



Freehold Raceway

North Jersey Section Field Trip

Saturday, September 23, 1967



The IEEE

Newsletter

The Magazine of the North Jersey Section

MANAGEMENT SEMINAR

Turning Basic Science Into Profitable Products

Sept. 7, 1967

See Page 18

Volume 14 / Number 1

SEPTEMBER 1967



Outgoing chairman Steve Mallard (right) passes gavel to incoming chairman Bernie Meyer.

Reliability Chapter to be Guests of the North Jersey Section of the ASQC

The Reliability Chapter of the North Jersey Section of the IEEE will be the guests of the North Jersey Section of the ASQC at their September 20 meeting. Mr. Ridgely Park, Manager of Manufacturing, Computer System Division, Westinghouse, Pittsburgh, will speak on "Reliability Applications to Commercial Products." Before assuming his present position, Mr. Park was Staff Assistant of Reliability for Westinghouse.

Abstract:

Is Reliability a profit maker for commercial products — it effects warranty, guarantees and replacement frequency. Reliability of most products can be measured and new products estimated. Designer review is the most powerful tool in the profit arsenal and Westinghouse has used it to obtain a \$20.00 return on each dollar invested in the design review program. As such, the emphasis on this paper will be on the implementation and operation of design review. The next most important element in the program is to improve reliability of commercial products, its data collection and analysis and this element will also be discussed in detail.

Speaker:

Ridgely Park

Location:

ITT Federal Laboratories, Auditorium
Nutley, N. J.

Time and Date:

7:30 P.M., September 20

Refreshments will be served.

1967 IEEE Microelectronic Applications Symposium

The IEEE Long Island Section and the IEEE Group on Aerospace and Electronic Systems (G-AES) will hold the 1967 IEEE SYMPOSIUM ON MICROELECTRONIC APPLICATIONS, September 21 and 22, 1967 at the Garden City Hotel, Garden City, Long Island, New York. The Symposium will deal with military, industrial and commercial microelectronic applications, and will be of particular interest and timeliness to system designers. All papers are by invitation only, with nation-wide and international participation.

The Symposium will be chaired by Mr. Edward Keonjian of Grumman Aircraft Engineering Corporation. The keynote address will be given by Dr. Jack A. Morton, Vice President, Bell Telephone Laboratories. The first day's program will deal with generalized problems of microelectronic system requirements, (Session 1) and with the implementation of system requirements in actual design. First two sessions will be followed by a panel discussion: Microelectronics Reliability: Fact and Myth. Nationally prominent experts from DOD; NASA and private industry will serve as panelists.

The second day sessions will be devoted to selected case histories of Military and Space applications (Session 3), and to Industrial and Consumer Applications (Session 4). Cocktail hour and banquet will be held on September 21.

Inquiries may be directed to Mr. Leonard I. Kent, Executive Secretary, c/o Airborne Instruments Laboratory, Commack Road, Deer Park, New York 11729.

Student Affairs Active Year Predicted by North Jersey Student Chapters

NCE — Day

October 20 — A guest from Northwestern University is scheduled to speak to the student branch on Areas of Interest for Electrical Engineers in Graduate School.

November 10 — A guest from the Conduction Corporation will explain the theory of and discuss several practical applications for LASERS.

November 22 — This year's annual Field Trip will take NCE's student members to the IBM Poughkeepsie facility.

NCE — Evening

September 20 — A business meeting for the prime purpose of electing delegates to the New York Metropolitan Student Council will be held in Room 215 F, at 9:20 P.M. All student members are invited to attend.

September 27 — An informative color and sound motion picture on the various aspects of the NASA program will be shown at a General Meeting in Room 215 F, at 9:20 P.M.

As usual, the Evening Student Branch will participate in the Orientation program for people entering the Electrical Engineering Department with a view towards increasing participation among these new students.

Stevens Tech

The Student Branch is forming a consulting service for the development of electronic circuits to aid other groups and societies at Stevens. The first proposed project is the development of an Electronic Rally Computer for Stevens' active Sports Car Club.

New Branch Officers

Take Charge

Fairleigh Dickinson University Day Branch

Chairman _____ Irving Zaks
Vice Chairman _____ Osvaldo L. Cano
Secretary _____ Paul H. De Ghetto
Treasurer _____ Craig H. Wolfson
Interclub Rep. _____ Joseph P. Trotta

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Chairman _____ Pat Parkinson '68
Vice Chairman _____ Stephen F. Hoffman '69
Secretary _____ Richard P. Donnelly '69
Treasurer _____ Herbert C. Ohlandt '68
Program Chairman _____ Clark Gelling '69

Newark College of Engineering Evening Branch

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Vice Chairman _____ Willem Bakker
Secretary _____ Richard Eagen
Treasurer _____ Michael Prendergast

Stevens Institute of Technology

Chairman _____ Joseph A. Tana '68
Vice Chairman _____ Edward A. Radek '68
Secretary/Treasurer _____ Paul G. Greenfield '69

Published monthly except July & 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 14 September, 1967 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 Staff Associates

P.O. Box 275 — Morris Plains, N. J.
Telephone: 398-5524

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

Second Class Postage Paid
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ABOUT ADDRESS CHANGES

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.

NEWSLETTER STAFF

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NORTH JERSEY SECTION OFFICERS 1967-1968

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Executive Committee Meetings
at Verona Public Library
First Wednesday of Month
7:30 P.M.

1967

September 6 October 4
November 1 December 6

1968

January 3 February 7
March 6 April 3
May 1 June 5

All IEEE Members Welcome

CALENDAR

Page

Thursday, September 7

JT. METROPOLITAN — ENGINEERING MANAGEMENT WITH N. Y. BASIC SCIENCES AND NEWARK COLLEGE OF ENGINEERING

9:00 A.M. to 4:30 P.M. — Management Seminar — "From Basic Sciences into Profitable Products" at Newark College of Engineering.

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Tuesday, September 19

NORTH JERSEY — POWER

7:30 P.M. — "Nuclear Power Water Desalting Plant" by W. H. Stinson of Westinghouse Electric Co. at Jersey Central Power and Light Co., Morristown.

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NEW YORK — COMPUTER

7:45 P.M. — "Survey of Computer Graphics" by Dr. William H. Ninke of Bell Telephone Laboratories at Univac Auditorium, 1290 Avenue of the Americas, New York City.

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Wednesday, September 20

STUDENT BRANCH — NCE

9:20 P.M. — Election of delegates to N. Y. Metropolitan Student Council at NCE.

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NORTH JERSEY — RELIABILITY

NORTH JERSEY ASQC HOSTS

7:30 P.M. — "Reliability Applications to Commercial Products" by Ridgely Park of Westinghouse Electric Co. at ITT Federal Labs. Auditorium, Nutley.

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Thursday-Friday, September 21-22

LONG ISLAND — GAES

Two day symposium on Microelectronic Applications at Garden City Hotel, Long Island, N. Y.

2

Saturday, September 23

NORTH JERSEY SECTION

11:15 A.M. — Field Trip to Freehold Raceway, Freehold.

