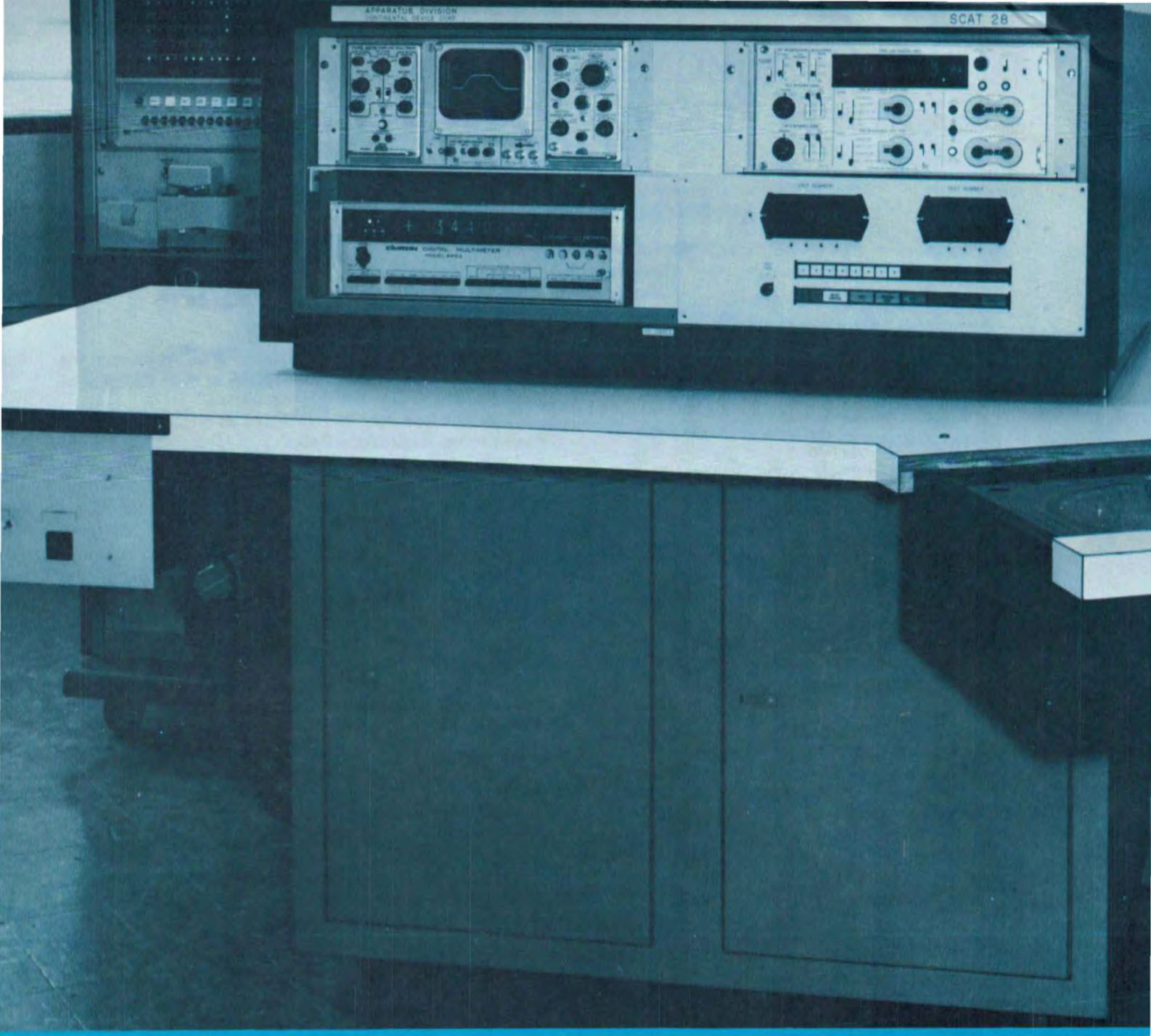


The IEEE
Newsletter
The Magazine of the North Jersey Section

"New Horizons in Measurements Trends in Theory and Application"

Governor Morris Inn, Morristown, N. J.
October 8 and 9, 1969

September, 1969

"NEW HORIZONS IN MEASUREMENTS TRENDS IN THEORY AND APPLICATION"

Sponsored by the NORTH JERSEY SECTION
In Cooperation with the N.Y. JOINT CHAPTER ON
INSTRUMENTATION AND MEASUREMENTS

October 8 and 9, 1969
Governor Morris Inn
Morristown, N. J.

GENERAL INFORMATION

LOCATION

All sessions will be held at the Governor Morris Inn, 2 Whippany Road (at Lindsley Drive), Morristown, N.J.

PARKING AND TRANSPORTATION

Ample parking space is available in the Governor Morris parking lot. Bus service is available:

Between Newark and Morristown—No. 70 Public Service Bus, or No. 146 DeCamp Bus.

Between New York City and Morristown—No. 77 DeCamp Bus.

REGISTRATION

Registration will be held at the Governor Morris Inn starting at 12 Noon Wednesday, October 8, and will be continued throughout the conference.

CONFERENCE FEES

Registration fees are $10.00 for IEEE members. Registration fees for non-members is $15.00.

The fees include admission to all sessions and a copy of the conference proceedings which contains the complete text or an abstract version of most papers.

Badges are required of all attendees for admission to the sessions.

Tickets for the Banquet may be obtained at the Registration Desk and should be called for in advance.

CONFERENCE PUBLICATIONS

A volume of the conference proceedings, which contains the complete text or an abstract version of most papers to be presented, will be distributed at registration.

Extra volumes may be purchased at $15.00 each (U.S. Funds) at the Registration Desk.

After October 9, 1969, volumes may be purchased from the Institute of Electrical and Electronics Engineers, 345 East 45th Street, New York, New York 10017.

