



The IEEE

Newsletter

The Magazine of the North Jersey Section

AN INTRODUCTION TO ASTRONOMY

Lecture Series — February 17, 1970, Union College, Cranford

(For additional details see Page 8 or write:

P. O. Box 666, Mt. Arlington, N. J. 07856 Phone (201) 398-5524)

JANUARY, 1970

Problem Solving With Computers

The January meeting of the North Jersey Power Group will be devoted to a presentation on, "Using Time-Sharing Computers for Engineering Problem Solving." The information Service Department of the General Electric Company will host the meeting at their Teaneck Computer Center.

A discussion of time-sharing computer concepts and languages will be presented.

Demonstrations of power system problem solving programs are planned. On-hand experience at a terminal device should be available for most of those attending. Bring your engineering problems to the meeting; G.E. computer experts will be on hand to discuss the approaches to computer solutions.

Time: Wednesday, January 21, 7:30 P.M.

Place: General Electric Computer Center, 1500 Palisades Avenue, Teaneck, N.J.

Refreshments will be served.

MEETINGS CALENDAR

Thursday, January 15

Metropolitan Chapter of the Engineering Management Group — **Peter Drucker film on Effective Decisions** — John Peel Restaurant on Old Country Road, Westbury, Long Island, N.Y., 6:30 P.M.

Tuesday, January 20

Northern New Jersey Computer and Communications Technology Groups — **Digital Signal Processing**, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J., 8:00 P.M.

Wednesday, January 21

North Jersey Power Group — **Using Time-Sharing Computers for Engineering Problem Solving**, General Electric Computer Center, 1500 Palisades Avenue, Teaneck, N.J., 7:30 P.M.

Wednesday, January 21

Magnetics Chapter of the Princeton Section — **Magnetic Garnet Films**, Room 217, Murray Hall, Rutgers University, New Brunswick, N.J., 8:00 P.M.

Wednesday, January 21

Newark College of Engineering — **Digital Filtering Seminar**, Newark College of Engineering, Newark, N.J., 9:30 A.M.

Tuesday, February 17

I.E.E.E. North Jersey Section — **An Introduction to Astronomy, The Sun and Its Family** — William Miller, Sperry Observatory, Union College, 1033 Springfield Avenue, Cranford, N.J., 8:00 P.M.

Saturday, February 21

North Jersey Section — **Annual Dinner Dance Honoring New Fellows and Award Winners**, Governor Morris Inn, Morristown, N.J., 6:00 P.M.

ON THE COVER: Equipment housed in these twin domes of the William Miller Sperry Observatory of Union College will be used in a Spring Lecture Series on, "Introduction to Astronomy." For details on this and other spring lectures see Pages 5 thru 8.

The IEEE Newsletter

Published monthly except July and August by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc. Office of Publication: 9 Little John Road, Morris Plains, N. J.

Volume 16

January 1970

No. 5

NEWSLETTER STAFF

Editor Alan H. Stolpen
Managing Editor M. M. Perugini
Student Activities Editor Gary Woerner
Associate Editor Martin Hollander
Associate Editor Barry Janoff
Associate Editor Raymond Dusault
Associate Editor Robert McMillan

Deadline for all material is the 25th of the second month preceding the 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 666

Mt. Arlington, N. J. 07856

Phone: 398-5524

Subscription: 75¢ per year through dues for members; \$1.50 per year for non-members.

Second Class Postage Paid

at Morris Plains, 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 1969-1970



M. M. Irvine

Chairman Merle M. Irvine
Vice Chairman Herbert E. Blaicher, Jr.
Treasurer Robert G. Sokalski
Secretary Carl C. Torell
Member-at-Large Raj P. Misra
Member-at-Large P. E. Watson
Jr. Past Chairman Joseph G. O'Grady

The Newsletter, January 1970



Power and Industrial Div.

EDUCATIONAL PROGRAM — SPRING 1970

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." N. Y. exams will be held in April and December.
ENDORSED BY NYSSPE

STRUCTURAL PLANNING AND DESIGN (IEEE-ASME)

STUDY GROUP NO. 21

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 AISC and ICI codes. Printed notes available.

MONDAYS, Starting Feb. 2, 1970, 6:15-8:30 P.M., 18 Sessions
Auditorium, 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. 22

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 Feb. 3, 1970, 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. 23

Review for Mechanical Engineering Section of Part III, N. Y. Exam. Application of mechanical engineering principles to combustion, gas dynamics, compression shock, nozzle design, steam power plant cycles, psychrometrics, air conditioning, heat transfer, nuclear reactors, Mach cone, kinetics, gyroscopic motion, vibratory motion, balancing of machines, compound shafts, design of gears, hydraulics, pumps and fans, stress and deformation of machine elements, etc.

MONDAYS and WEDNESDAYS, Starting Feb. 2, 1970, 6:30-8:30 P.M., 19 Sessions (2 per Week)
Executive Conference Room, 4th fl., Dept. of Hospitals, 66 Leonard St., N.Y.C.