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Wednesday, September 27

STUDENT BRANCH — NCE

9:20 P.M. — Film on NASA Program at NCE.

2

Thursday, September 28

JOINT METROPOLITAN — ELECTRON DEVICES

8:00 P.M. — "Principles and Applications of Holography" by C. B. Burckhardt of Bell Telephone Labs. at General Telephone and Electronics Labs., Bayside, Long Island, N. Y.

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Friday, September 29

JOINT METROPOLITAN — GAES

9:30 A.M. — Field trip to Grumman Aircraft Engineering Corp., Bethpage, Long Island, N. Y.

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Monday, October 9

NORTH JERSEY SECTION 10-LECTURE SERIES

6:30 P.M. — "Electric Power Distribution for Industrial Plants" at Jersey Central Punchbowl Room, Madison.

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Wednesday, October 11

NORTH JERSEY SECTION 6-LECTURE SERIES

7:00 P.M. — "Fortran Programming for Digital Computers" at Jersey Central Punchbowl Room, Madison.

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Monday, October 16

NEW YORK — COMTECH 6-LECTURE SERIES

6:30 P.M. — "Transmission Problems in Computer Controlled Data Systems" at N. Y. Telephone Little Theatre, 140 West Street, New York City.

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Tuesday, October 17

POWER AND INDUSTRIAL DIVISION

6:30 P.M. — "PATH Tractive Power System — Conversion to Static Rectifiers" by Daniel L. Goldberg, William B. Plasket, and Henry W. Wenson, Jr. at General Electric Co. Auditorium, 570 Lexington Avenue, New York.

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Thursday, October 19

NORTH JERSEY — MTT

NEW YORK — GAES

8:00 P.M. — "Microwave Radiometry" by Myron M. Rosenthal of General Precision Inc. at General Precision, Wayne.

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NORTH JERSEY SECTION 8-LECTURE SERIES

6:30 P.M. — "Basic Reliability Engineering" at Newark.

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Saturday, October 21

NORTH JERSEY SECTION

Inspection Trip to Oyster Creek Nuclear Generating Station being built by Jersey Central Power and Light Co.

4

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North Jersey Section Inspection Trip Nuclear Generating Station

The photo below shows the Nuclear Station Reactor being lifted into the Reactor Building at the Oyster Creek Nuclear Generating Station being built by the Jersey Central Power and Light Company.

Note personnel standing to left and at rear of the Reactor.

The Reactor measures 62 feet high and 19 feet in diameter and weighs 600 tons. This station is New Jersey's first Nuclear generating station and will have an expected capacity of 640,000 kilowatts.

The Program Committee of the North Jersey Section has planned an inspection trip to the generating station for October 21, 1967. More details will appear in the October issue of the Newsletter.



Computer Permits Rapid Plotting and Display of Graphs

In an experimental program demonstrated at the Eighth National Symposium of the Society of Information Display, recently held in San Francisco, a computer is utilized to "draw" a graph on a television-like screen within seconds. The new program eliminates the painstaking manual plotting of points and lines usually required.

Any numerical field can be plotted against any other numerical field, making the number of graphs that can be generated from the various combinations almost infinite. Scaling is also done automatically by the computer. Several plots can be shown simultaneously on one graph.

Information to be graphed is selected from the computer's files, or new data are put into the computer, by two keyboards and a light pen. The light pen is a light-sensitive device used to select information for graphing by pointing at items displayed on the screen.

Data ranges can be specified for the variables being plotted, or for other related fields. For example, if the sizes of insurance policies are being plotted against the ages of the insured, the plot can be further limited to married professional men.

The new program was described in a paper by C. G. Beatty of the International Business Machines Corporation's Kingston, N. Y., laboratory.

North Jersey Membership in Professional Groups

There are 31 groups in the IEEE that cover a wide range of technical specialties. The interests of all members are covered by one or more of these groups. Through Group Chapters, members have frequent opportunity to participate in Section Activities that are devoted to the Group's technical specialty.

There are Chapters of seven groups in the North Jersey Section. The chapters and membership as of April 1967 are as follows:

G 7	Reliability	109
G 16	Computer	353
G 17	Microwave Theory and Technique	222
G 19	Communication Technology	222
G 23	Automatic Control	167
G 26	Engineering Writing and Speech	81
G 31	Power	322

In addition to the above Chapters, IEEE members of the North Jersey Section belong to nine chapters that are jointly sponsored by North Jersey, New York City and Long Island Sections. The groups and North Jersey participation are as follows:

G 6	Vehicular	58	39%
G 9	Industrial Electronics and Control Instrumentation	172	38%
G 10	Aerospace and Electronic Systems	193	18%
G 12	Information Theory	130	28%
G 14	Engineering Management	193	31%
G 15	Electron Devices	259	38%
G 18	Engineering in Medicine and Biology	112	21%
G 21	Parts, Materials and Packaging	107	36%
G 27	Electromagnetic Compatibility	44	29%

The number of members from the North Jersey Section in the joint group chapters vary from 44 to 259. The percentage of the total chapter's membership range from a low of 21% to a high of 41% with an average of 29%.

In addition to the Section Chapters and Joint Section Chapters, individual IEEE members living in the North Jersey Section belong to most of the 15 other groups. In several cases, the number of group members would indicate the feasibility of forming a Section Chapter. If you are a member of a group that does not have a Chapter or joint chapter in the New Jersey Section, you may wish to investigate formation of a chapter in this section. A number of members do not belong to even one group. In order to obtain the maximum benefit, the IEEE member should examine the technical specialty of the various groups and join and participate in the group or groups that are identified with his discipline.

NORTH JERSEY SECTION

Field Trip to Freehold Raceway



On Saturday, September 23, 1967, the North Jersey Section of the IEEE will have a field trip to Freehold Raceway, Freehold, New Jersey. This year is called "Expansion '67" at Freehold where over \$500,000 has been spent in a tremendous face lifting including a completely new track, additional seating capacity, increased wagering area and a much wider apron between the grandstand and the track.

More than 30 million sports fans in the United States and Canada will see harness racing in 1967. Although harness racing is rich and historic and filled with bright highlights in its 161 years of recorded history in North America, there are five events of transcending importance that tower over all others as milestones in the sports march forward.

The first was the importation of the English thoroughbred stallion Messenger which started it all in 1788, the second was the birth of the great progenitor Hambletonian 10 in 1849, the third was the development of the low-wheel bicycle tire sulky in 1892, the fourth was the introduction of night harness racing in 1940 and the last was the perfection and full introduction of the mobile starting gate in 1946. Prior to the last development, starting a race was a long and often tedious task. This mobile starting gate brought precision starts, permitted precise scheduling and opened the way for the return of the sport's color and excitement as a sporting spectacle to the big cities where it has its origins.

