



The IEEE

Newsletter

The Magazine of the North Jersey Section

Inspection Trip, September 17
Kodak Color Film Processing Laboratory

Fairlawn, New Jersey

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September, 1968

Chairman's Report

The membership of the North Jersey Section is fortunate to have had over the years many opportunities to derive benefits from their membership in an international engineering society. Beginning with the merger of the two predecessor societies in 1962, North Jersey, under the co-chairmanship of John Schwanhausser and the late Albert Parkes, began operating as one of the first merged Sections of the newly formed Institute. From that time until now, and under the chairmanship in succeeding years of Charles Vadersen,, John Redmon, Walter Glomb, Stephen Mallard, and Bernard Meyer, the North Jersey Section has continued to grow and has continually furnished to the membership, in ever increasing numbers, programs and educational opportunities on the widest possible range of subjects.

But what is past is prologue.

During the coming year, the North Jersey Section will continue to make available to the membership the same kinds of worthwhile and informative programs for which this Section is now well known. We also intend to finalize our plans to hold within our territory, for the first time, what we hope will be an annual symposium on several aspects of instrumentation and measurement. This symposium has been in the planning stage for some time and last year Mr. Robert Sokalski was appointed Interim Chairman of this project. Mr. Sokalski will report to the membership, in considerable detail, the status of this symposium in the next issue of the NEWSLETTER.

In addition, we plan to establish closer ties with our six active Group Chapters in order to lend greater support to their activities, and also to assist others who would form new Group Chapters within our Section, if and where the need exists. Through this program, for which we have enlisted the support of the Group Chapter Chairmen, we hope to encourage greater participation of our membership in group activities and to encourage more of our membership to affiliate with one or more groups of their choice. It is also our intention to increase our support to the several Student Chapters of our Section at Newark College of Engineering, Stevens Institute of Technology, and Fairleigh Dickinson University. We have also supported in the past, and will continue to support, the Metropolitan Student Council which is an organization involving all of the Student Groups of the New York Metropolitan Area. But it is eminently clear that financial aid is not enough. We must, in fact, become more personally involved with our Student Groups and furnish for them programs which are more suited to their needs.

You are all encouraged — you are all urged — to take a more active part in the activities of the Section, not only by your attendance at technical meetings but also by taking part in the many activities being planned on your behalf by the Program Committee and other Standing Committees of the North Jersey Section. There are unlimited opportunities for participation in many other Section and Group activities as well, including the Annual Students' Night in December, the Annual Awards Dinner in February, and the Annual Section Dinner in June. We also recommend to those who are interested, an even fuller involvement in the activities of the Section by serving on one of the several standing committees. We sincerely recommend a careful consideration of this suggestion since the benefits, particularly to young engineers, are numerous and your membership in the IEEE will be worth more for the effort. Your inquiries and suggestions as to how the Section can serve the membership better should be directed to Mr. Joseph G. O'Grady, Public Service Electric and Gas Company, 200 Boyden Avenue, Maplewood, New Jersey 07040.

Alanson Parkes Jr. Dies at 68

Former chairman of IRE North Jersey Section Alanson W. Parkes Jr. died on May 31, 1968 of hepatitis at Harkness Pavilion of the Columbia-Presbyterian Medical Center in New York. He was 68 years old and lived at 200 Overlook Ave., Boonton, N. J.

Mr. Parkes was president of the Ballantine Laboratories. He served as Chairman of the North Jersey Section of the IRE when the IRE merged with the IEE to form the IEEE.

In September 1928 Mr. Parkes directed the final tests of radio receiving equipment on the plane of Comdr. Richard E. Byrd's Antarctic expedition.

He was born in Sandwich, Mass. and was graduated from Clark University in 1922. He received an MS degree from Harvard where he also taught physics.

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**INSTITUTE OF ELECTRICAL AND ELECTRONICS
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 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**

1968-1969



Chairman Joseph G. O'Grady
 Vice Chairman Merle M. Irvine
 Treasurer Herbert E. Blaicher, Jr.
 Secretary Robert G. Sokalski
 Member-at-Large Harry Clark
 Member-at-Large Carl C. Torell
 Jr. Past Chairman Bernard Meyer

Executive Committee Meeting

Verona Public Library,

Wednesday, September 4

7:30 P. M.

Will Inspect Processing Laboratory

The North Jersey Section has scheduled a September 17th inspection trip to the Kodak film processing laboratory in Fairlawn, N. J.

The processing laboratory is one of the most modern and best equipped laboratories in the country where Eastman Kodak processes 8mm and 16mm Kodachrome movies, 35mm miniature Kodachrome films, as well as all of the Ektachrome products. This popular tour will last from one to one-and-a-half hours.

The cover: Typical scene in an Eastman Kodak color processing laboratory: while Kodachrome 11 film is processed, a technician closely watches temperature, purity, and freshness of chemicals.

The tour is limited to 40 persons and reservations will be made on a "first come,

first served basis." No telephone reservations will be accepted. All reservations will be confirmed by return mail.

Time: Tuesday, September 17, 7:30 P. M.

Place: Kodak Processing Laboratory, 16-31 Route 208 (24 miles North of Route 4), Fairlawn, N. J.

Reservations: Use coupon below

Thomas J. Comerford

Public Service Electric & Gas Company

80 Park Place — Room 237

Newark, New Jersey

I plan to attend the inspection tour at the Kodak plant. Please send () tickets.

Name

Address

City

State Zip

CALENDAR

Thursday, September 12

Microwave Filters, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J., 8:15 P. M.

Tuesday, September 17

Inspection Trip of Kodak Film Processing Laboratory, Fairlawn, N. J., 7:30 P. M.

Wednesday, September 25

Pennsylvania-Jersey-Maryland Interconnection, Punchbowl Room, Jersey Central Power and Light, Morristown, N. J. 7:30 P. M.

Lecture Series — Data Systems, New York Telephone Company, 140 West St., New York City, 6:30 P. M.