Instructor: M. Kurtz, P.E.

ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)

STUDY GROUP NO. 24

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 Feb. 4, 1970, 6:30-8:30 P.M., 18 Sessions
Room 1425, Consolidated Edison Co., 4 Irving Place, N.Y.C.

Instructors: L. E. Burnett, Consolidated Edison Company
S. Sonsky, U. S. Naval Applied Science Laboratory

BASIC ENGINEERING SCIENCES (ASME-IEEE)

STUDY GROUP NO. 25

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

WEDNESDAYS and THURSDAYS, Starting Feb. 4, 1970, 6:30-8:30 P.M., 19 Sessions (2 per Week)
Consolidated Edison Co., 4 Irving Place, N.Y.C.
On Wednesdays—Room 1425; On Thursdays—North Cafeteria, 19th fl.

Instructor: A. Paulow
Consolidated Edison Company

REGISTRATION INFORMATION

GROUPS #	FEES	PAYABLE TO	MAIL TO
21, 22, 24	\$25 Members, IEEE, ASME, NYSSPE \$35 all others	"POWER & IND. GROUP, N.Y. SECTION, IEEE"	I. M. Berger, Vice Chairman Educational Committee, IEEE N.Y.C. Transit Authority, Rm. 1200 370 Jay St., Brooklyn, N.Y. 11201 Phone: (212) UL 2-5000, Ext. 4495
23, 25	\$25 Members, IEEE & ASME only \$35 all others	"ASME METROPOLITAN SECTION"	Clarence J. Owens, Educational Comm. ASME, Metropolitan Section, Dept. of Hospitals, Bureau of Engineering & Maintenance, 66 Leonard St., N.Y., N.Y. 10013 Phone: (212) 566-6940
30, 31, 32, 33	\$20 Members, IEEE, ASME, NYSSPE \$30 all others	"POWER & IND. GROUP, N.Y. SECTION, IEEE"	E. I. Fabri, Vice Chairman Educational Committee, IEEE, Consolidated Edison Co., Rm. 1311 4 Irving Place, New York, N.Y. 10003 Phone: (212) 460-6072
34	\$25 Members, IEEE, ASME, NYSSPE \$35 all others		



STUDY GROUP NO. 30

**ENGINEERING & MANAGEMENT OPERATIONS
OF NUCLEAR POWER PLANTS — PART III**

MONDAYS, 6:30 to 8:30 P.M.: Starting March 2, 1970

Consolidated Edison Co., Room 1425
4 Irving Place, New York, N. Y. 10003

Group Coordinator and Sponsor: E.N. Mercouris, Gibbs & Hill, Inc.
Tel. (212) 565-4300, Ext. 589

The present series of lectures is the last of three parts. Last year, Part I & II were given under the title, "Nuclear Plant Design," covering the basics. As attendance is expected to be heavy, pre-registration at least two weeks before the first lecture is desirable. Scope of the present series is to give fast pace survey type lectures oriented for engineers, managers and technical personnel involved with the Engineering & Management Operations (construction, operation and maintenance) of Nuclear Plants.

1. **March 2 Reactor licensing & safety regulations —**
Saul Levine, Asst. Director for Reactor Tech., AEC
Feasibility of underground plants in metropolitan areas;
cooling and pollution considerations —
J. A. Prestele, Asst. Manager of Production, Con Edison
2. **March 9 Operational & control rod aspects —**
Dr. W. C. Lipinski, Argonne National Laboratory
Reactor coolant properties — *Leon Green, Nuclear Materials Div., Brookhaven National Laboratory*
3. **March 16 Pressurized water reactors & prodac computer control —** *G.H. Farbman, Consulting Engineer, PWR Systems Div., Westinghouse Electric Corp.*
Nuclear training & education —
Elias N. Mercouris, Gibbs & Hill, Inc.
4. **March 23 Boiling water reactors & computer control**
Speaker to be announced
Construction delays tests & start-up operations —
Speaker to be announced
5. **March 30 Pressurized water reactors —**
Speaker from Combustion Engineering Inc.
On-line computer digital & analog control —
Speaker to be announced

6. **April 6 PWR: Quality assurance, control & tests—***Robert E. Wascher, Manager, Performance Engineering, The Babcock & Wilcox Co.*