As a group, anyone attending will pay a service charge of \$.50 which will cover admission and a seat in a reserved section of the grandstand (a \$2.25 value). It is suggested that you plan to arrive and be parked in the area near Gate #2 by 11:15 A.M. The parking charge per car is \$1.00 (park and lock) or \$1.50 (valet parking). Enter at Gate #2 and be there to pick up your grandstand reserved ticket before 1:15 P.M. Proceed then to the Jockey Club where, at 11:30, our group will hear a representative of the track greet us and give us a "brief technical" explanation of the operation of the track and some interesting highlights about Harness Racing. Some of the time will be left open to questions (please, no tips on the races). After this session, we will be on our own to use the Jockey Club cocktail lounge or cafeteria for lunch. Anyone 16 years old and over is welcomed but only those 21 years old and over can use the cocktail lounge and/or place bets. So, bring your family and friends. The form at the bottom should be used to make reservations at \$.50 per person. Please include a stamped self-addressed envelope for returning your tickets. For any reservations received after September 16th, the tickets will be held for you near Gate #2 by a IEEE program committeeman. Take U. S. 9 or N. J. 33 to the Freehold traffic circle.

Mr. Carl C. Torell
9 Colony Court
Summit, New Jersey 07901

Enclosed please find my check (or money order) made payable to the North Jersey Section, IEEE in the amount of \$ _____ (\$.50 each) for _____ tickets for the September 23rd trip to Freehold Raceway. Enclosed also is a self-addressed stamped envelope to expedite return of the tickets to me. If reservation coupon is received after September 16th or without envelope, tickets will be held near Gate #2 ticket booth.

Name _____ Telephone No. _____

Address _____
No. Street City State Zip Code

New Lightweight Battery Uses Magnesium, Air and Seawater

A new type of lightweight, portable battery has been developed that produces electricity from thin magnesium sheets and oxygen from the air, with seawater used as an electrolyte. The new power source is a primary battery that can be refueled in about 15 minutes simply by adding a new set of magnesium plates, a handful of salt, and any available water.

The refuelable Magair battery, developed at the General Electric Research and Development Center, uses commercially available sheet magnesium as its replaceable anode. The porous cathode promotes the reaction of oxygen in the air with the water in the electrolyte and the magnesium electrode to produce an electric current. Magnesium hydroxide (milk of magnesia) is formed as a by-product.

One set of magnesium anodes in the Magair will supply 24 volts for a field radio up to 12 hours before anode replacement is necessary. To reactivate the battery, the used magnesium anodes are removed, the magnesium hydroxide sediment is emptied out, and fresh magnesium plates, water, and salt are added.

The porous air cathodes are not consumed in the reaction but eventually deteriorate after repeated use. However, they may be replaced as necessary. The batteries have been tested for 30 cycles (refills), or nearly 400 hours of use, without requiring replacement of the air cathodes. It is estimated that in actual field use the cell life may be extended to 1000 hours.

The battery's high energy-to-weight ratio, noncorrosive and nontoxic electrolyte, and low weight qualify it for industrial, military, and consumer applications calling for specialized portable power sources.

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- Maintenance-Free, Sealed, Follow-Up Potentiometers
- Positive, Reliable, Clean Vacuum Paper Hold-Down System

SPECIFICATIONS			
Model	Recording Size (in.)	Input Ranges	Pot. Mode
600	8 1/2 x 11	16 dc ranges 0.5 mv/in to 50 v/in	0.5 to 5 mv/in
610	8 1/2 x 11	16 dc ranges 0.5 mv/in to 50 v/in	0.5 to 5 mv/in
680	8 1/2 x 11	Selectable	Available on special order
690	8 1/2 x 11	13 dc ranges 0.5 mv/in to 50 v/in	Not available
800A	11 x 17	16 dc ranges 0.5 mv/in to 50 v/in	0.5 to 5 mv/in
810A	11 x 17	16 dc ranges 0.5 mv/in to 50 v/in	0.5 to 5 mv/in
822A	11 x 17	3 dc ranges 0.1 to 10 v/in	Not available
850A	11 x 17	16 ranges 1 mv/in to 100 v/in	1 to 10 mv/in

OPTIONS: Remote pen lift, rear input connectors, indicator scales, metric calibration, retransmitting potentiometers, logarithmic conversion, a.c. inputs.



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October 11 — Introduction and Arithmetic Statements
October 18 — Input/Output Statements, Subscripting, Control Statements
October 25 — IF Statements, Loops, DO Statements
November 8 — Format, Subprograms, Subroutines
November 15 — Review, Problem Solving, Visit Typical Computer Installation

Fortran Programming For Digital Computers

A six session course to teach engineers and others to solve engineering problems on a digital computer.

INSTRUCTOR Mr. H. E. Blaisdell, Jr., Distribution Planning Engineer, Jersey Central,
New Jersey Power and Light Company.

TIME 7:00 P.M. to 9:00 P.M. — Wednesday Evenings — October 11 to
November 15, 1967.

PLACE Jersey Central/New Jersey Power and Light Company, Room B-08,
Madison Avenue at North Bend, Madison, N.J.

FEES \$30.00 members (I.E.E.E., A.S.M.E., etc.); \$40.00 Non-Members. \$5.00
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October 25 — IF Statements, Looping, DO Statements
November 1 — Use of DO Statements
November 8 — Format, Subprograms, Subroutines
November 15 — Review, Problem Solving, Visit Typical Computer Installation

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November 15, 1967.

PLACE Jersey Central/New Jersey Power and Light Company, Room B-09,
Madison Avenue at Punch Bowl Road, Morristown.

FEE \$30.00 Members (I.E.E.E., ASME, etc.); \$40.00 Non-Members. \$5.00
discount for early registrations. Text material will be supplied.

Send Registration Forms To: Mr. James C. Gass
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Union, New Jersey
Phone: MU 7-3700

REGISTRATION FORM — FORTRAN PROGRAMMING COURSE

Name Tech. Society

Firm Phone

Address

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Power and Industrial Div.

EDUCATIONAL PROGRAM - FALL 1967



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".

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STRUCTURAL PLANNING AND DESIGN (IEEE-ASME)

COURSE NO. 5

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. 11, 1967, 6:15-8:30 P.M., 18 Sessions
North Cafeteria, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

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

BASIC ENGINEERING SCIENCES (ASME-IEEE)

COURSE NO. 6

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

TUESDAYS, Starting Sept. 5, 1967, 6:30-8:30 P.M., 19 Sessions
North Cafeteria, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

Instructor: A. PAULLOW, Consolidated Edison Co., Inc.

MECHANICAL ENGINEERING (ASME)

COURSE NO. 7

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

WEDNESDAYS, Starting Sept. 6, 1967, 6:30-8:30 P.M., 19 Sessions
Rm. 240, Ebasco Bldg., 2 Rector St., N. Y. C.

Instructor: M. KURTZ, P.E.

ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)

COURSE NO. 8

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*. Features methods of problem solution based on examinations of past 7 years. Printed notes and past examinations available.

WEDNESDAYS, Starting Sept. 13, 1967, 6:30-8:45 P.M., 18 Sessions
Rm. 1427, Con Edison Co., 4 Irving Place, N. Y. C.