HOUSING AND MEALS

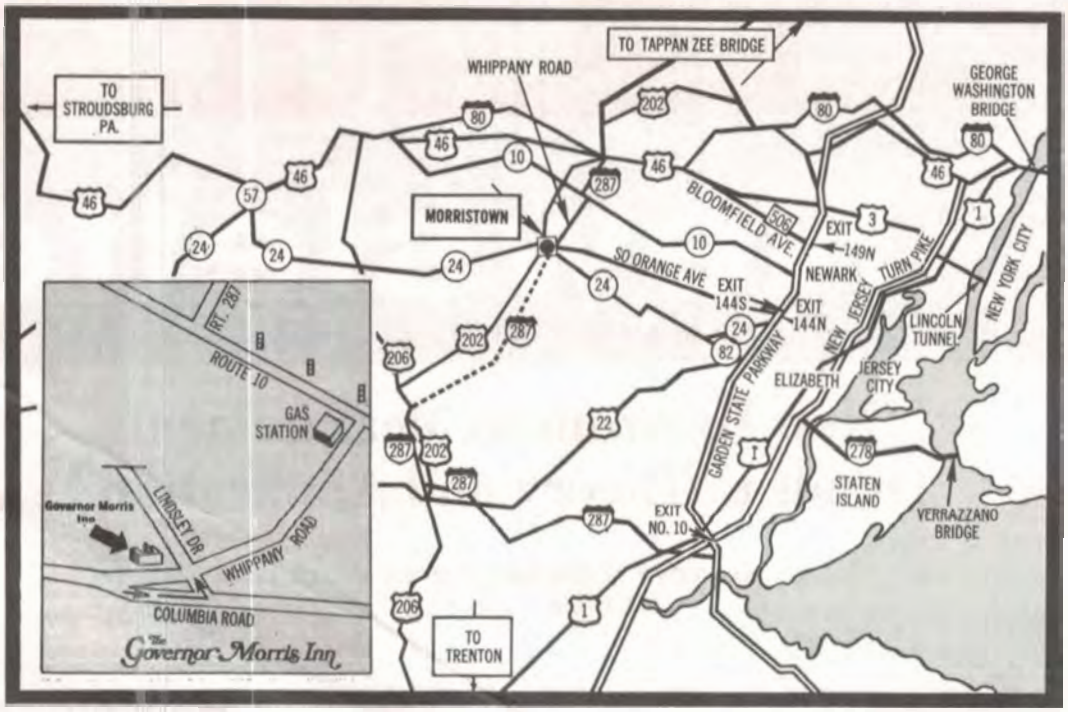
Lodging arrangements may be made through the Governor Morris Inn (201-539-7300). Radio, TV and individually-controlled air conditioning and heating are standard.

The Governor Morris has excellent facilities for meals and refreshment:

Beef and Bird Restaurant—the distinctively different Beef and Bird restaurant offers an atmosphere of warm elegance, a gourmet menu featuring the finest ribs obtainable—steaks branded with your own initials, drinks mixed to perfection and truly impeccable service.

Colonial Tavern—The popular Colonial Tavern is the perfect haven for those seeking refreshment and relaxation. It features an intimate atmosphere, out-sized drinks and soft music for dancing.

Cupboard Coffee Shop—Enjoy a hearty breakfast or a quick snack any time of the day or night at the Cupboard Coffee Shop which overlooks the pool.



Technical Program

Plenary Session—CONFERENCE KEYNOTE
(1:30 P.M., Wednesday, October 8, 1969)

Speaker: DR. JAMES H. MULLIGAN, JR., National Academy of Engineering, Washington, D.C.

Session I—ANALOG AND DIGITAL MEASUREMENTS
(3:00 to 5:00 P.M., Wednesday, October 8, 1969)

Chairman: DANIEL COTTE, JR., RFL Industries Inc.

1. "DPM'S Present and Future," JACK V. STEGENGA, Weston Instruments, Inc.
2. "The Sampling Oscilloscope," PHILIP EMILE, JR., Monsanto Company.
3. "Analog and Digital Recording," PAUL HUBER, Electronic Associates, Inc.
4. "A-to-D Converters in Measuring Systems," BERNARD GORDON, Analogic.

Session II—TIME AND FREQUENCY DOMAIN MEASUREMENTS
(3:00 to 5:00 P.M., Wednesday, October 8, 1969)

Chairman: HENRY OTZMANN, Westinghouse Electric Corp.

1. "Frequency Synthesis Techniques," HERSH MARANTZ, Monsanto Company.
2. "Measurement of Microwave Spectra," RALPH SANDSTROM, Singer Company.
3. "Advances in Counters, Timers, and Their Applications," RONALD MYERS, Monsanto Company.
4. "Time and Frequency Standards," DR. ERIC HOFNER, U.S. Army Electronics Command.

Session III—IMPROVEMENT OF MEASUREMENT TECHNIQUES

(7:00 to 9:00 P.M., Wednesday, October 8, 1969)
Chairman: AL MINDES, Picatinny Arsenal

1. "Bridge and Potentiometric Measurements," DENNIS H. GALLAGHER, Leeds and Northrup Company.
2. "Wattmeter Applications," L. J. LUNAS, Westinghouse Electric Corp.
3. "Low Noise Measurement of Oscillators," ROBERT SINUSAS, Monsanto Company.
4. "The Effects of Residuals on Y and Z Measurements," ARTHUR KATZ, Boonton Electronics Corp.
5. "Calibration Procedures," JOHN GESHNER, Picatinny Arsenal.

Session IV—PANEL DISCUSSION: NEW HORIZONS IN ENVIRONMENTAL INSTRUMENTATION
(7:00 to 9:00 P.M., Wednesday, October 8, 1969)

Chairman: NICHOLAS STRAKHOV, Bell Telephone Laboratories.

1. "Noise Pollution Measurements," LEWIS GOODFRIEND, Goodfriend-Ostergaard Associates.
2. "Water Pollution Measurements," DR. JOSEPH HUNTER, Rutgers University.
3. "Air Pollution Measurements," DR. R. PASCERIA, N.J. State Department of Health.
4. "Remote Sensing Methods," GEORGE E. SANNER, Westinghouse Electric Corp.
5. "Remote Sensing Methods," MAYNARD E. SMITH, Brookhaven National Laboratories.

Session V—ADVANCED POWER SYSTEM MEASUREMENTS
(3:00 to 5:00 P.M., Thursday, October 9, 1969)

Chairman: KARL SOMMER, Consolidated Edison of N.Y., Inc.

1. "High Voltage D-C System Instrumentation," RAYMOND V. POHL, General Electric Company.
2. "High Voltage Current Monitoring Using the Tracer System," HERBERT W. BRACK, Allis-Chalmers Manufacturing Company.
3. "Frequency and Rate-of-Change of Frequency Measurements," STEVE J. WITTELS, Consolidated Edison of N.Y., Inc.
4. "Nuclear Plant-Reactor Instrumentation and Measurement," ROY ANDERSON, Westinghouse Electric Corp. and KARL SOMMER, Consolidated Edison of N.Y., Inc.

Session VI—AUTOMATED AND COMPUTER-AIDED MEASUREMENTS
(3:00 to 5:00 P.M., Thursday, October 9, 1969

Chairman: WALTER EDGE, Monsanto Company

1. "Automatic Test and Measurement Systems," DR. H. V. RANGACHAR, RCA.
2. "The Computer as Part of a Cable Measuring System," ROBERT SUTTON, Bell Telephone Laboratories.
3. "The Small Computer as Part of a Measurement System," JOEL BLOOM, Monsanto Company.
4. "Medical Instrumentation," A. SMITH, Instrumentation Associates.

BANQUET
(7:00 to 9:00 P.M., Thursday, October 9, 1969)

Speaker: DR. GEORGE B. HOADLEY, North Carolina State University.

A Day at The Races

On Saturday, September 27, 1969, the North Jersey Section of the IEEE will conduct an outing to Freehold Raceway, Freehold, New Jersey.