Start up, operations and maintenance —
Speaker to be announced

7. **April 13 Accident analysis, engineered safeguard systems. Plant erection, U.S. & West European market —** *F.D. Hutchinson, Asst. Chief Mech. Eng., Nuclear, Gibbs & Hill*
Far East market; plant erection, labor force training, quality control and management —
Speaker to be announced
 8. **April 20 Electrical power, control redundancy and emergency standby systems —** *W. McShea, Supervising Electrical Engineer, Burns & Roe, Inc.*
Construction management & scheduling —
Allan Conrad, Bechtel Corp.
 9. **April 27 BWR Containment systems & construction —**
Speaker from Ebasco Services Corp.
Nuclear power plant processes — *W.J.L. Kennedy, Chief Nuclear Engineer, Stone & Webster*
 10. **May 4 High temperature gas cooled reactors (PSCV for 330 & 1000 MWe Structures); Control boards and simulators —**
Speaker to be announced
Fast & liquid metal reactors — *Stanley K. Hellman, Chief Nuclear Engineer, The Ralph M. Parsons Co.*
 11. **May 11 Reactor vessel, components, site erection & tests —** *R.S. Webb, Product Manager, Nuclear, Chicago Bridge & Iron*
Fabricated piping, heat treatment & custom pipe bending —
William Molvie, Chief Engineer, Pipe Fabrication Div., Dravo Corp.
 12. **May 18 Economics, financing insurance —**
Speaker to be announced
Fuel management — *R. J. McWhorter, S. M. Stoller Corp.*
- Tours: **May 9** Oyster Creek, N.J.
May 16 Indian Point 1 on line, 2 & 3 being built

STUDY GROUP NO. 31

ELECTRICAL SPECIFICATIONS AND ESTIMATING

TUESDAYS, 6:30 to 8:30 P.M.: Starting March 3, 1970

Brooklyn Union Gas Co., Auditorium
195 Montague Street, Brooklyn, N.Y.

Group Coordinator: N. Softleigh, Public Service E&G Co.
Tel. (201) 622-7000, Ext. 2164

Group Sponsor: D. Marshall, Brodsky, Hopf and Adler
Tel. (212) 687-1272

Good specification writing practices and accurate estimating procedures for equipment procurement and installation on modern construction projects are reviewed.

1. **March 3 Specification Intent and Contents —** Intent, organization, and principal considerations.
Speaker to be announced
2. **March 10 Rotating Equipment —** Electric generators, motors and other rotating equipment.
Speaker to be announced
3. **March 17 Transformers and Related Equipment —** Ratings, insulation, temperature, cooling, losses, noise levels, evaluation procedures and other items.
Speaker to be announced
4. **March 24 Distribution Equipment —** Switchgear, panel and control equipment requirements. *Speaker to be announced*

5. **March 31 Installation Specifications —** Scope, reference standards, definitions, listing of major items, details and other items.
Speaker: W.J. Klotz, Chief Electrical Engineer T. J. Kauffeld Co.

6. **April 7 Government Specifications —** Reference standards, accurate descriptions and other items.
Speaker to be announced

7. **April 14 Municipal Specifications —** Local standards and special considerations.
Speaker from N.Y.C. Dept. of Public Works

8. **April 21 Takeoff Procedures and Temporary Facilities —** Organization for rapid and accurate takeoff, and provision for temporary power.
Speaker to be announced

9. **April 28 Pricing, Overhead Expenses and Job Extras —** Procedures necessary for economic estimating. Derivation and application of basic pricing units for labor.
Speaker: Robert Kushner, Consolidated Edison Co.

10. **May 5 Estimating For a Typical Electrical Installation —** Review of a recent electrical project.
Speaker: Ray Mitchell, Consolidated Edison Co.



IEEE
NORTH JERSEY SECTION
LECTURE SERIES
SPRING 1970



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. Blizzard, Assistant Director, MULTI-AMP Institute.

Starts February 17, 1970

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

ENGINEERING ECONOMICS

This eight-session study group is intended to give to the student the tools to correctly solve many of the "run-of-the-mill" economic problems. The sessions will be devoted primarily to a presentation of the Revenue Requirements technique for measuring the profitability of ventures and relative economy of alternative proposals. Financial Mathematics, Depreciation, and Income Taxes are among the topics which will be considered. This study group should be of particular interest to financial, accounting and engineering personnel.

Starts February 25, 1970

*Public Service Electric & Gas Company
80 Park Place (Room 3171A)
Newark, New Jersey*

AN INTRODUCTION TO ASTRONOMY

A four-lesson course with lectures given by members of Amateur Astronomers, Inc. Viewing sessions using 6-inch refractor and 12-inch reflector are related.

Starts February 17, 1970

*William Miller Sperry Observatory
Union College
1033 Springfield Avenue
Cranford, New Jersey*

(See Details and Registration Forms on Following Pages)



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. Blizzard, Assistant Director, MULTI-AMP Institute.

February 17—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.

February 24—FUSES AND MOLDED CASE CIRCUIT BREAKERS

Theory of operation - Interpretation of Manufacturers Time Current Curves.

March 3—LOW VOLTAGE POWER CIRCUIT BREAKERS

Theory of Operation - Interpretation of Manufacturers Time Current Curves.

March 10—PROTECTIVE RELAYS (Overcurrent)

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

March 17—PROTECTIVE RELAYS (Undervoltage and Percentage Differential).