*Instructors: P. ZARAKAS, Engineer, Consolidated Edison Co., Inc.
and J. F. BATES, Electrical Engineer, Gibbs & Hill, Inc.*

ENGINEERING ECONOMICS AND PRACTICE (IEEE-ASME)

COURSE NO. 9

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

THURSDAYS, Starting Sept. 7, 1967, 6:30-8:30 P.M., 18 Sessions
Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

Instructor: F. BLACKWOOD, American Can Co.

REGISTRATION INFORMATION

FEES: For all courses except course No. 11
\$20 — to members of I.E.E.E., A.S.M.E.
\$30 — to all others.
For course No. 11
\$30 — to members (as above).
\$40 — to all others.

For advanced registration, except in Courses No. 7 & No. 10, (mailed one week before 1st session) deduct \$5.00 from fee.

REGISTRATION: Fill out ONE form (see back page) for EACH course attended and mail with payment to the following:

For courses No. 1 to 4

make checks or money orders payable to:

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and mail to: David Hawkins, Vice Chairman, Educational

Committee, I.E.E.E., Consolidated Edison Co., Room 1250S, 4 Irving Place, New York, N. Y. 10003. Tel. (212) 460-6166.

For courses No. 5, 8, 9 & 11

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"POWER & IND. GROUP, N.Y. SECT., I.E.E.E."

and mail to: Lewis Burnett, Vice Chairman, Educational Committee, I.E.E.E., Consolidated Edison Co., Room 1132, 4 Irving Place, New York, N. Y. 10003. Tel. (212) 460-6363.

For courses No. 6, 7 & 10

make checks or money orders payable to:

"ASME METROPOLITAN SECTION"

and mail to: Eli Kleinman, Educational Committee, A.S.M.E., Metropolitan Section, Dept. of Hospitals, Bureau of Eng. & Maint., 241 Church St., New York, N. Y. 10013. Tel. (212) 566-6940.

(REG. FORMS ON BACK PAGE)



COURSE NO. 1

SYMMETRICAL COMPONENTS

MONDAYS, 6:30 to 8:30 p.m. Starting Sept. 25, 1967

Ebasco Auditorium, 2 Rector Street, New York, N. Y.
Course Coordinator: EMERY FABRI, Consolidated Edison Co.
Tel: (212) 460-6072

This course covers fundamentals and applications of symmetrical components. Lectures will include fault calculations and the effects of equipment characteristics.

1. Sept. 25 The Per Unit System of Notation

Calculations of short circuit currents. Common KVA base conversions to per unit values. Short cut calculations.

Speaker: R. W. PASHLEY, Long Island Lighting Co.

2. Oct. 2 Review of Phasor Algebra & A-C Power Circuit Theory

Phasor representation of a-c voltages and currents. Basic manipulations of phasors and phasor operators. A-C power circuit analysis methods.

Speaker: R. W. PASHLEY, Long Island Lighting Co.

3. Oct. 9 Resolution of Phasors into Symmetrical Components

Positive, Negative and Zero sequence. Sequence networks and calculations. Line to Line and Line to Ground faults. Examples.

Speaker: R. W. PASHLEY, Long Island Lighting Co.

4. Oct. 16 Sequence Current & Voltage Components During Faults

Sequence network connections to represent faults. Faults through impedance and open conductors.

Speaker: R. W. PASHLEY, Long Island Lighting Co.

5. Oct. 23 Mechanics of Fault Current Calculations I

Data preparation for power system fault study. Cable characteristics and transmission line impedances. Fault calculations by analytic method.

Speaker: H. Y. TSIEN, Public Service Electric & Gas Co.

6. Oct. 30 Mechanics of Fault Current Calculations II

Sequence current and voltage components during faults. Examples.

Speaker: H. Y. TSIEN, Public Service Electric & Gas Co.

7. Nov. 6 Mechanics of Fault Current Calculations III

Large system fault study with computers, Analog and Digital Methods.

Speaker: H. Y. TSIEN, Public Service Electric & Gas Co.

8. Nov. 13 Transformer Characteristics & Connections

Fundamental equation and vector diagram, phase shifts through transformer banks. Auto-transformers.

Speaker: J. L. BLACKBURN, Westinghouse Electric Corp.

9. Nov. 20 Rotating Machinery Characteristics

Generator characteristics, transient, subtransient, synchronous and negative sequence reactances.

Speaker: J. L. BLACKBURN, Westinghouse Electric Corp.

10. Nov. 27 Symmetrical Components Applied to Relaying

Use of zero sequence currents, voltages and combinations of both. Directional ground relaying.

Speaker: J. L. BLACKBURN, Westinghouse Electric Corp.

COURSE NO. 2

LAW FOR ENGINEERS

TUESDAYS, 6:30 to 8:30 p.m. Starting Sept. 26, 1967

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

Course Coordinator: HARRY JOHNSON, Automatic Switch Co.
Tel: (212) DI 4-3765

Each year engineers encounter more and more legal problems in their profession. This study group is designed to explore the association of law in engineering and to bring some modern legal considerations to those who desire to recognize the problems, learn to protect vital interests and add some techniques to their professional knowledge.

Speakers: MR. STUART SPRAGUE, member of the New York City law firm of Sprague and Peck, will present Lectures 1-8 and Lecture 10. Admitted to New York Bar in 1926. Member of Federal Communications Bar Assoc. and the Association of the Bar of the City of New York.

MR. EUGENE E. GEOFFREY, Member of the New York Bar, and a specialist in Patents and Trade Marks will present Lecture 9.

1. Sept. 26 Contracts

A general study of what constitutes a binding agreement.

2. Oct. 3 Specifications and Warranties

Performance standards and Certified tests.

3. Oct. 10 Purchases and Sales of Equipment

Problems of acceptance and rejection.

4. Oct. 17 Principals and Agents

Laws of Agency — liability to third parties. Consultants and the personal responsibility of the consulting engineer.

5. Oct. 24 Corporations and Partnerships

Advantages and Disadvantages of each.

6. Oct. 31 Negligence and Insurance

Initiation and adjustment of claims.

7. Nov. 14 Bills, Notes and Checks

Importance of maintaining accurate books and records so as to refute tax claims and unwarranted charges for labor, materials, etc.

8. Nov. 21 Leases and Easements

Rights of entry and crossings.

9. Nov. 28 Trade Marks and Patents

How to apply for; how to interpret claims of patents; the proposed revisions of the patent statutes.

10. Dec. 5 Transportation, Storage

Disposition of unclaimed goods — responsibility for loss or damage of material.

— Special Study Groups



FALL 1967

COURSE NO. 3

SUBSTATION DESIGN

WEDNESDAYS, 6:30 to 8:30 p.m. Starting Sept. 27, 1967

Consolidated Edison Co., Room 1701S, 4 Irving Place,
New York, N. Y.

Course Coordinator: VINCENT DeVINCENZO,
Consolidated Edison Co.
Tel. (212) 460-3578

The course provides a comprehensive survey of substation design with emphasis on basic subjects such as bulk-power substations, distribution substations, their physical arrangement, the equipment used, and their protection.