Thursday, September 26

Lecture Series — Math for Engineers, New York Telephone Company, 140 West St., New York City, 6:30 P. M.

Unusual Processing Techniques, NCR Auditorium, 50 Rockefeller Plaza, New York City, 7:45 P. M.

Wednesday, October 16

Transducer Lectures, The Design of Sensors for Water Quality Measurement, Vail Hall, N. J. Bell Telephone Co., 540 Broad St., Newark, N. J., 7:00 P. M.

Tuesday, October 22

Computer Services as an Aid to Engineers, Union Carbide Auditorium, 270 Park Ave., New York City, 6:30 P. M.

Dr. Leo Young to Talk on Microwave Filters at North Jersey G-MTT Meeting

Guest speaker for the September 12, 1968, meeting of the North Jersey G-MTT will be Dr. Leo Young of Stanford Research Institute, Menlo Park, California. Dr. Young's speech will be entitled, "What Are Microwave Filters?"

An abstract of Dr. Young's talk follows:

In the past few years several new types of microwave filters have been developed. The talk will explain the basic principles of some of these filters, and Dr. Young will show photographs and typical performance characteristics of some of them.

The design of most microwave filters is based on prototype circuits, such as the low-pass lumped-constant and the quarter-wave transformer prototypes. Bandstop filters using shunt open-circuited or series short-circuited stubs can be designed from the low-pass prototype using Richard's transformation. Other bandstop filters use parallel-coupled lines, and spur-lines.

Filter types that will be described include magnetically tunable yttrium-iron-garnet filters, waffle-iron filters, leakwall filters, a waveguide band-pass filter that

maintains low reflection also in the stop band, dielectric multilayer filters, a birefringent filter, the principle of which will also be explained. The latter two types are more suitable as optical and millimeter-wave filters.

Young received his bachelor of arts degrees in mathematics and physics, and the master of arts degree from Cambridge University, England, in 1945, 1947 and 1950, respectively, and the master of science in electrical engineering and Ph.D. degrees from the Johns Hopkins University in 1956 and 1959. He was with Westinghouse Electric Corporation from 1953 to 1960. Since 1960 he has been with Stanford Research Institute, where he is head of the Microwave Techniques Program.

Dr. Young is a Fellow of IEEE and was awarded the 1963 Microwave Prize.

Time: Thursday, September 12, 8:15 P. M.

Place: Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J.

Dinner: (Optional) 6:30 P. M., Wally's Tavern, Watchung, N. J.

Power Interconnection: Benefits, Problems & Goals

At its September meeting, the N. J. Power Group will hear Mr. Wilmer Kleinbock, Manager of the Pennsylvania-Jersey-Maryland Interconnection, trace the history leading to the formation of the PJM power pool including its structure, procedures, and responsibilities. He will discuss the various benefits which the member companies enjoy, such as greater reliability and lower power costs. There are also some problems. The future goals of the PJM system will be described.

Attendance at these meetings is not limited to Power Group members, but is open to all interested parties. Refreshments will be served following the program.

Place: Punchbowl Room, Jersey Central Power and Light Company, Madison Ave., (Highway 24) at Punchbowl Rd., Morristown, N. J.

Time: Wednesday, Sept. 25, 1968, 7:30 P. M.

Discussion Group Set

N. Y. Power and Industrial has set meeting nights for five technical discussion groups, to be presented during the coming year. Members, prospective members and other engineers are invited to attend and participate in any of the technical discussion groups.

Transmission and Insulation and Insulated Conductors groups meet in the third floor meeting room, Union Carbide Bldg., 270 Park Ave., N. Y. C. All other groups meet in room 503, Con Ed Bldg., 4 Irving Place, N. Y. C.

Industrial and Commercial Power Systems
Tuesdays — Sept. 24, Oct. 29, Nov. 26;
Thursdays — Feb. 27, Mar. 27; and
Tuesday April 29.

Transmission and Distribution
Thursdays — Oct. 17, Dec. 5, Mar. 20
and May 1.

Insulated Conductors
Thursdays — Oct. 3, Nov. 14; Tuesdays
— Mar. 4, Apr. 8.

Substation
Tuesdays — Oct. 8, Dec. 3; Wednesdays
— Mar. 12, Apr. 16.

System Engineering
Thursdays — Oct. 10, Mar. 6, Apr. 10.

Interested parties call Mr. Thomas E. Sharp, Public Service Elec. and Gas Co., 325 County Ave., Secaucus, N. J. 07094.

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New York P & I Plans Six General Meetings

The Power and Industrial Division of the New York Section has announced these six general meetings for the 1968-69 season:

Oct. 22, 1968 — *Computer Services as an Aid to Engineers*

Nov. 19, 1968 — *Review of Blackout and Where Do We Stand*

Dec. 10, 1968 — *Modern Power Interrupters*

Feb. 18, 1969 — *Elevator Control Using Solid State Switching*

Mar. 18, 1969 — *High Reliability of Power Sources*

Apr. 22, 1969 — *Damming the Long Island Sound*

All meetings will be held at 6:30 P. M. in the Union Carbide Auditorium, 270 Park Ave., New York City. The March 18, 1969 program will include nominations for the Executive Committee with elections being held at the April 22, 1969 meeting.



Power and Industrial Div.

EDUCATIONAL PROGRAM — FALL 1968



REVIEW STUDY GROUPS — FOR PROFESSIONAL ENGINEER EXAMINATIONS

This program is designed to prepare candidates for Professional Engineer License examinations in New York and New Jersey. The N. Y. State Board permits graduates of approved schools to take Parts I and II and qualify for "Engineer-in-Training."

ENDORSED BY NYSSPE

STRUCTURAL PLANNING AND DESIGN (IEEE-ASME)

STUDY GROUP NO. 1

Review for Part I, N. Y. Exam., Part II, N. J. Exam Planning, design construction of buildings and similar structures in timber, steel and concrete, including beams, columns, foundations, piles, girders, riveted and welded sections. Intensive work in problem solving techniques with emphasis on the AISI and ICI codes. Printed notes available.