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

March 24—MOTOR PROTECTION

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

March 31—GUIDE LINES FOR COORDINATION

April 7—PROBLEMS AND SUMMARY

Discussion of Problems - Good Design - Coordination - Maintenance

TIME: 7:00-9:00 P.M., Tuesday evenings starting February 17, 1970.

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

FEE: \$30.00 to Members (IEEE, ASME, NJSSPE, etc.); \$40 Non-Members. A \$5.00 discount for early registration applied to both applications if received prior to February 10, 1970.

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

REGISTRATION FORM—BASICS OF ELECTRICAL SYSTEM PROTECTIVE DEVICES

Send to: *Mr. C. K. Blizzard*
MULTI-AMP Corporation
61 Myrtle Street
Cranford, New Jersey 07016

Phone (201) 276-8200

Name _____ Tech. Society _____

Firm _____ Position _____

Business Address _____ Phone _____

Home Address _____ Phone _____

Check or Money Order Enclosed:

Member: \$25.00.....; \$30 after Feb. 10.....

Non-Member: \$35.00.....; \$40 after Feb. 10.....

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



Engineering Economics

This eight-session study group is intended to give to the student the tools to correctly solve many of the "run-of-the-mill" economic problems. The sessions will be devoted primarily to a presentation of the Revenue Requirements technique for measuring the profitability of ventures and relative economy of alternative proposals. Financial Mathematics, Depreciation, and Income Taxes are among the topics which will be considered. This study group should be of particular interest to financial, accounting and engineering personnel.

The instructors will be Mr. Bert J. Blewitt, Engineering Economist and Mr. Leonard VanNimwegen, Senior Staff Assistant, of the System Planning and Development Department, Public Service Electric and Gas Company, Newark, New Jersey.

February 25—MINIMUM REVENUE REQUIREMENTS DISCIPLINE (Cost of Money)

March 4—BASIC CONSIDERATIONS IN ECONOMIC ANALYSIS (Depreciation, Income Taxes, etc.)

March 11—FINANCIAL MATHEMATICS

March 18—PROBLEM SOLVING SESSION

March 25—PERIOD OF STUDY

April 1—REPLACEMENT ECONOMICS

April 8—COST OF LOSSES

April 15—GENERAL REVIEW AND PROBLEM SOLVING

TIME: 6:30-8:30 P.M. Wednesday evenings starting February 25, 1970.

PLACE: Room 3171A, Public Service Electric and Gas Company, 80 Park Place, Newark, N. J.

FEE: \$30.00 to Members of IEEE, ASME, etc.; \$35 Non-Members; \$5.00 discount for registrations received prior to February 18, 1970.

COORDINATOR: For any information concerning course or location contact: Mr. John Zemkoski, Room 5326, Public Service Electric and Gas Company, Newark, N. J. Phone: (201) 622-7000.

REGISTRATION FORM—ENGINEERING ECONOMICS

Send to: *Mr. John Zemkoski*

Room 5326

Public Service Electric and Gas Company

Newark, N. J.

Phone: (201) 622-7000

Name _____ Tech. Society _____

Firm _____ Position _____

Business Address _____ Phone _____

Home Address _____ Phone _____

Check or Money Order Enclosed:

Member: \$25.00.....; \$30 after Feb. 18.....

Non-Member: \$30.00.....; \$35 after Feb. 18.....

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



Introduction to Astronomy

A four-lesson course called "An Introduction to Astronomy" will be held at the William Miller Sperry Observatory on the campus of Union College, 1033 Springfield Avenue, Cranford, New Jersey. Registration will be limited to forty people.

Lectures will be given by members of Amateur Astronomers, Inc.

February 17

THE SUN AND ITS FAMILY

E. T. Pearson - President A.A.I. - Engineer - P.S.E. & G. Co.

February 24

THE STARS

Mr. Pearson

March 3

EXTERNAL GALAXIES AND COSMOLOGY

Patrick J. White - Assistant Director of Sperry Observatory - Past President A.A.I. - Vice Principal, Perth Amboy Schools

March 10

RADIO ASTRONOMY

Kenneth D. Smith - Past President A.A.I. - Engineer (Retired), Bell Telephone Laboratories

It is expected that lectures will be followed by viewing sessions with members of the A.A.I. demonstrating and assisting the class in the use of the 6-inch refractor and 12-inch reflector installed in the Observatory Domes. Should the weather cooperate, the wives are cordially invited to attend the sessions and participate in the viewing.

TIME: 8:00 P.M. Tuesday evenings starting February 17, 1970.

PLACE: William Miller Sperry Observatory, Union College, Cranford, N. J.

FEE: \$15.00 to Members of IEEE; \$20.00 to Non-Members

COORDINATOR: For any information concerning course or location, contact: J. W. Fink, Jr., Public Service Electric & Gas Company, 200 Boyden Avenue, Maplewood, N. J. 07040, (201) 621-6800, Ext. 726.