1. **Sept. 27 Introduction — Basic Designs**
Choice of site, size of substation, esthetics, noise level and zoning.
Speaker: N. BLESHEMAN, Public Service Electric and Gas
2. **Oct. 4 Transmission Substations**
Reasons for its need, one line diagram, physical arrangement.
Speaker: R. HIGBIE, Consolidated Edison Co.
3. **Oct. 11 Distribution Substations**
Reasons for its need, one line diagram, physical arrangement.
Speaker: J. H. CAVEGLIA, Long Island Lighting Co.
4. **Oct. 18 Unit Substations**
Reasons for its need, one line diagram.
Speaker: R. WOLFF, Consolidated Edison Co.
5. **Oct. 25 Transformers**
Autotransformers, Voltage Regulators, Self-cooled vs. Forced-cooled.
Speaker: From General Electric Co.
6. **Nov. 1 Switchgear**
Circuit breakers, Switches and Interruptors.
Speaker: From Westinghouse Corp.
7. **Nov. 8 Insulators and Supports**
Bus Supports, Insulators, Lightning Arresters and Cable Terminations.
Speaker: S. DIXON, H. K. Porter Co.
8. **Nov. 15 Relay Protection**
Relay protection methods and equipments.
Speaker: S. HOROWITZ, American Electric Power Corp.
9. **Nov. 22 Supervisory Control & Data Logging**
Types of systems, equipments and reliability.
Speaker: G. SCHNEIDER, Consolidated Edison Co.
10. **Nov. 29 Fire Protection and Smoke Protection Equipment**
Types of equipment and applications.
Speaker: From Pyrotronics, Inc.

COURSE NO. 4

MATHEMATICS FOR ENGINEERS

THURSDAYS, 6:30 to 8:30 p.m. Starting Sept. 21, 1967

Consolidated Edison Co., Room 1701S, 4 Irving Place,
New York, N. Y.

Course Coordinator: N. SOFTLEIGH, *Public Service Electric & Gas Co.*
Tel: (201) 622-7000, Ext. 2164

A survey of the basic concepts and techniques of the calculus including topics from algebra, trigonometry, plane solid analytical geometry, vector algebra, matrix algebra, probability and differential equations.

Speaker: DR. NORMAN SCHAUMLBERGER, Professor of Mathematics Bronx Community College, City University of New York. Instructor of Mathematics, Teachers College, Columbia University.

1. **Sept. 21 Topics from Algebra and Trigonometry**
Inequalities, Mathematical Induction, Theory of Equations, De Moivre's Theorem.
2. **Sept. 28 Elementary Probability**
Permutations, Combinations and Probability methods.
3. **Oct. 19 Vectors, Plane and Solid Analytical Geometry**
Algebra of Vectors, Applications of Vectors to Two and Three Dimensional Geometry.
4. **Oct. 26 Matrix Algebra and Determinants**
Applications of Matrices and Determinants to solution of System of Equations.
5. **Nov. 2 Differential Calculus**
The Derivative and its applications; Epsilon (ϵ), Pi (π), and other limits.
6. **Nov. 9 Differential Calculus and Integral Calculus**
Transcendental Functions, the Integral and its applications.
7. **Nov. 16 Integral Calculus**
Approximate methods of Integration and further techniques.
8. **Nov. 30 Partial Differentiation and Multiple Integrals**
Chain Rule, Higher Order Partial Derivatives, and application of Calculus in Three Dimensional Space.
9. **Dec. 7 Infinite Series**
Convergence, Power Series, Fourier Series and applications.
10. **Dec. 14 Differential Equations**
First and Second Order Linear Differential Equations.



Power and Industrial Div.

EDUCATIONAL PROGRAM — FALL 1967

INDIVIDUAL IMPROVEMENT STUDY GROUP



COURSE NO. 10

BUSINESS MANAGEMENT FOR ENGINEERS

THURSDAYS, 6:30-8:30 p.m. Starting Sept. 14, 1967

Little Theater, N. Y. Telephone Bldg.
140 West Street, N. Y. C.

Course Sponsor: G. E. EVANS, JR.
Zurns Industries, P.O. Box 1099, Mountainside, N. J.
Tel. (212) DI 9-0569 or (201) 233-8435

A series of lectures on business administration designed to give the engineer a better understanding of corporation management.

1. Sept. 14 Introduction to Organization & Management of Corporations

Speaker: WARREN MULCAHY,
Personnel Supervisor-Training Coordinator, N. Y. Telephone Co.

2. Sept. 21 Introduction to Organization & Management of Corporations

Speaker: FRANK DEXTER,
Personnel Supervisor-Training Methods, N. Y. Telephone Co.

3. Sept. 28 Basics of Corporate Finance

Speaker: J. R. LYNCH, SMD Controller, IBM

4. Oct. 19 Budgetary Control — A Corporate Tool

Speaker: J. R. LYNCH, SMD Controller, IBM

5. Oct. 26 Interpreting Corporate Financial Statements

Speaker: JOHN DYMENT, Managing Associate, Arthur Young & Co.

6. Nov. 2 Factors used in Extending Credit to Business

Speaker: GORDON SWEENEY,
Assistant Vice President, Chemical Bank N. Y. Trust.

7. Nov. 9 Marketing and Sales Planning

Speaker: CARL E. MILLER,
Director of Market Research, Combustion Eng. Inc.

8. Nov. 16 Contract Law for Engineers

Speaker: G. H. ABPLANALP, Partner, Havens & Emerson

9. Nov. 30 Personnel Administration — Policy, Placement, Communication & Benefit Programs

Speaker: ROBERT DODDS, Personnel Manager, Gibbs & Hill Inc.

10 Dec. 7 Communication Problems in Conference Meetings

Speaker: DR. H. R. GILLIS, Prof. of Speech, Long Island University

11. Dec. 14 Letter and Report Writing

Speaker: DR. S. S. WEISMAN,
Executive Secretary, Alumni Assoc. C.C.N.Y.

COURSE NO. 11

THEORY AND MECHANICS OF TECHNICAL REPORTS

THURSDAYS, 6:30-8:30 p.m. Starting Sept. 21, 1967

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

Instructor: E. ALCOSSER, Sperry Gyroscope Co.

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

1. Sept. 21 Introduction

Course description, purpose, communication of ideas.

2. Sept. 28 Written Communication

Types, purpose and for whom.

3. Oct. 19 The Outline

Purpose, value, mechanics — Use of

4. Oct. 26 First Draft — Part I

(General) — Style, grammar, effectiveness.

5. Nov. 2 First Draft — Part II

(Specific) — Choosing the media, layout, illustrations.

6. Nov. 9 Final Report

Draft review, production, final check.

7. Nov. 16 Oral Reports

Principles of speaking, outline, presentation.

8. Nov. 30 Preparation of Oral Reports

Use of index cards, timing, use of aids.

9. Dec. 7 Delivery of Student Reports

Prepare short report (term project) for presentation and discussion.

10. Dec. 14 Delivery of Student Reports

Prepare short report (term project) for presentation and discussion.