MONDAYS, Starting Sept. 9, 1968, 6:15-8:30 P.M., 18 Sessions

North Cafeteria, 19th fl., Consolidated Edison Co., 4 Irving Place, N. Y. C.

Instructor: O. ONDRA, Professor of Civil Engineering
Manhattan College

ENGINEERING ECONOMICS AND PRACTICE (IEEE-ASME)

STUDY GROUP NO. 2

Review for Engineering Economics Section of Part III, N. Y. Exam. Economic comparisons, fixed and operating costs, accounting and cost analysis, valuations, contracts, etc.

TUESDAYS, Starting Sept. 3, 1968, 6:30-8:30 P.M., 18 Sessions

Auditorium, 19th fl., Consolidated Edison Co., 4 Irving Place, N. Y. C.

Instructor: R. E. MENDOZA, Public Service E. & G. of N. J.

MECHANICAL ENGINEERING (ASME)

STUDY GROUP NO. 3

Review for Mechanical Engineering Section of Part III, N. Y. Exam. Application of mechanical engineering principles to modern practice, shafts, flywheels, springs, gears and other machine elements, steel and heat treatment, internal combustion engines, air compressors, gas turbines, steam power plant cycles and equipment, refrigeration, heat transfer, air conditioning and other special subjects.

WEDNESDAYS, Starting Sept. 4, 1968, 6:30-8:30 P.M., 19 Sessions

Conference Room A, 10th floor, Parsons-Judon Corp., 26 Broadway, N. Y. C.

Instructor: M. KURTZ, P.E.

ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)

STUDY GROUP NO. 4

Review for Electrical Engineering Section of Part III, N. Y. Exam. Electrical Engineering Principles and Applications of: transformers, a-c and d-c machines, transmission lines, filters, networks, impedance matching, bridges, coupled circuits, resonance, harmonics, transients, three phase power, amplifiers, and *electronic circuits*.

WEDNESDAYS, Starting Sept. 4, 1968, 6:30-8:45 P.M., 18 Sessions

Consolidated Edison Co., 4 Irving Place, N. Y. C.

Instructors: L. E. BURNETT, Consolidated Edison Co.
S. SONSKY, U. S. Naval Applied Science Laboratory

BASIC ENGINEERING SCIENCES (ASME-IEEE)

STUDY GROUP NO. 5

Review for Part II, N. Y. Exam., Part I, N. J. Exam. Practical applications of hydraulics, thermo-dynamics, mechanics, and electrical principles.

THURSDAYS, Starting Sept. 5, 1968, 6:30-8:30 P.M., 19 Sessions

North Cafeteria, 19th fl., Consolidated Edison Co., 4 Irving Place, N. Y. C.

Instructor: A. PAULLOW, Consolidated Edison Co.

REGISTRATION INFORMATION

GROUPS #	FEES	PAYABLE TO	MAIL TO
1, 2, 4	\$25 Members IEEE, ASME, NYSSPE	"POWER & IND. GROUP, N. Y. SECTION, IEEE"	<i>Lewis Burnett</i> , Vice Chairman Educational Committee, IEEE, Consolidated Edison Co., Rm. 1326, 4 Irving Place, New York, N. Y. 10003. Phone: (212) 460-6363
6	\$35 all others \$20 Members IEEE, ASME, NYSSPE \$30 all others		
3, 5	\$25 Members, IEEE & ASME only \$35 all others	"ASME METROPOLITAN SECTION"	<i>Eli Kleiman</i> , Educational Committee, ASME, Metropolitan Section, Dept. of Hospitals, Bureau of Engineering & Maintenance, 241 Church St., N. Y., N. Y. 10013 Phone: (212) 566-6940
7	\$20 Members, IEEE & ASME only \$30 all others		
8, 9, 10 11, 12, 13	\$20 Members, IEEE, ASME, NYSSPE \$30 all others	"POWER & IND. GROUP, N. Y. SECTION, IEEE"	<i>David Hawkins</i> , Vice Chairman Educational Committee, IEEE, Consolidated Edison Co., Rm. 1250S 4 Irving Place, New York, N. Y. 10003. Phone: (212) 460-4094

Fill out registration form (see back page) for each group and mail with payment.



Study Group No. 8: COMPUTER PROGRAMMING AND METHODS

MONDAYS, 6:30 to 8:30 pm; Starting Sept. 16, 1968

Consolidated Edison Co.

4 Irving Place, New York, New York

Group Coordinator: V. DEVINCENZO, *Consolidated Edison Co.*
Phone: (212) 460-4181

Instructor: D. L. HAWKINS, *Consolidated Edison Co.*

An introductory group in computer programming emphasizing techniques, useful in scientific and engineering work. The lectures will be supplemented with practice problems.

1. **Sept. 16 Computer Systems**
Basic computer hardware, number system, flow diagrams.
2. **Sept. 30 Programming — Part I**
Arithmetic statements in Fortran IV.
3. **Oct. 7 Programming — Part II**
Control and decision statements in Fortran IV.
4. **Oct. 14 Programming — Part III**
Input, output, and format statements in Fortran IV.

5. **Oct. 21 Programming — Part IV**
Subprograms and arrays in Fortran IV.
6. **Oct. 28 Programming — Part V**
Program debugging, computational errors, iterative techniques.
7. **Nov. 4 Matrices and Linear Algebra**
Properties of Matrices, roots and vectors, and inversion of matrices.
8. **Nov. 18 Numerical Methods — Part I**
Solution of simultaneous linear equations and solution of non-linear equations.
9. **Nov. 25 Numerical Methods — Part II**
Integration by trapezoidal and Simpson's Rule, differentiation.
10. **Dec. 2 Numerical Methods — Part III**
Approximation and non-numerical problems including sort and search procedures.