As a special group, we will receive a deluxe buffet luncheon, consisting of hot and cold dishes, admission to the track, reserved seats, a program and personalized tickets—all for $5 per person, including gratuities. Parking fees are not included in the $5 fee. It is suggested that those planning to attend should meet at the Patio Terrace inside the track at 10:00 A.M. A representative of the track will meet us and give us a brief explanation of the operation of the track and some interesting highlights about Harness Racing.

Anyone over 16 years of age is welcome, but only those 21 years of age or older can use the cocktail lounge and/or place bets. The form at the bottom should be used to make reservations at $5.00 per person. Please include a stamped, self-addressed envelope in which your tickets will be sent to you. Mail your reservation early so that you will receive your tickets before September 27, 1969.

Time: Saturday, September 27, 1969, at 10:00 A.M.
Place: Freehold Raceway, Freehold, New Jersey

RESERVATION FORM—FREEHOLD RACEWAY

To: W. T. Kelly
c/o Public Service Electric & Gas Company
80 Park Place – Room 8343M
Newark, New Jersey 07101
Phone: (201) 622-7000, Ext. 3162

Enclosed please find my check (or money order) made payable to the North Jersey Section IEEE in the amount of _____ $5.00 per person) for _____ tickets for the September 27th trip to Freehold Raceway. Enclosed is a self-addressed stamped envelope.

Name _____

Address _____

_____ Zip _____

Phone _____

Stanley Dancer lets out with a happy yell and upraised whip as Cardigan Bay streaks to the finish line a length and one-quarter victor of the Freehold Special (last September) to become the first horse in harness racing history to amass $1,000,000 in earnings. The win for the New Zealand-bred great closed out his racing career with total money of $1,000,671.

The IEEE Newsletter

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Volume 16 September 1969 No. 1

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.
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Jr. Past Chairman ..... Joseph G. O'Grady

N. Y. Section, IEEE

Power and Industrial Div.

EDUCATIONAL PROGRAM — FALL 1969

Metropolitan Section

ASME

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 AISC and ICI codes. Printed notes available.

MONDAYS, Starting Sept. 8, 1969, 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. 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. 9, 1969, 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 combustion, gas dynamics, compression shock, nozzle design, steam power plant cycles, psychrometrics, air conditioning, heat transfer, nuclear reactors, Mach cone, kinetics, gyroscopic motion, vigratory motion, balancing of machines, compound shafts, design of gears, hydraulics, pumps and fans, stress and deformation of machine elements, etc.

WEDNESDAYS, Starting Sept. 3, 1969, 6:30-8:30 P.M., 19 Sessions
Room 1238, Parsons-Jurden 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. 10, 1969, 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. 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. 4, 1969, 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 Company

REGISTRATION INFORMATION

GROUPS #	FEES	PAYABLE TO	MAIL TO
1, 2, 4	$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) UL2-5000, Ext. 4495
3, 5	$25 Members, IEEE & ASME only $35 all others	"ASME METROPOLITAN SECTION"	*Clarence J. Owens,* Educational Committee, ASME, Metropolitan Section, Dept. of Hospitals, Bureau of Engineering & Maintenance, 241 Church St., N. Y., N. Y. 10013 Phone: (212) 566-6940
10, 11, 12, 13, 14	$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

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

STUDY GROUP NO. 10 NUCLEAR PLANT DESIGN II

MONDAYS, 6:30 to 8:30 p.m.: Starting Sept. 15, 1969

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

Group Coordinator: E. N. Mercouris, Gibbs & Hill, Inc.
Tel. (212) 565-4300, Ext. 567
Group Instructor: F. D. Hutchinson, Gibbs & Hill, Inc.

Lecture No. 10 will be given by E. N. Mercouris

This study series will cover basics of Nuclear Plant Design on advanced level. Registration of those persons, who had not attended the lectures of Nuclear Plant Design I, is also encouraged.

Part III to follow this part in spring 1970 will cover modern nuclear reactor power plants now in operation and/or under construction with emphasis on the engineering, control, systems and construction with speakers representing Authorities (AEC & Argonne National Laboratory), Manufacturers (Reactor, systems & components), Engineers Designers Constructors—Consulting Engineers, Suppliers, Financing & Insurance Companies.

1. **Sept. 15 Biological Aspects**
   Critical organ and whole body doses, MPC's: public and operating personnel, Handbooks 59 & 69 10 CFR 20.
2. **Sept. 29 Shielding**
   Cross-sections, primary shields, gamma heating, radiation damage, secondary gammas, sky-shine, and metal-to-water geometries.
3. **Oct. 6 Fuel Cycles**
   Thorium-Uranium cycle Th-232, U-233; Uranium-Plutonium cycles U-238, Pu-239; U-235 Fuel Cycle.
4. **Oct. 20 Fuel Management**
   Mining, Conversion, Enriching, Conversion Fabrication, Irradiation, Reprocessing; Fuel Costs.
5. **Oct. 27 Nuclear Plant Accident Analyses I**
   Loss-of-flow, -power, and -coolant; cold water; boron dilution; rod drop; stuck rod; refueling.
6. **Nov. 3 Nuclear Plant Accident Analyses II**
   Missiles; adverse weather phenomena; pipe whipping; rod injection, chinese syndrome.
7. **Nov. 10 Containments**
   Steel, reinforced concrete, prestressed concrete, double containment, vapor suppression, ice condenser, pump back system.
8. **Nov. 17 Engineered Safeguards Systems**
   Safety Injection, core cooling, containment cooling, doped sprays, ventilation systems, containment isolation.
9. **Nov. 24 AEC Licensing Procedure**
   10 CFR 2, 10 CFR 50, ACRS, public hearings, Preliminary and Final Safety Analysis Reports, Construction and Operation Licenses.
10. **Dec. 1 Reactor Instrumentation & Control**
    Control boards, in-core instrumentation, monitors and neutron sources. On-line computers, inputs, routines, data points. Digital monitors & analog variables.
11. **Dec. 8 Off-Site Hazard Analysis**
    Exclusion distance, Low-population zone, 10 CFR 100, radiation-direct & skyshine, downwind doses, meteorological analyses. Whole-body and thyroid dose limits.
12. **Dec. 15 Nuclear Plant Startup & Next Generation Commercial Reactors**
    Cold hydro, containment pressure test, pre-criticality tests, criticality, post criticality test, power escalation; breeder and liquid metal reactors.

STUDY GROUP NO. 12 MATHEMATICS FOR ELECTRICAL ENGINEERS

TUESDAYS, 6:30 to 8:30 p.m.: Starting Sept. 23, 1969

Brooklyn Union Gas Company Auditorium
195 Montague Street, Brooklyn, N.Y.
Group Coordinator: Samuel O. Digwo
Consolidated Edison Company
Tel. (212) 460-4026
Group Sponsor: F. G. Wells, Long Island Lighting Co.
Group Instructor: Dr. Philip Goldstein
Jersey City State College

A survey of the basic concepts and techniques of the calculus and linear differential equations including vectors, complex numbers and numerical methods. Practical engineering problems will be solved during the lectures.