ADVANCE-REGISTRATION FORM

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Study Group

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☐ ASME
☐ OTHER
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for membership in

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

BASIC RELIABILITY ENGINEERING

An eight session study group will be presented on probability and statistics to familiarize the engineer with statistical concepts, techniques, and applications under the direction of Dr. R. Misra of the Section Reliability Group.

October 19 — Introduction to Reliability Problems in Electronics.

Instructor: R. L. Trent, NASA

October 26 — Probability Theory and Basic Distribution

Instructor: Professor H. Barkan, N.C.E.

November 2 — Distribution

Instructor: Professor H. Barkan, N.C.E.

November 9 — Sampling Theory

Instructor: A. Fennochi

November 16 — Sampling Practices

Instructor: A. Fennochi

November 30 — Basic Failure Mechanisms in Semi-Conductors

Instructor: Professor R. Misra, N.C.E.

December 7 — Failure Mechanisms in Capacitors and Electronic Tubes

Instructor: Professor R. Misra, N.C.E.

December 14 — Management Problems in Reliability Engineering

Instructor:

TIME — 6:30 P.M. - 8:30 P.M. — Thursday Evenings — October 19 to December 14, 1967.

PLACE — NEWARK, NEW JERSEY.

FEE — \$30.00 Members; \$40.00 Non-Members. \$5.00 discount for early registration. Printed notes will be supplied.

Send Registration Forms To: Mr. John Zemkowski
Public Service Electric & Gas Company
80 Park Place, Room 6319
Newark, New Jersey 07101
Phone: 622-7000, Ext. 3008

REGISTRATION FORM — BASIC RELIABILITY ENGINEERING COURSE

Name Tech. Society

Firm Phone

Check Enclosed Member: \$25.00; \$30.00 after Oct. 12

Non-Member: \$35.00; \$40.00 after Oct. 12

Please make checks payable to: North Jersey Section, I.E.E.E.

ELECTRIC POWER DISTRIBUTION FOR INDUSTRIAL PLANTS

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

Oct. 9 — Basic Considerations — Preview of material to be covered, factors affecting the planning and selection, load surveys, one line diagrams, use of symmetrical components for short circuit calculation. Instructor: J. W. Gordon, Application Engineer, East Orange.

Oct. 16 — Short Circuit Calculations — effect of faults, how to make a short-circuit study, per unit and percent systems, problems. Instructor: A. H. Moore, Application Engineer, New York.

Oct. 23 — Short Circuit Calculations, calculating procedures, examples, use of handbook data. Instructor: A. H. Moore, Application Engineer, New York.

Oct. 30 — Selection and Application of Protective Devices — need for adequate devices, significance of breaker and fuse rating, use of application tables, equipment available, review of short-circuit tests. Instructor: Paul Reifschneider, Application Engineer, Philadelphia.

Nov. 6 — Selection and Application of Protective Devices — breaker ratings and fuse ratings, factors to consider in selection of equipment, problem solutions. Instructor: Frank Shields, Application Engineer, Schenectady.

Nov. 13 — Voltage Regulation and Power Factor Improvement, importance of good voltage, voltage drop, power factor fundamentals, calculation methods, capacitor facts and fallacies, rate studies.

Instructor: W. C. Bloomquist — Manager, Application Engineering, Schenectady.

Nov. 20 — Relay Coordination, factors to be considered in coordination studies, use of time current curves, protective device characteristics, example of coordination, code and standards consideration, differential protection, ground sensors. Instructor: A. H. Moore, Application Engineer, New York.

Nov. 27 — Selection of Conductors — selection and application of cables for main and branch circuits, overhead versus underground systems, shielding practices, splicing and terminating. Instructor: D. H. Peterson, Wire & Cable Specialist, New York.

Dec. 4 — Overvoltage Grounding — nature and causes of overvoltage, demonstration of grounded versus ungrounded systems, case studies, selection of grounding methods, selection of lightning arresters and surge capacitors. Instructor: George Walsh, Application Engineer, Schenectady.

Dec. 11 — Power Systems for Industrial Buildings — voltage and circuit selection for small, medium and large buildings, schools, etc., 460Y/265 volt versus 208/120 volt systems, economic factors affecting selection, 3000 cycle lighting, overcurrent protection, selection of proper and economical equipment for buildings fed from high short-circuit capacity networks. Instructor: I. C. Cranos, Application Engineer, Schenectady.

TIME 6:30 - 9:00 P.M. Monday nights — Starting October 9, 1967 and ending December 11, 1967.

LOCATION Punchbowl Room, Jersey Central/New Jersey Power and Light Company, Madison Avenue at Punch Bowl Road, Morristown, New Jersey.

FEE \$50.00 to members (IEEE, ASME, NJSSPE, etc.); \$60.00 to non-members. \$5.00 discount for early registrations. The following text material will be supplied:

1. Industrial Power Systems Handbook — McGraw Hill (\$22.50).
2. IEEE 141 Electrical Power Distribution for Industrial Plants (\$3.00).
3. IEEE 241 Electric Systems for Commercial Building (\$6.00).

Send Registration Forms To: Mr. B. G. Geertsma
Jersey Central/N. J. Power & Light Co.
Engineering Department — Substation
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960
Phone: 539-6111; Ext. 498

REGISTRATION FORM — INDUSTRIAL POWER COURSE

Name Tech. Society

Firm Phone

Check Enclosed Member: \$45.00; \$50.00 after Oct. 2

Non-Member: \$55.00; \$60.00 after Oct. 2

Please make checks payable to: North Jersey Section I.E.E.E.

New York Computer Survey of Computer Graphics

Computer graphics — the interchange of information between men and computers via pictorial or graphic representations — will be the subject of the September 19 meeting of the New York Chapter of the IEEE Computer Group.

This meeting, the Chapter's first of the 1967-68 year, will begin at 7:45 P.M., Tuesday, September 19, in the fifth floor auditorium of Univac, 1290 Avenue of the Americas (at 51st Street). A pre-meeting dinner will begin at 6:00 P.M. in Schrafft's restaurant, 21 W. 51st Street. No reservations are needed for the dinner or the meeting.

The lecturer will be Dr. William H. Ninke, who is responsible for hardware and software design of computer graphics equipment at Bell Telephone Laboratories, Murray Hill, N. J. Dr. Ninke will survey problems and progress in computer graphics and will illustrate his review with examples from specific projects at Bell Labs. Vital concepts in computer-aided problem solving using computer graphics will be emphasized, and a movie showing the use of a graphical console for problem solving will be shown. An example of an unusual use of computer graphics will conclude the talk.

Computer graphics is becoming increasingly important and should be of growing professional interest to members of the IEEE. Therefore members and guests are urged to attend this meeting and the pre-meeting dinner, where there will be an opportunity to meet the speaker and officers and members of the Chapter.

The newly elected officers of the N. Y. Chapter of the IEEE Computer Group are: Chairman, Alan Corneretto, Wathen/Walsh Associates, N. Y. C.; Vice Chairman, Prof. Herbert Freeman, New York University, Bronx; Secretary/Treasurer: Jeffrey Bairstow, Electronic Design magazine, N. Y. C.