Study Group No. 9: DISTRIBUTION SYSTEM DESIGN

MONDAYS, 6:30 to 8:30 pm; Starting Sept. 16, 1968

General Electric Auditorium

570 Lexington Avenue, New York, New York

Group Coordinator: R. CAPPELLI, *Consolidated Edison Co.*
Phone: (212) 460-4083

This group gives the basic engineering criteria for the design of distribution systems used in both residential and urban areas.

1. **Sept. 16 Overall Design**
Basic concepts of distribution systems including types of loads and load characteristics.
Speaker: R. R. CAPPELLI, Consolidated Edison Co.
2. **Sept. 30 Subtransmission and Distribution Substations**
Basic substation design, physical arrangement of equipment and appearance.
A. ADAMSON, Long Island Lighting Co.
3. **Oct. 7 Primary and Secondary Distribution**
Radial and loop circuit arrangements, primary networks. Design of secondary systems.
E. SCENA, Long Island Lighting Co.
4. **Oct. 14 Overhead Equipment**
Pole-type transformers, lightning arresters, fused-cutouts, insulators and their arrangement for aesthetic appearance.
Speaker to be announced
5. **Oct. 21 System Voltage Regulation**
Allowable voltage variations on distribution systems. Methods of improving voltage regulation.
W. A. KLEIN, Public Service E. & G. of N. J.
6. **Oct. 28 Application of Capacitors**
Applying shunt capacitors to distribution circuits and series capacitors to subtransmission circuits.
N. SWEETMAN, Public Service E. & G. of N. J.
7. **Nov. 4 System Protection**
Coordination of fuses and circuit breakers in protecting distribution equipment and circuits.
R. J. FRYSSINGER, AEP
8. **Nov. 18 Auto-Loop Systems**
Use of automatic reclosers and sectionalizers for automatic isolation of faults and load transfer on looped-radial systems.
Speaker to be announced
9. **Nov. 25 Underground Residential Distribution (URD)**
Subsurface transformers, direct-buried cable and plug-in cable terminations as applied to URD systems.
J. A. ARCERI, Consolidated Edison Co.
10. **Dec. 2 Secondary Network Systems**
Basic design of secondary network systems, including network transformers, network protectors and fuses.
Speaker from Consolidated Edison Co.

Study Group No. 10: TRANSMISSION LINE DESIGN

TUESDAYS, 6:30 to 8:30 pm; Starting Sept. 17, 1968

Brooklyn Union Gas Co. Auditorium

195 Montague Street, Brooklyn, New York

Group Coordinator: J. SCHMIDT, *Automatic Switch Co.*
Phone: (212) 344-3765

Group Sponsor: R. G. O'SULLIVAN, *Burns & Roe, Inc.*

This group covers the basic parameters and principal considerations involved in the design of a modern transmission line.

1. **Sept. 17 Initial Considerations**
Load studies, voltage selection, line loading, losses, costs and basic economics.
Speaker: PETER A. LEWIS, Public Service E. & G. of N. J.
2. **Sept. 24 Transmission Line Characteristics**
Inductive and capacitive reactance, surge impedance, power limits, voltage drop, line configurations.
DAVID HAWKINS, Consolidated Edison Co.
3. **Oct. 8 Conductor Selection**
Current carrying capacities, types of conductors, bundled conductors, thermal limits.
EDWARD DZIEDZIC, Kaiser Aluminum & Chemical Co.
4. **Oct. 15 Span-Sag Calculations**
Minimum clearance requirements, maximum spans and tension, thermal considerations, conductor creep, sample calculations.
LEINAR OVERN, Alcon Cable Co.
5. **Oct. 22 Transmission Structures**
Wood, steel, aluminum structures; tangent, angle, dead end towers; loading considerations, configurations, broken wire assumption, foundations.
WILLIAM ROM, Ebasco Services
6. **Oct. 29 Insulation Requirements**
Surges, lightning protection, normal and transient voltages, number of insulators.
From General Electric Co.
7. **Nov. 12 Special Problems**
Line outages, shielding, grounding, corona, radio interference, communication, effect of altitude, vibration.
From General Electric Co.
8. **Nov. 19 Construction Methods**
Line surveys, conductor stringing, tower erection, right of way, maintenance, storm damage.
From Power Line Erectors
9. **Nov. 26 Typical Line Design**
Review of line design on recent EHV system (AEP, TVA, BPA, Con Ed)
HERBERT B. WHITE, Transmission Line Consultant
10. **Dec. 3 High Voltage DC Transmission**
Conversion equipment, characteristics of dc, use of ground return, line design considerations, typical systems, state of the art.
OLOF BERGLUND, ASEA Electric Co.

IEEE
NORTH JERSEY SECTION
LECTURE SERIES
FALL-1968

Electric Power Distribution For Industrial Plants

A thirteen-session study course to help electrical, consulting, and project engineers, contractors, architects, and others who are concerned with power distribution systems. It will be especially valuable in providing a sound working knowledge of engineering principles necessary to properly select and lay out an economical, adequate, safe, and reliable power system. The presentations will be made by engineers from the General Electric Company who have specialized in designing distribution equipment for industrial plants.

Starts September 17, 1968

Vail Hall, 540 Broad St., Newark, N. J.



Speed Reading And Comprehension

An eight-session course to improve an engineer's reading speed and retention.

Starts October 14, 1968

Public Service Electric & Gas Co., 80 Park Place, Newark, N. J.



Introduction To Digital Techniques

An eight-week course which serves as an introduction to digital technology, primarily for those with little or no experience in the field.

Starts October 16, 1968

ITT Federal Laboratories, Nutley, N. J.



(See Details and Registration Forms on Following Pages)

SPEED READING AND COMPREHENSION

This eight-session course is designed to help engineers to keep abreast of the literature in their fields, and of their general reading. It improves reading speed and retention through skills taught and practiced. It releases reading power held back by inefficient habits and attitudes. Engineers may expect improved speed in their reading, greater comprehension and retention of information, and an insight into the process of reading which will foster continuing individual growth.

