2. **March 5 — Introduction to Transactional Analysis**
3. **March 12 — Case Study No. 1 "The Convention Thing" —**
a. Conference Budgeting and Planning, etc. — b. Conference Publicity and Participant Motivation
4. **March 19 — Case Study No. 1 (cont'd.) — c. Presentation Planning. — d. Care and Feeding of Speakers, Exhibitors and Staff Personnel**
5. **March 26 — Presentation Techniques**
6. **April 2 — Case Study No. 2 "The Learning Session" —**
a. Conference Budgeting and Planning. — b. Care and Feeding of Speakers, Exhibitors and Staff Personnel
7. **April 9 — Case Study No. 2 (cont'd.) — c. Presentation Planning - d. Presentation Techniques**
8. **April 16 — Case Study No. 3 "The Problem Solving Conference" —**
a. Conference Publicity and Participant Motivation. — b. Presentation Planning
9. **April 23 — Case Study No. 3 (cont'd.) — c. Presentation Techniques, Obtaining Feedback, Using Visuals, etc.**

STUDY GROUP NO. 9 ELECTRICAL DISTRIBUTION SYSTEM PROTECTION

WEDNESDAY, 6:30-8:30 P.M., Starting February 27, 1974

Roger Smith Hotel — Cavalier Room
47th Street & Lexington Ave., New York, N.Y.

Group Coordinator: *Ed Gimbut, Bussmann Mfg. Co.
Tel. (212) 267-1466*

Group Sponsor: *Mr. John Tambasco — N.Y.S. Urban Development Corp. (212) 974-7617*

The heartbeat of any building lies in its electrical distribution system. Without this system, it would be virtually impossible for the building to function. Since it is so vital it must be protected; protected from the power it contains in itself. The application of system protection is the topic for this lecture series.

1. **February 27 — Introduction and Topic Analysis — Code Requirements and Standards**
Mr. Clarence Tsung, Syska & Hennessy, Inc.
2. **March 6 — Short Circuit Analysis — Review of Three Phase and Single Phase Fault Calculations, Short Cut Methods**
Mr. Clarence Tsung, Syska & Hennessy, Inc.
3. **March 13 — Application of Short Circuit Values — Study of the destructiveness of Mechanical Force (I^2t) and Thermal Energy (I^2t). Interrupting Capacities of Electrical Equipment**
Mr. Gary Golinski, Bussmann Mfg. Co.
4. **March 20 — Protective Devices — The Application, Design and Maintenance of Molded Case and Drawout Circuit Breakers**
Mr. Arthur Freund, Caretsky Assoc.
5. **March 27 — Protective Devices — Circuit Breaker Application (cont'd.); Ground Fault Indication Applications**
Mr. Arthur Freund, Caretsky Assoc.
6. **April 3 — Protective Devices — The Application of Fuses. Fuse Types & Standards, Current Limiting Ability, Interrupting Capacities and Time Delay Effect**
Mr. Gary Golinski, Bussmann Mfg. Co.
7. **April 10 — Component Protection — Overcurrent Protection for Motors, Controllers and Transformers — Single Phase Protection**
Speaker: To be announced
8. **April 17 — Component Protection — Overcurrent Protection for Switchboards, Busways, Cable, Circuit Breakers and Transfer Switches**
Speaker: To be announced
9. **April 24 — Selectivity & Coordination — Proper Selection of Protective Devices to Eliminate Unnecessary Power Outages (blackouts) in Electrical Distribution System**
Speaker: To be announced
10. **May 1 — System Growth — Planning for Future Expansion; Inspection and Maintenance of Electrical Equipment**
Mr. Clarence Tsung, Syska & Hennessy, Inc.



Power and Industrial Div.

EDUCATIONAL PROGRAM — SPRING 1974

SPECIAL STUDY GROUPS



STUDY GROUP NO. 10

SOLID STATE PROTECTIVE RELAYS

THURSDAYS, 6:30-8:30 P.M., Starting February 28, 1974

Consolidated Edison Co., Room 3415, 4 Irving Pl., New York, N.Y.

Group Sponsor: *Jalal Gohari, American Electric and Power*

Tel. (212) 422-4800, Ext. 551

Group Coordinator: *Alex Corn, Stone and Webster*
Tel. (212) 592-9300

The following ten sessions have been designed to acquaint utility and Consultant Engineers with the design and application of Solid State Protective Relays and Systems.