REGISTRATION FORM—AN INTRODUCTION TO ASTRONOMY

Send to: *Mr. J. W. Fink, Jr.*
Public Service Electric & Gas Company
200 Boyden Avenue
Maplewood, New Jersey 07040

Phone: (201) 621-6800 Ext. 726

Name _____ IEEE Member _____
Firm _____ Position _____
Business Address _____ Phone _____
Home Address _____ Phone _____
Check or Money Order Enclosed:

Member: \$15.00.....; Non-Member: \$20.00.....

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



STUDY GROUP NO. 32 ELECTRICAL EQUIPMENT MAINTENANCE

TUESDAYS, 6:30 to 8:30 P.M.: Starting March 3, 1970
Consolidated Edison Co., Room 1701
4 Irving Place, New York, N. Y. 10003

Group Coordinator: R. Barzolla, Port Authority
Tel. (212) 620-7100

Group Sponsor: R. Ragusa, Consolidated Edison Co.
Tel. (212) 460-6021

This study series will deal with the basic and practical problems of electrical equipment maintenance. It will cover the most important requirements for proper testing and maintenance.

1. **March 3 Turbo-Generators** — Lecture and slides showing the electrical and visual inspections necessary for the maintenance of large turbo-generators.

Speakers: John Legier, Paul Kinkel, General Electric

2. **March 10 Motors and Small Generators** — The care and feeding of motors and generators; or why plant managers turn gray.

Speaker: Ken Rymer, General Electric

3. **March 17 Gas Turbines** — Preventative maintenance of the gas turbine mechanism.

Speaker: Joe Curry, Pratt & Whitney

4. **March 24 Station Transformers** — Maintenance of large transformers in generating stations and substations.

Speaker: From Consolidated Edison Co.

5. **March 31 Circuit Breakers and Switchgear** — Large circuit breakers, and other switchgear used in switching and substations.

Speaker: From Westinghouse

6. **April 7 Instruments, Control Systems and Protective Relaying** — Testing and inspection of controls, instruments and relays used in generating stations and substations.

Speaker: From Consolidated Edison Co.

7. **April 14 Overhead Distribution System** — The inspection and maintenance of overhead distribution structures and operating devices; such as reclosers, transformers, capacitors, etc., together with a look at the equipment used for the inspections.

Speaker: George Wendel, Long Island Lighting Co.

8. **April 21 Pumping Plants and Pipe Type Cables** — High voltage underground transmission lines and associated oil circulation and oil pumping plants.

Speaker: John Zeller, Consolidated Edison Co.

9. **April 28 Distribution and Secondary Cable** — Underground distribution feeders, low pressure gas-filled cables, cable joints and the secondary network system.

Speaker: Richard Ragusa, Consolidated Edison Co.

10. **May 5 Network Transformers, Rectifiers, Protectors** — Inspection, maintenance, and testing of underground distribution equipment.

Speaker: Richard Fogarty, Consolidated Edison Co.

STUDY GROUP NO. 33 INDUSTRIAL FACILITY ELECTRICAL DESIGN

WEDNESDAYS, 6:30 to 8:30 P.M.: Starting March 4, 1970
Consolidated Edison Co., Room 1701
4 Irving Place, New York, N. Y. 10003

Group Coordinator: H. Johnson, Automatic Switch Co.
Tel. (212) 344-3765

Group Sponsor: M. Isaacs, Ammann & Whitney
Tel. (212) 924-8282

Group Instructor: W. Walcoff, Naval Facilities Engineering Command

This study group is presented for engineers who are concerned with the design of industrial electrical facilities. Subject matter covers sound engineering principles to select and lay out a safe, reliable system economically. Examples of specific facilities will be offered.

1. **March 4 Introduction** — Description of hypothetical industrial plant that will serve as the example and the design problem for the lecture series.

2. **March 11 Load Study** — Establish connected loads, their characteristics and reliability requirements. Calculate demands, load factors and coincidental demands. Determine power sources, utility and standby.

3. **March 18 Voltage Considerations** — Equipment characteristics. Voltage regulation criteria. System voltage selection - economics.

4. **March 25 Systems** — Review of high and low voltage systems. Select systems for the hypothetical industrial plant, reviewing radials, loop and spot networks.

5. **April 1 Fault Currents** — Contributing factors. Calculations. Methods to limit.

6. **April 8 Introduction to Systems Protection** — General review of fuses, circuit breakers and their operation.

7. **April 15 Introduction to Protective Relaying** — Overcurrent, under/over voltage, reverse current and percentage differential relays.

8. **April 22 Codes and Standards** — Round table discussions led by Mr. Robert Harmel, Chief Engineer, Bureau of Gas and Electricity.

9. **April 29 General Design Items** — Power factor, instrumentation, status indication systems, harmonics, grounding.

10. **May 6 Design of Hypothetical Plant (I)** — Supplying the loads, subfeeders, panels, branches, standby power resources.