- October 14 — Introduction to Speed Reading**
October 21 — Organization as an Aid
October 28 — Paragraph Patterns and Functions
November 4 — Eye Movements
November 18 — Graphic Aids to Understanding
November 25 — Technical Aids to Understanding
December 2 — Reading to Remember
December 9 — Broadening Horizons

INSTRUCTOR **Mr. E. E. Coing, Assistant to Director of Educational Work, Public Service Electric & Gas Co.** Former member of N. Y. U. School of Commerce faculty, he has over 30 years experience teaching courses for business and industry.

TIME 6:30 P. M. to 8:30 P. M. — Monday nights — Starting Oct. 14 and ending Dec. 9, 1968. (There will be no meeting on Nov. 11, 1968)

PLACE Public Service Electric & Gas Co., 80 Park Place, Newark, N. J.

FEE \$30.00 for members (IEEE, ASME, NSPE, etc.) \$40 for non-members, \$10 of which is applicable to IEEE membership dues.

\$5.00 discount for early registration.

Text material will be supplied.

Registration will be limited to the first 40 applicants.

REGISTRATION FORM — SPEED READING

Send To: C. G. Engstrom
Public Service E & G Co.
90 Park Place, Rm. 244
Newark, N. J. 07101 Phone: 201 - 622-7000, Ext. 2603

Name.....Tech. Society.....

Firm.....Phone.....

Address.....

Check Enclosed:

Member \$25.00 \$30.00 after Oct. 7

Non-Member \$35.00 \$40.00 after Oct. 7

Make checks payable to North Jersey Section IEEE.

INTRODUCTION TO DIGITAL TECHNIQUES

This 8-week course will serve as an introduction to digital technology, primarily for those with little or no previous experience in the field. There are no prerequisites but the course will be conducted at a level sufficient to give the student a thorough introduction to digital techniques. The techniques discussed are not restricted to computer design as such but are applicable to a rapidly increasing number of technical areas.

October 16, 23, 30 — Switching Algebra

The first three lectures will discuss Switching Algebra, a simple yet precise form of notation extremely useful in describing digital operations.

November 6 — Logic Circuits

A detailed discussion of the various forms of circuitry used as building blocks to implement the functional relationships defined by means of the switching algebra. Emphasis will be on currently available integrated circuit modules.

November 13, 20 — Binary Arithmetic

The lectures will introduce the concepts of binary arithmetic and discuss how decision making is done in a digital manner.

November 27 — Digital Design

This lecture will be a description of the digital design process. Drawing on the material previously developed the following topics will be covered: formulation of requirements, choice of circuitry to be employed, development of logic equations, and solutions to commonly encountered circuit problems.

December 4 — Application of Digital Techniques

This concluding lecture will discuss specific areas in which digital techniques are particularly useful: accurate waveform generation, information transfer, storage and display, and control applications. Also covered will be how electrical and mechanical parameters are converted into digital form by means of analog to digital converters and digital transducers.

INSTRUCTOR **Mr. A. Richardson, ITT Avionics**

TIME 7:00 - 9:00 P. M. — Wednesday nights — October 16 to December 4, 1968.

PLACE ITT Federal Laboratories, 500 Washington Avenue, Nutley, N. J.

FEE \$25.00 Members (IEEE, NJPE, etc.); \$35.00 Non-Members; \$5.00 Discount for early registration

REGISTRATION FORM — INTRODUCTION TO DIGITAL TECHNIQUES

Send To: Mr. J. Zemkowski
Public Service Electric & Gas Company
80 Park Place
Newark, N. J. 07101 Phone: 622-7000, Ext. 3008

Name.....Tech. Society.....

Firm.....Phone.....

Address.....Zip.....

Check Enclosed:

Member: \$20.00.....; \$25.00 after Oct. 9

Non-Member: \$30.00.....; \$35.00 after Oct. 9

Please make checks payable to: North Jersey Section, IEEE

ELECTRIC POWER DISTRIBUTION FOR INDUSTRIAL PLANTS

A thirteen-session study course to help electrical, consulting, and project engineers contractors, architects, and others who are concerned with power distribution systems. It will be especially valuable in providing a sound working knowledge of engineering principles necessary to properly select and lay out an economical, adequate, safe, and reliable power system. The presentations will be made by engineers from the General Electric Company who have specialized in designing distribution equipment for industrial plants.

The complimentary text "Industrial Power Systems Handbook" (McGraw-Hill \$22.50 each) will be supplied. This book contains engineering information, as well as data in tables, chart and curve form, for your handy reference. Examples of typical cases and problem calculations and homework problems are also included.

September 17 — Introduction. Preview of material to be covered — Documentary films — Load surveys — Need for plot plans — One line diagrams — Things to check when designing a power distribution system — Use of Symmetrical Components.

*Instructor: J. W. Gordon, Applications Engineer,
Millburn Office*

September 24 — Basic Considerations — Short Circuits. Introduction to short-circuit studies — Sources of short-circuit currents — Symmetrical currents.

A. M. Meisel, Applications Engineer, New York Office

October 1 — Short Circuits. Effects of synchronous and induction machines — Decrement factors — Multiplying factors — Per unit and percent systems — Determination of system impedance data.

A. M. Meisel, Applications Engineer, New York Office

October 8 — Short Circuits. Calculating procedures — Effects of faults — How to make a short circuit study — Use of handbook data — Examples.

A. M. Meisel, Applications Engineer, New York Office

October 15 — Selection And Application of Protective Devices. Need for adequate devices — Significance of breaker and fuse ratings — Use of application tables — Equipment available — Movies of short-circuit tests.

*Paul Reifschneider, Applications Engineer,
Philadelphia Works*

October 22 — Selection And Application of Protective Devices (Continuation). BRKR ratings and fuses ratings — Factors to consider in selection of equipment — Problems solutions.

Frank Shields, Applications Engineer, Schenectady, N. J.

October 29 — Power-Factor Improvement. Power-factor fundamentals — Calculation methods — Capacitor facts and fallacies — Rate studies — Release of system capacity by power-factor improvement — Capacitor economics — Instruments and measurements for power-factor studies.