1. February 28 — Components — Switching speed, Temperature stability, Power capabilities and limitations of the transistor switch, Thyristor, Triac and driver
Prof. M. Javid - City College of New York
2. March 7 — Gates and Timers — Basic design, noise immunity and frequency limitations
Prof. M. Javid - City College of New York
3. March 14 — Electromagnetic Measurement Circuits — Comparator, Active and passive filters, Impedance and distant measurements
Speaker: To be announced

4. March 21 — Counterparts of Electro-mechanical Devices — Instantaneous, Inverse Overcurrent and Underfrequency Relays
Mr. J. A. Bright, Hathaway Inc.
5. March 28 — Solid State Recloser Control — Dual timing and reclosing from instantaneous, time delay and reclosing relay circuits. Transient protection and temperature stability techniques
Mr. S. H. Loomis, McGraw Edison Co.
6. April 4 — Directional Comparison Relay Schemes — Blocking, unblocking, logic, symbols and circuits, measuring function symbols and operation
Mr. J. Andrichak, General Electric Co.
7. April 11 — Directional Comparison Tripping Schemes — Permissive overreaching and underreaching
Mr. J. Andrichak, General Electric Co.
8. April 18 — Phase Comparison Schemes — High speed relaying of transmission lines through comparison of phase relationships
Speaker: To be announced, Westinghouse
9. April 25 — Phase Comparison Schemes — (Continued).
Speaker: To be announced, Westinghouse
10. May 2 — Mini Computer Application — Application of mini computers to relaying by means of on line digital fault calculation
Speaker: To be announced, Westinghouse

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Student's Night Slated for NCE

This year's IEEE Student Night (February 6th) promises to be an extremely enlightening and worthwhile evening. The program's theme will be 'Engineering Today and Tomorrow' and will present four very interesting and talented speakers to support it. The speakers will provide the students with a valuable and comprehensive inside look at different industries and various jobs within these industries.

John Walsh from IBM will speak on marketing and computers; Tom Podesta will discuss engineering management; Tom Kesolits will explore the present and future trends in the microelectronics design and development field; Bert Yankielun, a recent graduate, will compare the student's view of industry with the view of the same engineer after six months of his industrial career.

The evening will also feature dinner and door prizes.

Time: Dinner 6:30 P.M., Meeting 7:30 P.M., February 6, 1974

Place: Newark College of Engineering, 323 High Street, Newark, NJ, Center Building

Price: \$1.00

Further Information: Contact either Al Ross at (NCE) 645-5478 or Harold Mauser at 561-0174

Modern Design for Navigation Systems

The North Jersey Chapter of the Control Systems Society and the NY/ NJ Chapter of Aerospace & Electronic Systems Society will hear Dr. Charles R. Giardina discuss "Navigation System Design by Modern Analytic Techniques" at their February 21st meeting.

ABOUT THE TALK

Modern mathematical techniques and their application to Navigation and Guidance will be introduced. These will include concepts such as Metric Space, Normed Vector Space, Linear Functional, Function Spaces, and Skewed Fields.

The use of Metric Space and Norms to minimize computational errors associated

with transforming rate and velocity data will be illustrated. As a result, reduced computer memory and time load can be achieved. The concept of the Linear Functional for error analysis applications will be presented, along with a discussion on how Functional Spaces can play a major role in navigation systems. Skewed Fields will be explored with examples from the Quaternion Corpus. Among these examples will be illustrations of how and why Quaternions are useful in Strapdown Navigation.

ABOUT THE SPEAKER

Charles R. Giardina is with the Advanced Inertial Products Directorate of Singer-Kearfott Division. He is the project leader for the analysis and design of the strapdown measuring unit and the SKC-3000 computer.

Dr. Giardina is an Associate Professor of Mathematics, Electrical Engineering and Computer Science at Fairleigh Dickinson University. He is the Director of Graduate Studies at Fort Monmouth. He has written numerous papers in the fields of bandwidth theory, communication systems, and statistics. He is presently working on a book on strapdown navigation systems.

Time: 8:00 P.M., Thursday, February 21, 1974

Place: Singer Company, Kearfott Division, Plant 12 Auditorium, 150 Totowa Rd., Wayne, NJ

Pre-Meeting Dinner: (Please call Gary Blauth, 256-4000, ext. 3321 for reservations) Holiday Inn, Rt. 46 East, Wayne, NJ, 6:00 P.M.

Inspection Tour of Westinghouse Plant

The New York Section of the Power and Industrial Division is sponsoring an inspection tour of the Westinghouse Incandescent Plant in Bloomfield, New Jersey on Wednesday, February 20, 1973, at 7:15 P.M.

The tour of the Plant will highlight the manufacture of light bulbs from tungsten ore to the finished product.

Everyone must arrange for their own transportation. Send a stamped self-addressed envelope for tickets and directions to R.J. Heil, c/o Reynolds Metals, Co., 51 Cragwood Road, South Plainfield, New Jersey 07080. Please reply by February 12, 1974.