Power & Industrial Division PATH Tractive Power System Conversion to Static Rectifiers

Speakers:

Mr. Daniel L. Goldberg
Chief Electrical Engineer
Port of New York Authority
Mr. William B. Plasket
Specialist Diode Equipment
General Electric Company
Mr. Henry W. Wenson, Jr.
Consulting Engineer
Port of New York Authority

Moderator:

Mr. R. A. Keeler
R. A. Keeler Associates

Place:

General Electric Company Auditorium
570 Lexington Avenue
New York, New York

Date:

October 17, 1967 (Tuesday)

Time:

6:30 P.M.

Two Ballantine Voltmeters for Laboratory, Production, and Q.C. Needs

Ballantine solid state, wide-band voltmeters, one average-responding and one true-rms responding, feature exceptionally wide frequency ranges, high accuracy over entire 5-inch log scales, and operation from built-in rechargeable battery or line



BALLANTINE VOLTMETER

2 Hz to 6 MHz

Battery or line-powered --
1% accuracy at midband

MODEL 303

- Voltage range 300 μ V to 330 V (models with 20 dB probe, 1 mV to 1000 V)
- 1% accuracy, 30 Hz to 1 MHz
- Logarithmic indicator for uniform accuracy over entire 5 inch scale
- Average responding
- Built-in rechargeable battery (models for line only)
- Isolated signal ground
- 40 dB amplifier, 2 Hz to 6 MHz
- PRICES: Model 303 (Battery/line/no probe) \$320; Model 303-01 (line only/no probe) \$290; Model 303-50 (Battery/line/with probe) \$382; Model 303-51 (line only/with probe) \$352.

BALLANTINE TRUE RMS VOLTMETER

10 Hz to 20 MHz

Battery or line-powered

MODEL 323

- Voltage range 300 μ V — 330 V (as null detector to 70 μ V)
- 2% accuracy
- 50 Hz to 10 MHz
- Logarithmic indicator for uniform accuracy over entire 5 inch scale
- True-RMS responding
- Built-in rechargeable battery (optional model for line only)
- Isolated signal ground
- DC output of 0.1 - 1.0 V for each 10 dB range for application to recorder or DVM where output is proportional to mean square of input ac voltage.
- PRICES: Model 323 (Battery/line) \$520; Model 323-01 (line only) \$485.



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Great Neck, N. Y. HUnter 2-7876
Antenna Laboratory: Smithtown, N. Y.

North Jersey — Power The Nuclear Power-Water Desalting Plant Technology, Economics and Future Prospects

Date: Tuesday, September 19, 1967
Time: 7:30 P.M.

Place: Punchbowl Room
Jersey Central Power &
Light Company
Madison Avenue (Highway 24)
at Punchbowl Road
Morristown, New Jersey

Speaker: W. H. Stinson
Project Engineer Electric Utility
Headquarters Department
Generation Group
Westinghouse Electric Corporation
East Pittsburgh, Pennsylvania

Mr. Stinson will discuss the present status of desalting technology; the economic factors of desalting; techniques involved in combining both power generation and desalinization, and future prospects of large scale power desalting plants.

This is the first of six technical meetings planned for the 1967-68 season; all of which should prove both informative and interesting.

Refreshments will be served following the program.

Attendance at these meetings is not limited to Power Group members, but is open to all interested parties.

American Federation of Information Processing Societies FALL JOINT COMPUTER CONFERENCE

Those dull, mind-numbing presentations and discussions which invariably find their way into technical meetings will find the going rough at the 1967 Fall Joint Computer Conference.

The organizers of the 1967 FJCC — to be held in Anaheim, California, November 14-16 — are sponsoring two innovations aimed at improving the oral presentations of papers and improving panels and discussion sessions.

The Technical Program Committee, reports Harry T. Larson, chairman, has arranged for Mr. Robert Perry, of the

Executive Committee Column WELCOME

The time is here to welcome you to the activities of the coming year.
Let me introduce the 1967-68 Executive Committee:

Chairman:	Bernard Meyer	532-2420; 677-2903
Vice Chairman:	Joseph O'Grady	761-5111
Treasurer:	Merle M. Irvine	386-4141
Secretary:	Herbert Blaicher	539-6111
Members-at-Large:	Robert Sokalski	627-6400, Ext. 232
	Carl Torell	624-7500
	Stephen Mallard	622-7000, Ext. 2117
Junior Past Chairman:		
Committees:		
Awards:	Wellesley Dodds	485-3900, Ext. 2027
Education:	Clifford Engstrom	622-7000, Ext. 2603
Group Coordinator:	John Vogler	992-7700
History and Procedures:	Morris Hooven	622-7000, Ext. 3448
Membership:	Maitland McLaren	887-7600
Nominations:	Walter Glomb	284-2930
Program:	Thomas Comerford	622-7000, Ext. 3679
Publications:	A. D'heedene	538-0632
Publicity:	Joseph Skroski	539-6111
Student Activities:	Prof. James Earle	645-5478
NJECSSG (Non Voting)		
Liaison:	A. G. Gabrielle	212 - 422-4800

M. M. Perugini (398-5524), Business Manager of Newsletter, is a regular, non-voting but essential, attendee.

Note: Area Code is 201 unless otherwise noted.

Chapter Chairmen:

G-7 Reliability	Prof. R. S. Misra	
G-16 Computer	Edward R. Byrne	386-2253
G-17 Microwave Theory & Techniques	Robert Pecine	582-3263
G-19 Communications Technology	Frank E. Willson	386-2118
G-23 Automatic Control	Jan A. Norton	386-2531
G-26 Engineering Writing & Speech	LaVerne Lee	
G-31 Power	Wally Hopkins	(Westinghouse)

With your help this dedicated and ingenious group will plan the activities for the coming year. We look forward to making this a banner year.

As an appetizer; For September, the Section is planning an outing to Freehold Raceway on Saturday the 23rd. If the turnout is big enough, we will get a race named after us. There will be another outing in October to visit the new Oyster Creek nuclear power station. Here's an opportunity to see a lot because it is almost ready for use.

Of course, the plans for the Annual Dinner and Dance are proceeding apace for February 1968. By the time you read this, we hope to have the restaurant selected and the speaker committed.

Also I shouldn't forget the fact that our Education Committee has lined up three courses for the coming year.

So with the active planning that your Executive Committee is doing, and your support by attending these events, we can look forward to an exciting, entertaining, and instructive year.

The Executive Committee meets the first Wednesday of the month at the Verona Public Library. Every IEEE Member may attend.

See you at the Executive Committee Meetings, and at the Section Meetings!
BERNIE MEYER

Hughes Aircraft Company, to work with FJCC authors to provide newly developed information to enable them "to design uniquely effective presentations which sustain audience interest, speed introduction of stimulating concepts, and build speaker stature."

The new look in professional meeting communications which the FJCC's pioneering effort may introduce is suggested by one topic in the presentation design course: it is "The Engineering of Acceptance."