*W. C. Bloomquist, Manager, Application Engineering,
Schenectady, N. Y.*

November 5 — Voltage Improvement. Reasons for good voltage — Methods of reducing voltage drop, spread, and flicker — Calculation of steady-state voltage drop — Use of voltage drop charts — Calculation of system voltage dip due to motor starting.

A. M. Meisel, Applications Engineer, New York Office

November 12 — Overvoltage-Grounding. Nature and cause of overvoltage — Demonstration of grounded verses ungrounded systems — Case studies — Selection of grounding methods—Selection of lightning arresters and surge capacitors.

George Walsh, Applications Engineer, Schenectady, N. Y.

November 19 — Relaying Coordination. Factors to be considered in coordination studies — Use of time-current curves — Protective device characteristics — Examples of coordination — Inherent protection of motors — Code and standards consideration.

W. L. Levene, Applications Engineer, New York Office

November 26 — Industrial Relaying. Problems associated with parallel operation of utility and industrial reclosing on systems with synchronous motors, differential protection, ground sensors.

W. L. Levene, Applications Engineer, New York Office

December 3 — Power System for Industrial Buildings. Voltage and circuit selection for small, medium and large buildings, schools, etc. — 460Y/265-volt versus 208/120-volt systems — Economic factors affecting selection — 3000 cycle lighting — Overcurrent protection — Selection of proper and economical equipment for buildings fed from high short-circuit capacity networks.

J. C. Cranos, Applications Engineer, Schenectady, N. Y.

December 10 — Wire and Cable. Selection and application of cables for main and branch circuits — Overhead versus underground systems — Shielding practices — Splicing and terminating.

D. H. Peterson, Wire & Cable Specialist, New York Office

TIME.....6:30 - 9:00 P. M. Tuesday nights — Starting September 17, 1968 and ending December 10, 1968.

PLACE.....Vail Hall, New Jersey Bell Telephone Company, 540 Broad Street, Newark, New Jersey.

FEE.....\$50.00 to members (IEEE, ASME, NJSSPE, etc.); \$60.00 to non-members. \$5.00 discount for early registrations. Registrations will be limited to the first 75 applicants.

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1 — Special Study Groups

Study Group No. 11: BASICS OF ELECTRICAL SYSTEM PROTECTIVE DEVICES

WEDNESDAYS, 6:30 to 8:30 pm; Starting Sept. 18, 1968

Consolidated Edison Co., 4 Irving Place, N. Y. C.
Group Coordinator: J. TAMBASCO, *East Division, N.F.E.C.*
Phone: (212) 264-7367

Group Instructor: H. S. ORTH, Director Multi-Amp Institute, Cranford, New Jersey, Section on Reclosers will be conducted by an authority from *McGraw-Edison Power Systems Division*.

A basic group covering the principles of operation, application, selection and coordination of electrical protective devices in common use today. The group will include data on fuses, motor overload relays, molded case and low voltage power circuit breakers, oil circuit reclosers and protective relays.

Normal life in the United States today depends on the uninterrupted flow of electric power. Proper selection, coordination, and operation of the electrical protective devices in a system can help guarantee this constant flow of electric power. This group is of great interest and value to engineers in the commercial, industrial and utility fields.

1. **Sept. 18** Introduction
2. **Sept. 25** Fuses and Molded Case Circuit Breakers
3. **Oct. 9** Low Voltage Power Circuit Breakers
4. **Oct. 16** Basic Theory of Protective Relay Operation, Emphasis on the Overcurrent Relay
5. **Oct. 23** Protective Relays (continued) With Emphasis on Undervoltage, Percentage Differential and Under Frequency Relays
6. **Oct. 30** Motor Protection
7. **Nov. 6** Oil Circuit Reclosers and Sectionalizers
8. **Nov. 13** Guide Lines for Proper Coordination
9. **Nov. 20** Class Discussion on Typical Electrical Protection Problems
10. **Dec. 4** How to Assure Adequate Electrical Protection

Study Group No. 12:

SWITCHGEAR AND CIRCUIT BREAKERS

THURSDAYS, 6:30 to 8:30 pm; Starting Sept. 19, 1968

Consolidated Edison Co.
4 Irving Place, New York, New York

Group Coordinator: R. A. BEDNARIK, *Consolidated Edison Co.*
Phone: (212) 460-4193

This group provides a comprehensive review of the fundamental theory behind circuit interruption and familiarizes one with the electrical properties, mechanical operation, application and development of switchgear and circuit breakers.

1. **Sept. 19** Introduction
Arc ionization, fundamentals of circuit breakers and switchgear.
Speaker: L. J. HOLLANDER, American Gas Association
2. **Sept. 26** Circuit Interruption
Voltage recovery, natural frequency of system, effects of resistors and asymmetrical currents.
L. J. HOLLANDER, American Gas Association
3. **Oct. 3** Switchgear Rating
Ratings, current, voltage and frequency.
E. RIETZ, ITE Circuit Breaker Co.
4. **Oct. 10** Kinematics of Switchgear
Closing and opening movement, speed, mechanical advantage, link pressure and stored energy.
R. S. SMITHLEY and W. G. HARLOW, Federal Pacific Electric Co.
5. **Oct. 17** Medium Voltage Applications
Air magnetic, air blast, oil and vacuum breakers.
G. SAKATA, General Electric Co.
6. **Oct. 24** High Voltage Applications
Air blast, oil, sulfur hexafluoride and vacuum breakers.
R. A. BEDNARIK, Consolidated Edison Co.
7. **Oct. 31** Switchgear Testing & Maintenance
Design, factory, and field testing.
H. ZAHNER, Consolidated Edison Co.
8. **Nov. 7** Relays & Circuit Breakers — Part I
Protective and supervisory—line relaying, relay and breaker operating times and schemes.
J. L. BLACKBURN, Westinghouse Electric Corp.
9. **Nov. 14** Relays & Circuit Breakers — Part II
J. L. BLACKBURN, Westinghouse Electric Corp.
10. **Nov. 21** New Development in EHV Switchgear Design
R. J. KATES, General Electric Co.