Making Measurements

The New York, North Jersey and Long Island Joint Chapter Instrumentation and Measurements is sponsoring a Spring 1974 Study Series on Electrical Measuring Instruments and techniques. The following subjects will be featured in the Series:

(a) Criteria for Selection of Digital Multimeters.

(b) CISPR Standards for RFI Measurements.

(c) Spectrum Analyzers. New Developments in Cathode Ray Oscilloscopes.

(d) Criteria for the use of Batteries in Test Equipment.

(e) Time and Frequency Standards via TV. Review of Standard Frequency Measurement.

(f) Wide Dynamic Amplitude and Low Level Measurements. Fundamental Problems in Measuring Techniques.

The series will be held on March 5, 12, and 19 and April 9, 16, and 23, 1974 at the General Office of Jersey Central Power & Light Company, Madison Avenue at Punchbowl Road, Morristown, N.J. from 7:30 P.M. to 9:30 P.M. There will be a reduced early registration fee of \$25 for IEEE members and \$35 for non IEEE members. Registration fees paid at the door will be \$30 for IEEE members, and \$40 for non IEEE members. Student registration fee is \$5. For further information in New Jersey, call Mr. R. Feldt (201) 773-8010, in New York, call Mr. D. Roberts (212) 422-8228.

REGISTRATION — ELECTRICAL MEASURING INSTRUMENTS AND TECHNIQUES

IEEE	\$30 at the door
Members	\$25 early pre-registration
Non-IEEE	\$40 at the door
Members	\$35 early pre-registration
Students	\$5

Make checks payable to "Joint Chapter, I&M, IEEE"

To: Mr. R. Feldt
Rohde & Schwarz Sales Co., Inc.
111 Lexington Ave.
Passaic, N.J. 07055

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IEEE NORTH JERSEY SECTION LECTURE SERIES-SPRING, 1974

PRINCIPLES OF ELECTRICAL DISTRIBUTION DESIGN

This ten session study group is presented for the benefit of electrical, consulting and project engineers, contractors, manufacturers, and designers who are concerned with power distribution systems.

This course will stress practical design and application information for distribution systems, stressing actual experience over abstract theory.

February 26, 1974—MEDIUM VOLTAGE (5-15KV)—Switchgear construction ratings. Application. Relaying fusible switches. Circuit breakers. Motor starters.

March 5, 1974—TRANSFORMERS—Dry type. Askarel filled. Oil filled. Ratings. Application. Connections.

March 12, 1974—SERVICE ENTRANCE EQUIPMENT—Large services. Small services. Code requirements. Metering. Circuit breakers. Service protectors. Bolted pressure switches.

March 19, 1974—LOW VOLTAGE SWITCHGEAR—Construction. Air circuit breakers. Ratings. Application. Selectivity. Magnetic trip units. Static trip units.

March 26, 1974—LOW VOLTAGE SWITCHBOARDS—Nema standards. Design and construction. Bus ratings. Bus bracing. Circuit breakers. Fused switches. Hybrid types. Applications.

April 2, 1974—PANELBOARDS—Circuit breakers and ratings. Switches and fuses. Construction. Application. Standards. Special features. UL fuse classifications.

April 9, 1974—MOTOR CONTROL AND MOTOR CONTROL CENTERS—Starters reduced voltage starting. Ratings. Overcurrent protection. Short circuit protection. Motor control center construction. Application.

April 16, 1974—GROUND FAULT PROTECTION—Needs. 1971 code requirements. Practical system design. Application. Damage limits. Coordination. Life protection. Hospital systems.

April 23, 1974—GROUNDING—Power factor correction. Wire and cable. Grounding code requirements. Good grounding power factor. Cost savings. Calculations. Application.

April 30, 1974—BUS DUCT—Bus duct design types. Horizontal systems. Vertical risers. Code requirements. Voltage drop take-off devices and methods. Application.

SPEAKER: Mr. Herman Reichenstein, P.E. Consulting Engineer
TIME: 7:00-9:00 P.M. Tuesday evenings, beginning February 27, 1974
PLACE: Auditorium, ITT Avionics, 390 Washington Ave., Nutley, N.J.
FEE: \$60.00 to members of IEEE, ASME, AIME, ASCE, etc. \$70.00 to non-members.
SPECIAL OFFER: A \$5.00 savings for advanced registrants whose mail registrations are received prior to February 20, 1974.

REGISTRATION FORM—PRINCIPLES OF ELECTRICAL DISTRIBUTION DESIGN

Mail to: Al Cox, Busmann Mfg., 155 Ridge Street, Newark, N.J. 07104; phone (201) 484-3500, (212) 267-1466.