11. **May 13 Design of Hypothetical Plant (II)** — Load centers, feeders, switchgear, incoming services, utility coordination.

12. **May 20 Specifications, Drawings and Estimates**

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

INDIVIDUAL IMPROVEMENT STUDY GROUP

N. Y. Section, IEEE



Power and Industrial Div.

EDUCATIONAL PROGRAM — SPRING 1970

Metropolitan Section



ASME

STUDY GROUP NO. 31

APPLIED ORAL AND WRITTEN COMMUNICATION SKILLS

THURSDAYS, 6:30 to 8:30 P.M.: Starting March 5, 1970

Consolidated Edison Company, Room 503

4 Irving Place, New York, N. Y. 10003

Group Coordinator: J. Domorski, Automatic Switch Co.

Tel. (212) 344-3765

Group Sponsor: J. Schmidt, Automatic Switch Co.

Group Instructor: Robert E. Zange, Automatic Switch Co.

Good ideas can be bogged down and lost through poor communication. This course is designed to improve the engineer's ability to communicate his thoughts and ideas effectively in a clear, concise, and accurate way. Human aspects, rather than grammar, are stressed in the writing sessions. Practice is included for speaking and writing.

1. **March 5 Introduction** — Why engineers need to be good communicators; Good communication is an art and a science; An instrument for measuring communication; The Communication Process; Non-verbal communication.
2. **March 12 Making An Effective Presentation** — How to put a talk together; Methods of delivery; Making and using notes; How to practice; Handling stage fright.
3. **March 19 Effective Presentations, continued** — Student talks and critiques.
4. **April 2 Techniques Of Clear Concise Writing** — Understanding the reader; How to say what you mean; Being specific.
5. **April 9 Writing, continued** — Avoiding monotony; How to give your writing power; Words that stir emotions.
6. **April 16 Visual Aids** — How they help the speaker and the audience; What material should be visual; Making your own visual aids; How to handle visual aids in your talk.
7. **April 23 Student Talks and Evaluations On Techniques**
8. **April 30 Writing Letters And Memos That Get Results** — Creating good tone; Discarding Gaslight Phrases; How to begin and end a letter; Saving time when dictating to a secretary or a machine.
9. **May 7 An Easier Way To Write Reports** — How to begin; Ways to organize your information; How to use an outline to help you write; Making your report readable and effective.
10. **May 14 How To Have A Meeting** — Things to do before the meeting; The leader's responsibilities; Keeping the meeting on the right track; Handling the perpetual talker; Getting ideas from shy people; What to do after the meeting.

REGISTRATION FORM

Name (printed)
Firm Position
Business Address
Phone No.
Home Address

Study Group

Member of:

- ☐ IEEE
☐ ASME
☐ OTHER
☐ NON-MEMBER

I intend to apply
for membership in

(Do Not Write In This Space)

Admission Card No.
Refund Certificate No.
Fee Paid \$..... (Cash, Check, M.O.)
Date By

REGISTRATION FORM

Name (printed)
Firm Position
Business Address
Phone No.
Home Address

Study Group

Member of:

- ☐ IEEE
☐ ASME
☐ OTHER
☐ NON-MEMBER

I intend to apply
for membership in

(Do Not Write In This Space)

Admission Card No.
Refund Certificate No.
Fee Paid \$..... (Cash, Check, M.O.)
Date By

Note: See Registration Information for Checks

Note: See Registration Information for Checks

Nine New Fellows

The North Jersey Section is proud of these nine new Fellows from our Section:

JOHN L. BLACKBURN, Westinghouse Electric Co.—*For contributions in the application of protective relaying to large electric power systems.*

RUDOLPH S. ENGELBRECHT, Bell Telephone Laboratories—*For contributions to parametric, domain, and other active microwave devices, and for leadership in the integration of microwave circuits.*

WALTER L. GLOMB, ITT Federal Laboratories—*For contributions to communication transmission systems, particularly those utilizing satellite repeaters.*

ALEXIS A. LUNDSTROM, Bell Telephone Laboratories—*For original contributions to systems for telephone dialing, and for satellite tracking and guidance.*

JOHN W. McNALL, Westinghouse Lamp Division—*For contributions in microwave technology, and for direction of research and development in light sources.*

LAURENCE W. MORRISON, Bell Telephone Laboratories—*For contributions and leadership in the development of large electronic systems.*

ERIC E. SUMNER, Bell Telephone Laboratories—*For contributions to pulse-code modulation, and signal processing systems.*

E. KENNETH VAN TASSEL, Bell Telephone Laboratories—*For contributions to telephone transmission, radar circuitry, and applications of digital techniques to data processing.*

LEON HIMMEL, Formerly Vice Pres. ITT Federal Laboratories—*For contributions and leadership in the development of aerial navigation.*