1. **Sept. 23 Basic Concepts in Differential and Integral Calculus**
   Limits, functions, geometrical interpretations of derivatives and integrals. Maxima and minima problems.
2. **Sept. 30 Concepts in the Calculus**
   An extension of the concepts developed in lecture I to trigonometric, exponential and logarithmic functions.
3. **Oct. 7 Vectors, Plane and Solid Analytic Geometry,**
   Algebra of vectors, components, surfaces and curves in two and three dimensions.
4. **Oct. 14 Differential Calculus**
   Partial derivatives, total differentials, implicit differentiation, the gradient operator, applications.
5. **Oct. 21 Integral Calculus**
   Improper integrals, areas and volumes of revolution, multiple integrals, line integrals.
6. **Oct. 28 Complex Numbers**
   Concepts in the algebra and geometry of complex numbers, DeMoivre's theorem, phasors, analytic functions.
7. **Nov. 18 Infinite Series**
   Convergence of series, Taylor series, Fourier series and applications.
8. **Nov. 25 Solution of Linear Differential Equations with Constant Coefficients, Applications**
9. **Dec. 2 Systems of Simultaneous Differential Equations, Determinants**
10. **Dec. 9 Numerical methods for the evaluation of integrals and the solution of differential equations.**

IEEE

NORTH JERSEY SECTION

LECTURE SERIES

FALL 1969

MODERN RADAR

An eight-session survey course designed to update the engineer's basic knowledge of radar theory in the light of recent advances in radar technologies and radar systems design.

Starts October 15, 1969

ITT Avionics Division Auditorium
500 Washington Avenue
Nutley, New Jersey

EXTRA HIGH VOLTAGE

This eight-session study course covers the problems and considerations peculiar to voltages of 345KV and higher for power transmission. The course will afford those concerned an opportunity to hear lectures by experts in the various areas.

Starts October 2, 1969

Jersey Central/New Jersey Power & Light Co.
Madison Avenue at Punch Bowl Road
Morristown, New Jersey

PROFIT PLANNING FOR ENGINEERS IN MANAGEMENT

A nine-session course relating marketing, finance and general business economics to the decision-making procedure in technical enterprises. The course is directed to higher echelon managers who have advanced through engineering and technical lines, but whose scope encompasses profit planning for comprehensive operations.

Starts October 15, 1969

Union Motor Lodge
Route 22
Union, New Jersey

(See Details and Registration Forms on Following Pages)

NORTH JERSEY SECTION LECTURE SERIES—FALL, 1969

MODERN RADAR

This eight-week survey course is primarily designed for those engineers with a basic knowledge of radar who wish to refresh and update that knowledge by examining recent advances in radar theory and techniques and their application in modern radar design. This course should prove particularly useful for those who are not engaged in radar design per se but whose activities require a working knowledge of current radar design practice; this would include areas peripheral to or associated with radar, such as antennas, microwave components, signal processing, navigation aids, ECM, etc.

October 15—TRACK-BEACON EQUATIONS

Basic, beacon, and bistatic forms of the radar equation will be developed. Antenna aperture, noise figure, noise temperature, and the matched filter concept will be considered.

Lecturer: P.D. Hansell, Bell Telephone Labs

October 22—SEARCH RADAR EQUATION

The matched filter concept will be further developed. S/N optimization, equivalent noise bandwidth, signal integration, and search radar parameters will be considered. The search form of the radar equation and the power-aperture product will be developed.

P.D. Hansell, Bell Telephone Labs

October 29—TARGET TRACKING

Generalized target tracking concepts, various angle and range position determining and position prediction techniques will be described. Both least squares and minimum variance (Kalman) data smoothing and their realization by digital computer will be covered.

H.D. Helms, Bell Telephone Labs

November 5—DETECTION THEORY

The general problem of signal detection in noise will be described on a statistical basis with particular application to radar detection both with and without known signal parameters. The problem of Radio Astronomy, involving unknown or noise-like signals will be briefly discussed.

W.G. Graves, Bell Telephone Labs

November 12—PULSE COMPRESSION

The basic theory of and reasons for use of pulse compression will be presented. Matched filters, spectrum equalization, and transversal equalization will be described with respect to linear FM pulse compression. Phase coded pulse compression and coherent multiple pulse processing will also be described.

W.G. Graves, Bell Telephone Labs

November 19—RADAR ANTENNAS

A brief introduction to microwave antenna theory will be given including a discussion of the use of geometric optics to describe antenna performance. Mechanically-scanned antennas, such as reflectors and lenses, and electrically-scanned antennas, such as phased arrays, will be described. Angle tracking antenna systems will also be described with particular emphasis on monopulse.

E.W. Kuhlmann, Jr., Bell Telephone Labs

November 26—RADAR TRANSMITTERS

Power-oscillator versus amplifier-chain type transmitters will be discussed, as well as combining and/or arraying of transmitter tubes. Transmitter stability and linearity requirements for MTI and for pulse compression will be reviewed, as will techniques for generating shaped pulses for spectrum control. RF tube types for pulsed radar transmitters will be compared, and existing RF tube power capabilities will be briefly summarized.

T.A. Weil, Raytheon Company

December 3—MOVING TARGET INDICATORS

The basic theory and techniques for achieving coherent and non-coherent MTI will be reviewed. Particular emphasis will be placed on doppler detection, processing, and tracking in modern pulse doppler and conventional pulse radars.

Paul Howells, Syracuse University Research Corp.

TIME: 7:30-9:30 P.M.—Wednesday nights—October 15 to December 3, 1969
PLACE: ITT Avionics Division, 500 Washington Avenue, Nutley, New Jersey
FEE: $30 Members (IEEE, NJPE, etc.); $40 Non-Members; $5 discount for early registration.

REGISTRATION FORM—MODERN RADAR

Send to: *Mr. C. W. Flynn*
ITT Avionics Division
390 Washington Avenue
Newark, New Jersey 07110 *Phone (201) 284-2924*

Name _____ Tech. Society _____

Firm _____ Position _____

Business Address _____ Phone _____

Home Address _____ Phone _____

Check Enclosed:

Member: $25.00_____; $30 after Oct. 8_____
Non-Member: $35.00_____; $40 after Oct. 8_____

Please make checks payable to: North Jersey Section, IEEE.

NORTH JERSEY SECTION LECTURE SERIES–FALL, 1969

EXTRA HIGH VOLTAGE

The Education Committee of the North Jersey Section is offering this eight-session study course on the subject of extra high voltage which covers the problems and considerations peculiar to voltages of 345 KV and higher for power transmission. The course will afford those concerned an opportunity to hear lectures by experts in the various areas. Each session will be two hours with a mid-point break.

October 2–PLANNING
Historical development and growth of EHV systems, reasons for selection of EHV systems, expected future growth, and discussion of planning studies involved in EHV system design.
Speaker from Public Service Electric & Gas Co.