Study Group No. 13:

FACILITIES ELECTRICAL DESIGN

THURSDAYS, 6:30 to 8:30 pm; Starting Sept. 19, 1968

General Electric Co. Auditorium
570 Lexington Avenue, New York, New York

Group Sponsor: M. ISAACS, *Ammann & Whitney*

Group Coordinator: H. JOHNSON, *Automatic Switch Co.*
Phone: (212) 344-3765

Group Instructor: H. WALCOFF, *Naval Facilities Engineering Command*

The group will be oriented toward the man with engineering school background and about five years of design experience. In addition to lectures on voltage problems, equipment selection, fault currents and distribution methods, there will be an emphasis on System Planning and the Coordination problems between the Electrical Design group and the other design groups involved in the design of the whole facility. Examples of specific facilities, such as industrial plants (and perhaps a hospital or shopping center) will be offered. Home work assignments will be assessed by both students and instructors.

1. **Sept. 19** Project Planning
2. **Sept. 26** A Project
Size, scope and load.
3. **Oct. 3** Design
Requirements and documents.
4. **Oct. 10** System Selection
Distribution methods, load center.
5. **Oct. 17** Fault Currents
Calculations.
6. **Oct. 24** Protective Relaying
Introduction to subject and reference.
7. **Oct. 31** Motor Control
Starters and control methods.
8. **Nov. 7** Drawing
Preliminary and contract.
9. **Nov. 14** Specifications
Purpose, content, standards.
10. **Nov. 21** Construction Cost Estimates
11. **Dec. 5** Other Design Considerations I
Safety, codes, grounding.
12. **Dec. 12** Other Design Considerations II
Availability/Reliability, UPS, Power transfer.

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N. Y. Section, IEEE



Power and Industrial Div.

EDUCATIONAL PROGRAM — FALL 1968

INDIVIDUAL IMPROVEMENT STUDY GROUP

Metropolitan Section



ASME

Study Group No. 6:

THEORY AND MECHANICS OF TECHNICAL REPORTS

MONDAYS, 6:30 to 8:30 p.m.; Starting Sept. 16, 1968

Room 503, Con Edison Co., 4 Irving Place, N. Y. C.

Instructor: E. ALCOSSE, *Alpha-Tech, Inc.*

A Study Group designed to provide training in the preparation and presentation of technical reports.

- Sept. 16 Introduction**
Description, purpose, communication of ideas.
- Sept. 30 Written Communication**
Types, purpose and for whom.
- Oct. 7 The Outline**
Purpose, value, mechanics — Use of
- Oct. 14 First Draft — Part I**
(General) — Style, grammar, effectiveness.
- Oct. 21 First Draft — Part II**
(Specific) — Choosing the media, layout, illustrations.
- Oct. 28 Final Report**
Draft review, production, final check.
- Nov. 4 Oral Reports**
Principles of speaking, outline, presentation.
- Nov. 18 Preparation of Oral Reports**
Use of index cards, timing, use of aids.
- Nov. 25 Delivery of Student Reports**
Prepare short report (term project) for presentation and discussion.
- Dec. 2 Delivery of Student Reports**
Prepare short report (term project) for presentation and discussion.

Study Group No. 7:

BUSINESS MANAGEMENT FOR ENGINEERS

TUESDAYS, 6:30 to 8:30 p.m.; Starting Sept. 17, 1968

Little Theater, N. Y. Telephone Bldg.
140 West Street, New York, New York

Group Sponsor: G. E. EVANS, JR., *Zurn Industries, Inc.*

A series of lectures on Business Administration designed to give the engineer a better understanding of corporate management.

- Sept. 17 Introduction to Organization & Management of Corporations**
Speaker: J. P. WURZLER, N. Y. Telephone Co.
- Sept. 24 Basics of Corporate Finance**
Speaker to be announced.
- Oct. 8 Interpreting Corporate Financial Statements**
JOHN DYMENT, Arthur Young & Co.
- Oct. 15 Factors Used in Extending Credit to Business**
RICHARD KOEHLER, Chemical Bank, N. Y. Trust
- Oct. 22 Engineering Legislation & Ramifications**
P. E. LYFORD, Council on Eng. Laws
- Oct. 29 Marketing and Sales Planning**
CARL MILLER, Combustion Engineering Inc.
- Nov. 12 Contract Law for Engineers**
GLEN H. ABPLANALP, Havens & Emerson
- Nov. 19 Personnel Administration — Policy, Placement, Communications & Benefit Programs**
ROBERT DODDS, Gibbs & Hill, Inc.
- Nov. 26 Communications Problems in Conference Meetings — Part I**
DR. H. R. GILLIS, Long Island University
- Dec. 3 Communications Problems in Conference Meetings — Part II**
DR. H. R. GILLIS, Long Island University

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Unusual Processing Techniques Proposed for Next Computer Generation

The previous three generations of computers have shown tremendous changes in the technology of the devices used to build the processor logic. For the next generation we may expect to see new ways of dealing with the interface problem, that of getting information in and out of the computer:

Hybrid processing — the combination of analogue operations with digital steering signals may prove successful where information is in video form as in satellite pictures.

Electro-Optical preprocessing — the use of on-line Fourier transforms for the re-

moval of noise from data has already been demonstrated.

Stochastic processing — the representation of information by variable pulse sequences so that arithmetic circuits become cheaper and simpler is also feasible.

These and other unusual forms of information processing will be discussed by Dr. J. W. Poppelbaum, Professor of Electrical Engineering and Computer Science, University of Illinois, at the September meeting of the N. Y. Chapter of the Computer Group.

Time: Thursday, September 26, 7:45 P. M.

Place: Auditorium, National Cash Register Company, 50 Rockefeller Plaza at 51st St. between 5th and 6th Avenues.