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Check or money order enclosed:

<i>Member:</i>	<i>\$55.00 (after February 20, 1974, \$60.00)</i>
<i>Non-member:</i>	<i>\$65.00 (after February 20, 1974, \$70.00)</i>

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

INDUSTRIAL POWER SYSTEM GROUNDING

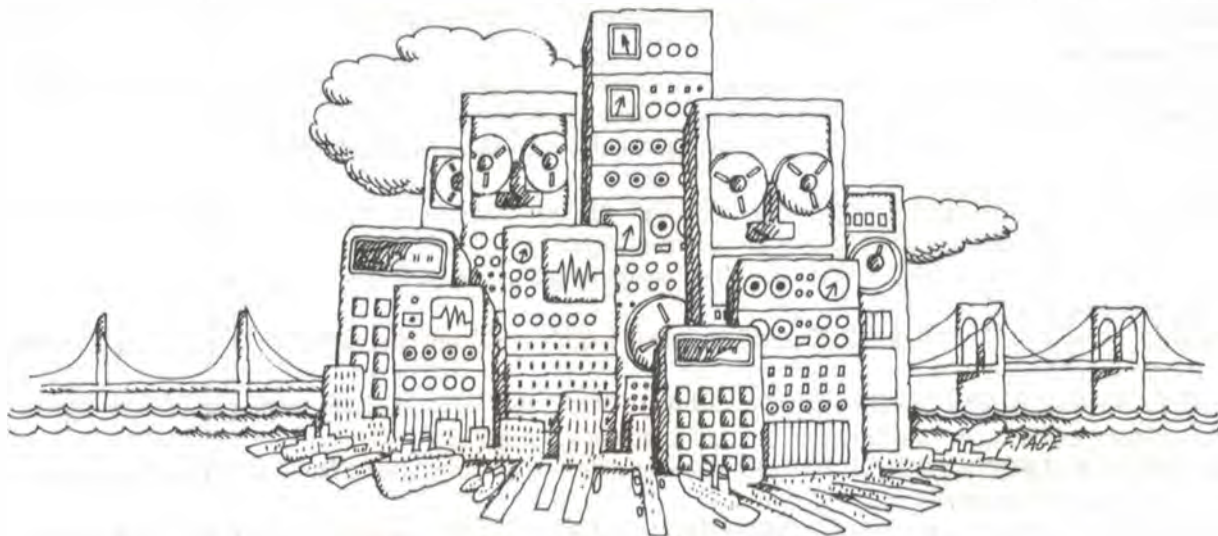
The instructors will be some of the top experts from leading manufacturers of grounding equipment.

April 11, 1974—THE NATURE OF ELECTRICAL INJURIES—The methods by which electricity harms the human being. The amount of current required to kill.

TIME: 7:00-9:00 P.M. Thursday Evenings, beginning February 28, 1974.
PLACE: Main Auditorium, Automatic Switch Company, 50-56 Hanover Road, Florham Park, New Jersey.
FEE: \$50.00 to members of IEEE, ASME, AIME, ASCE, etc; \$60.00 to non-members.
SPECIAL OFFER: A \$10.00 savings for advance registrants whose mail registrations are received prior to February 14, 1974.

Make checks payable to: *North Jersey Section IEEE.*

Mohammed, The Mountain, and IEEE Intercon



Moving mountains has never been a really cost-effective concept, even in ancient times. In the absence of an unlikely miracle, Mohammed had to go to the mountain instead of vice versa.

There's a whole mountain of exciting new electronics hardware and software ready for introduction this Spring. With energy in short supply, however, the innovators just can't bring the mountain to you this season.

Instead, nearly 300 companies and a couple of hundred first-rate

engineering authors are building their mountain in a central location — the island of Manhattan — where all of you can see it and hear it all at once.

The name of the event is IEEE Intercon/74, and it's a "getting down to business" high-technology show and conference.

It's got an outstanding 40-session program that tells you how to put the newest technology to work. Plus special workshops and short-courses.

It's got a mountain of brand-new components, devices, instrument systems, and EDP equipment ready for your on-line evaluation.

With severe restraints on sales travel, it just makes good sense to bring everything that's new and significant into one accessible place for thousands of professional engineers — by public transportation.

As a matter of fact, it's clearly in line with national policy to do so. And it is an excellent way to "energize" the surging electronics economy that's coming in the months ahead.



This is going to be an outstanding show and program. Maybe the best Intercon in several years. It's in your own best interest to "come to the mountain" and take home a wealth of practical new ideas to your organization.

Plan now to get your full share at Intercon in New York.



ieee intercon

March 26-29, New York Coliseum / Statler Hilton Hotel

The International Convention and Exposition of the Institute of Electrical and Electronics Engineers Inc.