October 9–INSULATION FOR SWITCHING SURGE VOLTAGES
Principal variables involved, flashovers, use of digital computers to determine transient voltages, and application to overall insulation coordination of the EHV system, including towers, line and equipment.
Speaker from Westinghouse Electric Corp.

October 16–INSULATION FOR POWER FREQUENCY VOLTAGES
Flashover characteristics for various insulation configurations, effect of contamination, and basic design criteria and application to EHV systems.
Speaker from Lapp Insulator Co.

October 23–CALCULATION OF LIGHTNING PERFORMANCE
Fundamentals of lightning problems, calculations of expected tripout rates, observed tripout rates, shielding angles, and application to basic line design.
Speaker from Ohio Brass Co.

October 30–SUBSTATION DESIGN
Station configurations and layout, special considerations of clearances and spacing, space requirements, disconnect switches, bus connections, coordination of station components.
Speaker from ITE Imperial Corp.

November 6–EHV CIRCUIT BREAKERS
Dielectric phenomena, circuit interruption and application of circuit breakers.
Speaker from General Electric Co.

November 13–EHV TRANSFORMERS
Special design considerations, and flux problems, application of lightning arresters, BIL.
Speaker from Allis-Chalmers Co.

November 20–RELAYING
Special relay problems and application
Speaker from Westinghouse Electric Co.

TIME: 7:00-9:00 P.M. Thursday nights–Starting October 2, 1969, and concluding November 20, 1969.

PLACE: Jersey Central/New Jersey Power and Light Co., General Operating Headquarters, Madison Avenue at Punch Bowl Road, (Rt. 24) Morristown, New Jersey, Punch Bowl Room.

FEE: $30.00 to members (IEEE, ASME, NJSSPE, etc.), $40.00 to non-members. $5.00 discount for registrations received prior to the first session.

SPONSORS: A. J. Magyar, Jersey Central/New Jersey Power and Light Co. Phone (201) 539-6111, Ext. 477; J. C. Gass, Allis-Chalmers, Phone (201) 687-3700, Ext. 28.

REGISTRATION FORM–EHV COURSE

Send to: *Mr. A. J. Magyar*
Jersey Central/New Jersey Power and Light Co.
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960

Name _____ Tech. Society _____

Firm _____ Position _____

Business Address _____ Phone _____

Home Address _____ Phone _____

Check Enclosed:

Member: $25.00_____; $30.00 after Oct. 2_____
Non-Member: $35.00_____; $40.00 after Oct. 2_____

Please make checks payable to: North Jersey Section, IEEE.

NORTH JERSEY SECTION LECTURE SERIES—FALL, 1969

PROFIT PLANNING FOR ENGINEERS IN MANAGEMENT

As a result of the increasing demand for engineers in managerial and administrative roles, the Northern New Jersey Education Committee and the Engineering Management Group of the Metropolitan New York Chapter of the IEEE are introducing a course relating marketing, finance and general business economics to the decision-making procedure in technical enterprises. The course is directed to higher echelon managers who have advanced through engineering and technical lines, but whose scope encompasses profit planning for comprehensive operations.

A particular objective of the course is the exploration of vital elements affecting profitable business decisions—so that managers with primarily technical backgrounds can communicate effectively with marketing and financial experts. This can lead to better preparation of comprehensive programs, improved defense of points which might be questioned, and more authoritative leadership in developing and managing broad-based business endeavors.

Due to the nature of the subject matter, the course will be restricted to persons with backgrounds in accounting, statistics and engineering economics, and whose positions indicate likely benefit from the course content. Class size will be limited, and the committee will exercise judgment in selecting applicants.

The lecturer will be Mr. Murray Menkis, president of Menkis Engineering Associates. Mr. Menkis holds a B.E.E. from Cooper Union, M.S.E.E. from Newark College of Engineering, and an M.B.A. from Baruch School of Business Administration. He is licensed as a professional engineer in New York, New Jersey and Connecticut. His experience includes eighteen years in the development of electrical control devices, and consulting practice in profitable exploitation of technical innovations.

October 15—Introduction

A. Characteristics of a free enterprise system; profit as a consequence of "beneficial innovation"; "beneficial innovation" as an improvement in the "cost-benefit" matrix for goods and services.
B. Role of the engineer in economic progress
C. Planning for Product Improvement and New Product Design
   1. Objectives of the firm
   2. Evaluation of present and potentially available resources
   3. Requirements in markets for firm's product capacity

October 22—Data Required for a Decision (1)

A. Broad view of market economics
B. Supply segment of markets; technological trends in supply

October 29—Data Required for a Decision (2)

A. Demand segment of market
B. Technological changes in market requirements

November 5—Data Required for a Decision (3)

A. Optimizing firm resources to meet market requirements more satisfactorily than alternate suppliers
B. Cost considerations

November 12—Data Required for a Decision (4)

A. Intangible factors
B. Cash flow and return-on-investment calculations

November 19—Pricing and Strategy in Technical Markets

A. Theoretical pricing methods (marginal cost equals marginal revenue)
B. Long-term considerations—maintenance of "technical primary," avoidance of excessive competition, stability
C. Strategic technical marketing

November 26—Analyzing the Supply Segment of the Market

A. Recent trends of sales and costs in the product line
B. General directions of technical developments, and market objectives sought
C. Price and profit trends
D. Statistical appraisal and projection

December 3—Analyzing the Demand Segment of the Market

A. Recent trends of purchases and prices in the product line
B. Determination of areas of possible dissatisfaction, and probing of "need" from a cost-benefit viewpoint
C. Future implications of technological trends
D. Econometric and statistical projection of future purchases

December 10—Evaluation of Intangibles

A. Quantification of intangibles (equivalent benefit method)
B. Political, sociological, psychological and irrational considerations

TIME: 7:00 P.M. to 9:00 P.M. Wednesday Evening
PLACE: Union Motor Lodge Motel, U. S. Highway 22 (westbound), Union, New Jersey
FEE: $90.00 to members (IEEE, EMG, ASME, etc.); $100.00 non-members.

REGISTRATION FORM

PROFIT PLANNING FOR ENGINEERS IN MANAGEMENT

Send to: *Mr. B. G. Geertsma*
Jersey Central Power & Light Company
Madison Avenue @ Punchbowl Road
Morristown, New Jersey *Phone: (201) 539-6111 ext. 513*

Name _____ Tech. Society _____

Firm _____ Position _____

Business Address _____ Phone _____

Home Address _____ Phone _____

Check Enclosed:

Member: $90.00 Non-Member: $100

Please make checks payable to: North Jersey Section, IEEE

AM — Special Study Groups FALL 1969

STUDY GROUP NO. 11 INTRODUCTION TO POWER ENGINEERING

TUESDAYS, 6:30 to 8:30 p.m.: Starting Sept. 16, 1969

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

Group Coordinator: John Schmidt, Automatic Switch Co.
Tel. (212) 344-3765

Group Sponsors: J. D. Graves, Consolidated Edison Co.
J. Beuchler, Long Island Lighting Co.