Dinner: A no-reservation pre-meeting dinner at Schrafft's Restaurant, 21 W. 51st St. at 6:00 P. M.

Instrumentation and Measurements Slates Transducer Lectures

The IEEE Joint Metropolitan Chapter on Instrumentation and Measurements will hold a fall Lecture Series on "Electrical Transducers for Non-Electrical Measurements."

An electrical transducer is a device which senses a phenomenon and converts the measurement into an electrical output signal. The non-electrical measurands considered comprise the more prominent physical and chemical phenomena which are of interest to engineers. Each lecture discusses the properties of the measured quantity, the principle of operation of the various transducers, the static and dynamic characteristics of the devices, and some typical engineering specifications and applications. For the purpose of presenting the best over-all picture of electrical transduction the lectures have been grouped by measured quantities rather than by principle of operation. This gives a degree of autonomy to each lecture. At the same time, this grouping allows for greater flexibility in description of device performance.

October 16, 1968 — The Design of Sensors for Water Quality Measurements, *Mr. Arthur E. Gealt, Senior Development Engineer, Industrial Division, Honeywell, Inc., Fort Washington, Pa.*

October 23, 1968 — The Application of Radiation Sensing Instruments, *Dr. Robert W. Houston, Director, Industrial Reactor Laboratories, Plainsboro, N. J.*

October 30, 1968 — Principles and Applications of Non-Contact Thermometry by Infrared Techniques, *Mr. John R. Yoder, Head-Advanced Systems Department, Barnes Engineering Co., Stamford, Conn.*

November 6, 1968 — The Sensing of Sound, *Mr. Bernard Katz, Manager Communication Market, B and K Instruments, Inc., Cleveland, Ohio.*

November 13, 1968 — The Sensing of Mechanical Dimension, *Mr. Richard J. Levi, President, Electro-Autosizing Machine Corp., Westwood, N. J.*

November 20, 1968 — The Sensing of Level and Flow, *Speaker from Hagan Controls Division, Westinghouse Electric Corp., Pittsburgh, Pa.*

December 4, 1968 — The Sensing of Motion, *Mr. Walter Christie, Senior Engineer, Navigation and Control Division, The Bendix Corp., Teterboro, N. J.*

December 11, 1968 — The Sensing of Force, Torque and Pressure, *Speaker from Automatic Timing and Controls, Inc., King of Prussia, Pa.*

Time: 7:00-9:00 P. M.

Place: Vail Hall, N. J. Bell Telephone Co., 540 Broad St., Newark, N. J.

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Newark College Of Engineering
323 High Street
Newark, N. J. 07102

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Report From The: Publications Committee



North Jersey Publication Committee: (From left to right) Dr. Emil Neu, Martin Hollander, David Wiener, Alan Stolpen, Mike Perugini. Barry Janoff is missing from the photograph.

If this issue of the NEWSLETTER looks different to you it is because that is our intention. We, the publications committee, as one of our tasks strive to make the NEWSLETTER an effective instrument. To be effective the membership must read it. In this issue and in issues to follow there will be many features designed to attract the general membership, that is, articles other than meeting notices.

During the coming months members of the executive committee, standing committees and group chapters will write articles explaining their function in the North Jersey Section IEEE. Hopefully you will find some common interests with one of these groups and participate in their activities. This, by the way, is where the greatest benefits are derived by IEEE members. Meeting and exchanging ideas with others in your field is what the IEEE is all about. You get new ideas, and new approaches to old ideas through personal professional contact. You and the society both win.

You may be interested in helping to run the section. All of the standing committees can use an extra hand. Perhaps you would be interested in lending a hand on the publications committee.

It is the function of the publications committee, (that hard working bunch in the photograph) to mold the character of all section publications. We collect, rewrite and edit all material for the section publications. We set advertising policy and assign priorities. We maintain contact with the student groups, watch what other publications are doing and try to print articles of interest. The NEWSLETTER is the main publication of the North Jersey Section. If any of you have something to say which is of interest to many in the section, feel free to write to us. If any of you are interested in helping out with the work of the publications committee, why don't you attend one of our meetings? Just pick up the phone and dial 673-7100, Ext. 2266 during the day, or 992-6078 during the evening. Ask for Dave Wiener, Publications Committee chairman.

New York Comtech Offers Engineering Education Courses

As a portion of its continuing education program the Communications Technology Group Chapter of the New York Section will present two 18-lecture courses this fall.

The first course, "Data Systems," will stress the fundamentals of the systems approach to data engineering. This course will emphasize the overall aspects of "big picture" approach to data systems. The initial lectures will describe pure data — What it is — Information Theory — Coding Schemes, etc. The second section or group of lectures will discuss the possible methods of transporting or transmitting data — AM — FM — PCM — PM, etc. The third group of lectures will concentrate on the overall data system — the advantages of different combinations of input/output vs. transmitting schemes, etc.

The speaker for the first six lectures is Mr. R. P. McCabe of the New York Telephone Company. Mr. McCabe is a registered Professional Engineer and he has been an instructor at the Bell System Data Engineering Course held at West Point, New York.

The second course, "Mathematics For Engineers," will review the fundamentals of engineering or applied mathematics. The purpose of this course is to reacquaint the graduate engineer with various facets of his mathematical training that may have been neglected since graduation. Reacquaintanceship with this material will allow the student to more easily grasp both new technical material and future engineering courses.

The speaker for the first twelve lectures is Professor Michael Lione of Newark College of Engineering. Professor Lione has been actively teaching engineers since 1946 and has also supervised instruction in Computer programming and numerical methods.

Both courses will be given at the New York Telephone Company, 140 West St., New York City, from 6:30 to 8:30 P. M. with the Data Systems course beginning on September 25 and Mathematics for Engineers beginning on September 26, 1968. Further information may be obtained from Mr. R. Paskouskas of the New York Telephone Company. (212) 394-8486.

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THE IEEE Newsletter

The Magazine of the North Jersey Section

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