Members Invited to Nominate

Members of the North Jersey Section are invited to nominate candidates for Fellows and other National awards. A call for such nominations appears in the November issue of SPECTRUM, pages 130 and 131. Also, candidates for election to Fellow Grade should be nominated as soon as possible. The Awards Board brochure entitled "IEEE AWARDS—An Invitation to Nominate" dated November, 1969 gives complete information and should be followed. All individual members, Groups and Sections of IEEE are eligible to nominate candidates for awards, and to support such nominations by submitting forms and relevant communications to the Secretary of the Awards Board at IEEE Headquarters. Likewise, members may sponsor candidates for Fellow Grade on FC-1 Forms. Due dates for 1970 are:

Field Awards — before April 1
Medal of Honor — before June 1
Major Annual Awards — before June 1
Price Paper Awards — before Sept. 15
Fellow Grade — before April 30
A nomination is strengthened by the

support of an IEEE organizational unit, that is, a Section or a Group. Therefore, when a nomination is made, a copy of the nomination form should be sent to the Chairman of the North Jersey Awards Committee, Julian Z. Millar, 72 Blackburn Place, Summit, N.J. 07901. All forms may be obtained from your Awards Committee Chairman who will also be glad to assist members upon request.

Computers in Speech Analysis and Synthesis

The Northern New Jersey Computer and Communications Technology Groups will jointly sponsor a meeting on digital signal processing on January 20, 1970. Dr. Ronald W. Schafer will be the speaker.

Digital signal processing is a topic of substantial current interest because in many cases it offers improvements over the size, weight, and cost of equivalent analog implementation. More important is a flexibility which permits operations not easily realized by analog means.

Voice communications research is one area where digital techniques are being applied. Digital computers are now being used extensively in research for the analysis and synthesis of speech sounds. Doctor Schafer will discuss the application of digital techniques to the problem of obtaining audio response from a computer. The objective is similar to that of reducing the transmission capacity required, in exchange for sophistication in terminals.

About the Speaker

Ronald W. Schafer received the B.Sc. E.E. and M.Sc. E.E. degrees in 1961 and 1962 from the University of Nebraska, and the Ph.D. in Electrical Engineering in 1968 from MIT.

From 1964 to 1968 he was Instructor in Electrical Engineering at MIT where he was associated with the Electronic Systems Laboratory and the Research Laboratory of Electronics. Presently he is engaged in research on speech analysis and synthesis and on digital signal processing techniques at Bell Telephone Laboratories, Murray Hill, N.J.

Time: Tuesday, January 20, 8:00 P.M.

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

Pre-Meeting Dinner: 6:00 P.M. at Wally's, Watchung, N.J. (Dutch treat).

Additional Information: Call Richard R. Shively at (201) 386-4715.

Magnetic Garnet Films

The Magnetics Chapter of the Princeton Section will hold a January meeting on Magnetic Garnet Films. Speaker is Mr. R. C. Linareo, Allied Chemical Corporation, Morristown, N.J.

Single crystal magnetic garnet films can be grown by liquid phase epitaxial deposition on non-magnetic garnet substrates. The magnetic properties have been found to be a function of the substrate perfection. Research work at Perkin Elmer Corporation on the growth and evaluation of films for magnetic optical devices will be described. Sputtering and vapor deposition techniques for growing these films will also be discussed.

Time: Wednesday, January 21, 8:00 P.M.

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

Pre-Meeting Dinner: 6:00 P.M., Alumni-Faculty Club, 197 College Avenue, New Brunswick, N.J.

Dinner Reservations: Call: Mrs. Helen Yefko, Dept. of Electrical Eng., Rutgers University, (201) 247-1766, Ext. 6325.

WHEELER LABORATORIES, INC.

A Subsidiary of Hazeltine Corporation
Engineering for Radar and Communications
Microwave Systems and Components
Antennas and Feed Networks
Solid-State and Laser Applications
Great Neck, N. Y. (516) 482-7876
Antenna Laboratory at Smithtown, N. Y.

GENERAL INSTRUMENT CORPORATION SEMI CONDUCTOR PRODUCTS GROUP

Your major source for:

Silicon & Germanium Transistors and diodes; silicon and selenium rectifiers; plastic rectifiers; silicon and selenium solid-state assemblies; Hybrid Microcircuits; M₁OS FETS and MTNS IC's.



P. O. Box 600, Hicksville, N. Y.
(516) 733-3000



DATA DELAY DEVICES
253 CROOKS AVENUE
CLIFTON, NEW JERSEY 07011
(201) 772-1108

DELAY
LINES

LUMPED, DISTRIBUTED
MECHANICALLY VARIABLE
ELECTRICALLY VARIABLE

FILTERS

H-P; L-P; B-P
TUNED CIRCUITS

COILS

TOROIDS, VARITORS
DECADE STANDARDS

Digital Filtering

A one-day seminar on Digital Filtering will be held on Wednesday, January 21, 1970, at Newark College of Engineering, Newark, N.J., at 9:30 A.M.

The Introduction will be made by F. A. Russell, Chairman, Electrical Engineering Department, Newark College of Engineering.