This study series will deal with basic problems of Power Engineering. It is oriented mainly toward the young engineer and designer who is interested in power engineering. Topics of the lecture were selected by young engineers working in the power engineering field.

1. **Sept. 16 Introduction**
The past, present, and future aspects of power engineering: general concepts in planning and economics.
Speaker: W. O. Uhl, Manager of Engineering Long Island Lighting Company

2. **Sept. 23 Conventional Generation**
Rotating Machinery, design and operating considerations.
Speaker: L. Brieger

3. **Sept. 30 Nuclear Generation**
Nuclear plant design and operating considerations.
Speaker: E. N. Mercouris, Gibbs & Hill, Inc.

4. **Oct. 7 Transmission Systems**
General planning criteria; EHV, UHV, HVDC, stability and role of interconnections.
Speaker: G. Loehr, Consolidated Edison Company

5. **Oct. 14 Switching Stations**
Study of various breaker arrangements, aspects of EHV switching station design.
Speaker: From Stone and Webster Company

6. **Oct. 21 Distribution Systems**
General planning criteria, design considerations.
Speaker: R. Settembrini, Consolidated Edison Company

7. **Oct. 28 Principles of Relay Protection**
Relay protection for transmission, distribution systems and generators; coordination criteria.
Speaker: R. W. Pashley, Long Island Lighting Company

8. **Nov. 18 Fundamental Mathematical Techniques**
Fundamental mathematical techniques such as per unit systems, symmetrical components, and application.
Speaker: R. W. Pashley, Long Island Lighting Company

9. **Nov. 25 Computer Applications**
Network reduction; load flow and short circuit studies with computers; general computer application; curve drawing.
Speaker: D. Hawkins, Consolidated Edison Company

10. **Dec. 2 General Utility Problems**
Pollution control, relationship with state and federal regulatory agencies, planning for future generating and transmission facilities.
Speaker: From Consolidated Edison Company

STUDY GROUP NO. 13 COMMERCIAL FACILITIES—ELECTRICAL DESIGN

WEDNESDAY, 6:30 to 8:30 p.m.: Starting Sept. 24, 1969

Consolidated Edison Company, 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

Group Instructor: W. 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 a commercial building (and perhaps a hospital or shopping center) will be offered. Homework assignments will be assessed by both students and instructors. The IEEE "Grey Book" will be used as the reference text.

1. **Sept. 24 Project Planning**
2. **Oct. 1 A Project**
Size, scope and load.
3. **Oct. 8 Design**
Requirements and documents.
4. **Oct. 15 System Selection**
Distribution methods, load center.
5. **Oct. 22 Fault Currents**
Calculation.
6. **Oct. 29 Motor Control**
Starters and control methods.
7. **Nov. 5 Drawing**
Preliminary and contract.
8. **Nov. 12 Specifications and Cost Estimates**
Purpose, content, standards.
9. **Nov. 13 Other Design Considerations I**
Safety, codes, grounding, protective relaying.
10. **Dec. 3 Other Design Considerations II**
Availability/Reliability, UPS, Power Transfer

N. Y. Section, IEEE

Power and Industrial Div

EDUCATIONAL PROGRAM — FALL 1969

Metropolitan Section

ASME

INDIVIDUAL IMPROVEMENT STUDY GROUP

STUDY GROUP NO. 14

SPEED READING FOR ENGINEERS

THURSDAYS, 6:30 to 8:30 p.m.: Starting Sept. 18, 1969

Consolidated Edison Company, Room 1701
4 Irving Place, New York, N. Y. 10003

Group Coordinator: F. Brown, Tel. (212) 460-4017
Public Service Commission

Group Instructor: D. Hawkins, Consolidated Edison Co.

This study series will first concentrate on learning how to program in FORTRAN IV. Useful programming techniques and debugging tools will then be covered along with some useful engineering computer applications. Practice programming problems will be given.

1. **Sept. 18 Computer Systems**
   Types of computers, time sharing systems, hardware, flow diagrams.
2. **Sept. 25 Programming — Part I**
   Arithmetic statements.
3. **Oct. 2 Programming — Part II**
   Control and decision statements.
4. **Oct. 9 Programming — Part III**
   Input, output, and format statements.
5. **Oct. 16 Programming — Part IV**
   Subprograms and arrays.
6. **Oct. 23 Programming — Part V**
   Program debugging, computational errors, iterative techniques.
7. **Oct. 30 Matrix Theory**
   Definitions, Matrix addition, subtraction, and multiplication with computers.
8. **Nov. 6 Engineering Problems**
   Critical Path scheduling, design calculations, economic evaluation.
9. **Nov. 13 Engineering Data Banks**
   Storage of data for engineering planning, designing, pricing, construction, operating, maintenance, and accounting.
10. **Nov. 20 Graphics**
    Use of X-Y plotter and special applications programs.

REGISTRATION FORM

Name (printed) .....

Firm ..... Position .....

Business Address .....

..... Phone No. .....

Home Address .....

.....

Study Group .....

Member of:
☐ IEEE
☐ ASME
☐ OTHER .....
☐ NON-MEMBER

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Fee Paid $..... (Cash, Check, M.O.)
Date ..... By .....

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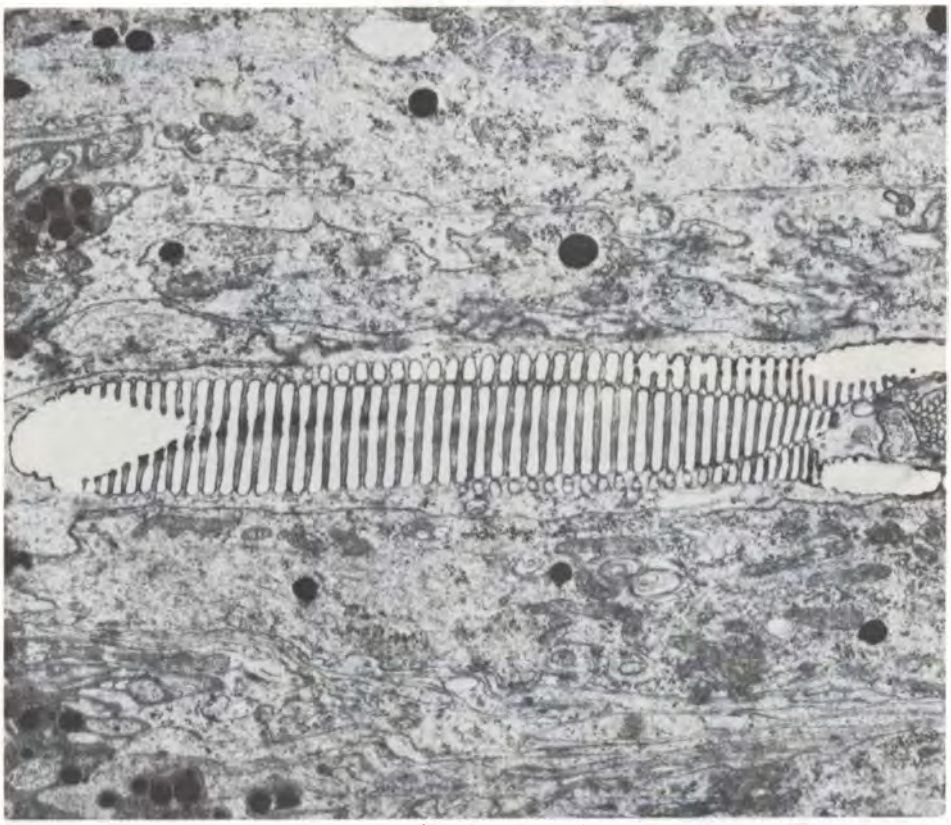
Fee Paid $..... (Cash, Check, M.O.)
Date ..... By .....

What has Antennas & Propagation Got to do With Insect Eyes?



Electron Micrograph of a Waveguide (Photoreceptor) and interference filter from the eye of a Buckeye butterfly.

A talk on the optics of insect eyes from antennas and wave propagation point of view will be presented at the October meeting of the North Jersey Section of GMTT/GAP.

About the Talk:

Insect eyes contain structures that resemble diffraction gratings, multimode cylindrical waveguides, and periodically layered interference filters. Since these structures have characteristic dimensions of the order of a wavelength of light, they can interact strongly with light and influence the eye's optical performance. Antenna and Propagation theory is very helpful in understanding insect optics.

The discussion will center around the optical components of the insect eye, their structure, optical performance, and biological function discussed in terms familiar to the engineer. The living insect eye often displays spectacularly beautiful colored patterns, many of which will be shown. Your wife should enjoy the presentation: bring her. The speaker promises no equations.

About the Speaker:

Gary D. Bernard is an Assistant Professor of Ophthalmology and Engineering at Yale University. The principal area of his research has been electromagnetic theory and antennas. For the last 3½ years he has been collaborating on a study of the optical structure and function of insect eyes with Dr. William H. Miller, Professor of Ophthalmology and Physiology at Yale.

He majored in Electrical Engineering at the University of Washington, Seattle, and received Bachelor's, Master's and Ph.D. degrees in 1959, 1960, and 1964, respectively. From 1965 to 1968 Dr. Bernard was a faculty member of the M.I.T. Department of Electrical Engineering where he taught electromagnetics and did research in the areas of plasma physics and insect vision. During the first year and one-half at M.I.T. he held a Ford Foundation Postdoctoral Engineering Fellowship.

Dr. Bernard is a member of the IEEE, Optical Society of America, Association for Research in Ophthalmology, Entomological Society of America, and the AAAS.

Time: Wednesday, October 15, 1969, 8:15 P.M.
Place: Arnold Auditorium, Bell Laboratories, Murray Hill, New Jersey.
Dinner: 6:15 P.M., Wally's, Watchung, New Jersey. (No reservations required.)

Reliability Officers

The following officers were unanimously elected to head the Reliability Chapter of the North Jersey Section for the 1969-1970 year at the Annual Meeting held on May 15, 1969.

Chairman: George Ebel, *Conral Corporation*
Vice-Chairman: Dr. Emil C. Neu, *Stevens Institute of Technology*
Secretary: Gregor L. Hetzel, *Bell Telephone Laboratories*
Members-at-Large: Dr. Raj P. Misra, *Newark College of Engineering;* John Clayton, *Aircraft Radio Corporation;* Richard Jacobs, *Consultant Services Institute.*

Set Discussion Meetings

The Power and Industrial Division of the New York Section has set meeting nights for the four 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.

Meetings are scheduled from October 2, 1969, thru April 30, 1970.

Group Sponsors will be pleased to include your name on their mailing lists for advice on meetings and discussion topics. Use the form below.

To: Mr. Peter Jackson
c/o Jersey Central & New Jersey Power & Light Co.
Madison Ave. at Punch Bowl Road
Morristown, New Jersey 07960

[ ] Industrial and Commercial Power Systems
[ ] Transmission & Distribution
[ ] Substation
[ ] Insulated Conductors

Name: _____

Company: _____

Address: _____

_____ Zip _____

Phone: _____

To Tour Power Station

The P & I Division and the Long Island Section of the ASME are sponsoring a tour of Long Island Lighting Company's Northport Power Station on Saturday, October 4, at 10:00 A.M. This Power station is the Long Island Lighting Company's largest and most efficient generating station. Situated on the Long Island Sound in the village of Northport, the plant's twin generating units produce a combined capacity of 760,000 kilowatts—enough power to fill the electrical needs of more than a half-million Long Island homes.

The number of visitors will be limited; make your reservations early. Reservations may be made by returning the completed form below before September 19.

Include a self-addressed, stamped envelope for prompt acknowledgment—tickets and directions to the power station. The tour is sponsored jointly by the Long Island Section of ASME and IEEE.

Tickets must be presented at the power station main gate in order to gain admittance. Safety regulations do not permit attendance by children under 16 years of age.

Time: Saturday, October 4, 1969; 10:00 A.M.

Place: Northport Power Station (Directions will accompany acknowledgment of reservations.)

NORTHPORT STATION TOUR RESERVATION FORM

To: P. E. Samuels
Long Island Lighting Company
175 East Old Country Road
Hicksville, N. Y. 11801

Please make ____ reservation(s) for the October 4, 1969, tour of the Northport Power Station.

Name: _____

Address: _____

_____ Zip _____

Phone: _____

Executive Committee Report:

WELCOME

I would like to take this opportunity to introduce your 1969—1970 Executive Committee:

Chairman: M. M. Irvine, 386-4141
Vice Chairman: H. E. Blaicher, Jr., 539-6111, Ext. 487
Treasurer: R. G. Sokalski, 334-1800, Ext. 246
Secretary: C. Torell, 589-7500
Members-at-Large: R. P. Misra, 645-5489; P. E. Watson, 539-8278
Junior Past Chairman: J. G. O'Grady, 621-6800, Ext. 702

COMMITTEES:

Awards: J. Milar, 277-1189
Education: J. Gass, 687-3700
Group Coordinator: D. Wiener, 673-6600, Ext. 2523
History and Procedures: F. Polkinghorn, 239-6074
Membership: M. McLaren, 328-3418
Nominations: S. A. Mallard, 622-7000, Ext. 2117
Program: H. J. Perlis, 645-5492
Publications: E. C. Neu, 792-2700, Ext. 263
Publicity: J. W. Fink, 621-6800, Ext. 726
Student Activities: J. W. Earle, 645-5478

CHAPTER CHAIRMEN:

G-7 Reliability: G. Ebel, 226-7777
G-16 Computer: R. R. Shively, 386-4715
G-17 Microwave Theory & Techniques: G. C. DiPiazza, 386-6050
G-19 Communications Technology: J. F. Kampschoer, 386-4135
G-23 Automatic Control: E. W. Van Winkle, 288-2000, Ext. 2357
G-31 Power: R. D. Stys, 622-7000, Ext. 3766

Business Manager: M. M. Perugini, 398-5524 or 398-3834

The committee will be striving throughout the year to bring you a wide variety of activities designed to stimulate and enhance your professional development.