Topics to be presented in the morning session are: "The Effect of Changes in Digital Filter Multipliers on Pole-Zero Locations," M. S. Corrington, RCA, Camden, N.J.; "The Digital Filter—Its Implementation and Application," J. F. Kaiser, Bell Telephone Laboratories, Murray Hill, N. J.; "A Survey of Digital Filtering," R. A. Haddad, Polytechnic Institute of Brooklyn.

The afternoon session will cover: "Designing Digital Filters to Optimally Meet Specifications," H. D. Helms, Bell Telephone Laboratories, Whippany, N.J.; "Implementation of Digital Filters," J. R. Fisher, Sylvania Electric Products, Needham Heights, Mass.

There will be a panel discussion on "The Technology and Art of Digital Filtering—Where Will it Go From Here?"

The IEEE New Technical and Scientific Activities Committee, New York Section, Subcommittee on Mathematical Sciences, Technical Meetings Development Committee, IEEE, and the Division of Continuing Engineering Education, Newark College of Engineering, are co-sponsors of the Seminar.

Advance registrations should be mailed to: Dr. Kenneth S. Sohn, Electrical Engineering Department, Newark College of Engineering, Newark, New Jersey 07102.

Pre-Registration is \$25 for IEEE Members, \$30 for Non-IEEE Members. Registration at Door is \$30 for members, \$35 for non-members. Registration fee includes Proceeding and Luncheon.

Name _____

Address _____

Zip _____

Phone _____

Make checks payable to NTSAC.

Effective Decisions Film

On January 15, 1970, the Metropolitan Chapter of the Engineering Management Group will hold a dinner meeting at the John Peel Restaurant on Old Country Road in Westbury, Long Island. The meeting will consist of a Peter Drucker Film on Effective Decisions and will be followed by a discussion period.

Reservations can be made either by mailing a check for \$8.50 to Norman Mills, 1213 Douglas Avenue, Wantagh, New York 11793, or by phone: (212) 586-3000, Ext. 3003. Dinner will start at 6:30 P.M.

Time: Thursday, January 15, 6:30 P.M.

Place: John Peel Restaurant, Old Country Road, Westbury, Long Island.

Report From the Membership Committee

The function of the Membership Committee is to promote application for membership in the Institute of Electrical and Electronics Engineers, Inc. and its Professional Groups. In addition, the Committee shall encourage upgrading of qualified members to higher grades and stimulate interest in participation in all Section activities.

The Membership Committee shall consist of a Chairman, a Vice-Chairman, and a number of Committee Members. To extend the activities of the Membership Committee, "IEEE Representatives" shall be selected in the various business and educational organizations within the Section. Specific responsibilities of each office follow.

The Chairman shall be appointed by the Section Chairman for a term of 1 year, commencing at the June Executive Committee meeting.

The Chairman is a member of the Section Executive Committee. He presides over, and regularly reports on the activities of the Membership Committee. The Chairman is responsible for the appointment of a Membership Committee Vice-Chairman, the designation of a Committee Member to attend all North Jersey Section meetings to perform his assigned Membership Committee duties, and the submission to the Executive Committee of at least one candidate for Membership Committee Chairmanship for the following year.

The Vice-Chairman, appointed by the Chairman, shall assist him and act in his behalf in his absence. He shall record the minutes of Membership Committee meetings.

One of the Membership Committee Members, appointed by the Chairman, shall attend all North Jersey Section meetings and shall be responsible for the distribution and collection of Attendance Badges. The Committee Members shall keep a record of all attendees, for the purpose of expanding and upgrading Section membership. They shall submit a report on all Section meetings, evaluating the class and interest of attendees.

The Committee Members shall organize and supervise a group of approximately twelve "IEEE Representatives," chosen from the various North Jersey business and educational organizations assigned to them by the Membership Committee. At least one IEEE Representative meeting shall be called by the Committee Members in order to promote Membership Committee activities.

The Committee Members shall be responsible for the maintenance of an adequate supply of IEEE membership blanks, leaflets, and other promotional material, as well as the dissemination of this material to their IEEE Representatives.

The IEEE Representatives, unlike the Membership Committee members, are not appointed for the duration of the Section Year, but rather for a minimum of one year, and preferably on a continuing basis. They are appointed by the Membership Committee for the purpose of promoting new membership, the upgrading of present members, and for stimulating greater interest in all Section activities.

The IEEE representatives shall be responsible for posting notices of Section and Professional Group activities, and also maintain an adequate supply of IEEE membership material.

The Membership Committee has several openings for Committee Members and IEEE Representatives throughout the North Jersey Section. Any IEEE members wishing to assist the Committee in the achievement of its goals should contact the Membership Committee Chairman, Maitland McLarin, Picatinny Arsenal, Dover, New Jersey 07801, or at Area Code 201-328-3492.

Maitland McLarin, Chairman, Membership Committee