These activities will include specialized technical papers presented by various group chapters, technical discussions of a more general nature sponsored by the Section, our Annual Student's Night, our Annual Recognition of New Fellows meeting in February, a broad educational program presented by the Education Committee, and for the first time, a special Measurements Symposium which will be held in October.

If you would enjoy participating in the planning and execution of these activities, or if you have specific suggestions or recommendations concerning these activities, you are urged to contact the appropriate committee or chapter chairman. Your active participation will be greatly appreciated.

The Executive Committee meets on the first Wednesday of the month at 7:30 P.M. in the meeting room of the Verona Public Library. You are welcome to participate in these meetings.

M. M. Irvine
Chairman

Newsletter 1969-70

With this, the first issue of the 1969-70 year, the Newsletter begins its second season under its new format. This format has been an important factor in keeping the official publication of the North Jersey Section a publication that we can be proud of.

While a good image is both necessary and important, it is of no significance if what is underneath it is not of substance and quality. It is thus with optimism that our mast head announces a new and enlarged staff to gather, edit and assemble the material for each month's Newsletter. In order for the staff to turn out the best possible publication the cooperation of the entire Section is required. This means sending material to the editor by the 25th of the month deadline in as final a form as possible. Information should be complete and in the standard format (see articles in this issue) and pictures should be good quality, glossy black and white prints.

One final word: the Newsletter depends on advertising to help meet expenses. Past experience has shown that the most promising advertising leads are provided by personal contacts. Thus each member of the North Jersey Section is in position to help continue the Newsletter as quality publication by sending any advertising leads to M. M. Perugini, Box 666, Mt. Arlington, New Jersey 07856. In doing so you will not only be aiding your Section but you will also be introducing your company to one of the most select audiences in the nation.

Emil C. Neu
Editor

Flavors and Fragrances

The New York Section of the Power and Industrial Division is sponsoring an interesting and unusual visit to International Flavors and Fragrances Inc. in Union Beach, New Jersey. This corporation which has plants throughout the world manufactures aroma chemicals for soaps, detergents, toiletries, and household products and flavorings for beverages and processed foods. The facility at Union Beach contains the Corporations Research Center where scientists and technicians are engaged in projects to find new means of simulating common aromas and flavors.

Wives and children of high school age are welcome to take this trip. Please send your ticket requests with a stamped self-addressed envelope to: Mr. E. G. Birbick, c/o Reynolds Metals Co., 100 Evergreen Place, East Orange, New Jersey 07018.

Details regarding transportation and other arrangements may be obtained by contacting Mr. Birbick at (201) 676-4441.

Time: Monday, October 13, 1969, 10:00 A.M.
Place: Union Beach, New Jersey.

Computers and the Communications Engineer

For the past decade the technology and influence of computers has grown at an unprecedented rate. Today, a knowledge of this field of activity is an essential part of the background necessary for everyone active in communications. In order to give this subject the time and attention it deserves, the Communications Technology Group Chapter will devote its entire 1969-70 educational program to this subject. Three interrelated programs (a three-part course on "Computer Systems for the Communications Engineer," an eight-session lecture series on "Basic Programming and Numerical Analysis" and an all-day Seminar on "Basic Computer Technology") are planned. Depending upon personal background and interests, these programs are available singly or as a group at a reduced rate.

Computer Systems for Communications

For the communications engineer to intelligently dispense modern day facilities, he must be familiar with the complex systems that are presently being conceived and utilized. This course is designed to thoroughly inform the engineer of modern computer systems concepts, without delving into minute mathematical and hardware considerations. In addition, the specific uses of computers in the communications field; i.e., message and trunk switching, will also be delineated.

PART I—*A general discourse on Data processing systems,* Building blocks, Programming language and Micro vs Macro programming. (September 11, 18, 25; October 2, 9, 16.)

PART II—*Batch Processing Systems* - (January 8, 15, 22, 29; February 5, 12.)

PART III—*Real Time Systems* - (March 5, 12, 19, 26; April 2, 9.)

Lecturer is Mr. Joel Darrow, Senior Systems Analyst for Merrill, Lynch, Pierce, Fenner and Smith.

Fees for members are $35 for all three parts and $15 for any one part. For non-members fees are $45 and $20. Lectures will be held from 6:30 to 9:30 P.M. in the auditorium of the AT&T Building, 195 Broadway, New York.

Basic Programming and Numerical Analysis

In order to thoroughly comprehend modern day computers, it is extremely helpful to actually experience the exact manner in which a computer received its directions and instructions. The concepts of numerical analysis form the basis of most scientific programs and Fortran is, by far, the most popular programming language. This course will add an additional dimension to the Computer Systems Course.

Lecture topics are:

Introduction to Computers

Elements of the Fortran Language

Fortran IV and Programming

Numerical Analysis—Roots of a Polynomial, Simultaneous Equations, Polynomial Approximations, Taylor Series, Numerical Integration, Solution of order Integration.

Meeting dates and times are 6:30 P.M. to 8:30 P.M. on October 30, November 6, 13, 20 and December 4, 11 and 18 at the New York Telephone Company Auditorium, 140 West Street, N.Y.C.

Speaker is Professor Michael Lione, Newark College of Engineering.

Fee for members is $14; for non-members, $17.

Basic Computer Technology Seminar

One of the natural questions that arises from the Computer Systems course is "How did these configurations develop and exactly how do they work?". This seminar attempts to answer these questions. What were the first and second generation machines? These and many other topics, including a general discussion of what to expect from fourth generation machines, will be presented by this seminar.

Topics include:

First, Second and Third Generation Computer Configurations (Difference, Capabilities, etc.)

Fourth Generation Computers

Third Generation Computer Equipment

The Seminar will be held November 6 at a midtown location. Costs (luncheon included) are $25 for members, $30 for non-members.

For additional information on all courses contact Mr. A. F. Boschulte, (212) 394-6427. Checks should be made payable to the Communications Technology Group Chapter, N. Y. Section, IEEE. Enclose a stamped, self-addressed envelope with your order.

To: Mr. D. J. Gillespie
Communications Discipline
105 Madison Avenue
New York, New York 10016

Check desired courses:

Computer Systems:

Part I___ II___ III___

All Three Parts___

Numerical Analysis___

Seminar___

All Three___ ($60 members; $75 non-members)

Non-Member IEEE___ Member___
Membership Number_____

Name_____

Address_____

_____ Zip _____

Phone_____