Mr. Perry, who has extensive experience in developing presentations made by engineers and scientists at Hughes, will also review slides and other visual materials, and offer constructive suggestions for improvement when needed.

North Jersey Computer Officers for 1967-68

The Northern New Jersey Chapter of the Computer Group elected officers for the coming year (July 1, 1967 to June 30, 1968) at the June 13 meeting held at the Arnold Auditorium. The new officers are:

Chairman _____ Edward R. Byrne
Vice-Chairman _____ Louis M. Small
Secretary _____ Harry R. Clark

An Executive Committee composed of Mr. S. Biniewicz, Mr. V. Keder, Mr. J. Strole and Mr. R. R. Shively has been formed and is planning activities for this season. There will be more details in the October NNJ Newsletter.

North Jersey Reliability Chapter One Year Old

The North Jersey Reliability Chapter has successfully completed its first year under the Chairmanship of Dr. Raj P. Misra, Newark College of Engineering and is planning to continue to expand its activities in the coming year. Five programs were presented during the past season. On November 17, 1966, Mr. Edward Keonjian, Chief of Microelectronic and Circuit Design at Grumman Aircraft talked on "Microelectronics." On January 19, 1967, Mr. Edwin W. Kimball of the Martin Company discussed the "Effects of Dormancy and Storage on Electronic Parts."

On February 16, the Reliability Chapter was host for a joint section meeting with the Power and Student Chapters. Three speakers presented papers: Mr. Philip Eisenberg from Autonetics spoke on "Reliability Requirements and Analysis for Components Needed in Minuteman Type of Program," Mr. Robert Trent of the Cambridge NASA Research Center talked on "Component-Reliability and Standardization Philosophy of NASA," and Mr. Stuart Voorhees of Public Service Electric and Gas Company discussed "Power System Security — Continuous Computer Monitoring to Enhance Reliability."

April 13 found Mr. Herbert Wall of IBM speaking to the Chapter on "Computer Aided Electronic Circuit Reliability Analysis." The final meeting for the season was again a joint section meeting with Mr. Harry Holland, Manager of Quality Assurance, Union Carbide Corporation speaking about "Solid Tantalum Capacitors — Failure Mechanisms and Determination of Failure Rates."

Officers for the coming year are:

Chairman:

Dr. Raj P. Misra
Newark College of Engineering

Vice Chairman:

John H. Gerth
Bell Telephone Laboratories

Vice Chairman:

Edward F. Mallahan
Bendix Corporation

Secretary:

Jack Clayton
Aircraft Radio Corporation

Treasurer:

Donald Shaw
Picatinny Arsenal

Members-at-Large:

Dr. Emil C. Neu
Stevens Institute of Technology
Richard Jacobs
Westinghouse Electric Company
Richard N. Wenman
General Precision
Less M. Davidson
Bendix Corporation

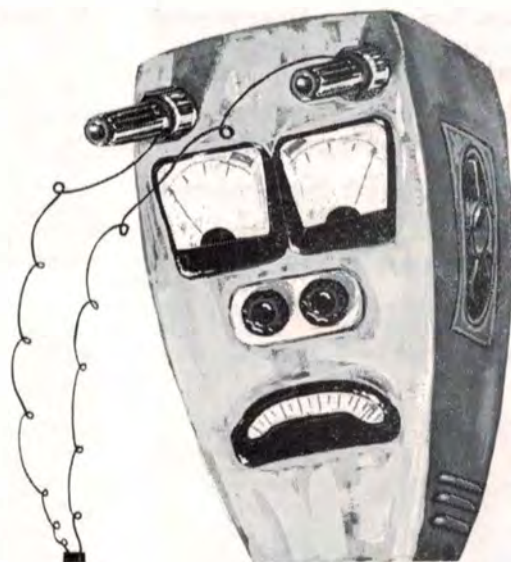
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Attendance at meetings for the past year has been good, ranging from a low of twenty-two to a high of fifty. Help us make the new year even more successful by attending the meetings and joining in on the discussions. Meetings are open to all. (See article on September meeting.)

New York ComTech

Transmission Problems in Computer Controlled Data Systems Lecture Series

Here is an opportunity to hear experts on data systems, both communicators and data processors, discuss the problems and different aspects of computer controlled data systems. A series of six lectures on "Transmission Problems in Computer Controlled Data Systems" will be presented by the Communications Technology Group, New York Section, IEEE, on Monday nights beginning October 16. These lectures will be held in the Little Theatre, New York Telephone Building, 140 West Street, New York City starting at 6:30 P.M.

The lectures are:

1. October 16, 1967 — Limitations on Time Sharing Systems — To be announced later.
2. October 23, 1967 — Limitations on Message Switching Systems — Mr. H. G. Schaffer — IBM.

3. October 30, 1967 — Interface Criteria with Communications Network—Mr. V. Dagostino — Digitronics Corporation.
4. November 13, 1967 — Interface Criteria with the Input—Output Devices — Mohawk Data Sciences, Inc.
5. November 20, 1967 — Problems in Wideband Data Transmission—Xerox.
6. November 27, 1967 — Problems in Voice Band Data Transmission and Summary — Mr. Pfunke — New York Telephone.

Send check, payable to "Communications Technology Group, New York Section, IEEE", c/o Mr. Paul Lenner, Room 1230, New York Telephone Company, 330 Madison Avenue, New York, New York 10017. Registration fees for the full series are: \$5.00 for IEEE members, \$8.00 for non-members, and \$1.00 for full-time students. Register early as audience size will be restricted to seventy. Tickets for attendees will be distributed at the first lecture.

Puzzle Corner

Answers to Puzzles in June Issue

1. House numbers.
 2. 16 base 16, 16 base 15, . . . , 16 base 2.
- If you have a favorite puzzle send it in and let others enjoy it.

D. WIENER
104 Falcon Road
Livingston, N. J. 07039

**Jt. Metro. Engineering Management
N. Y. Basic Sciences Committee
Newark College of Engineering**

**The Management of
New Developments
From Basic Sciences
Into Profitable
Products**

A one-day seminar on Thursday, September 7, 1967, 9:00 A.M. to 4:30 P.M. at Newark College of Engineering, Newark, N. J.



Jack A. Morton

Speakers

**"From Research
to Service"**

Jack A. Morton,
Vice-President,
Bell Telephone
Laboratories

**"Venture Activities
in the Large
Corporation"**
James Hillier,
Vice-President,
RCA Laboratories



James Hillier



R. H. Rines

**"Patents and the
Stimulation of
Innovation"**

Robert H. Rines,
Patent Attorney,
Boston,
Massachusetts

**"A Product Line . . .
for a Government-
oriented, R & D
Company"**
Kenneth J.
Germeshausen,
Chairman of
the Board,
E G & G, Inc.



**K. J.
Germeshausen**



J. H. Dessauer

**"Xerography:
A Single Idea
Transforms a
Company"**

John H. Dessauer,
Vice-President,
Xerox Corporation

Program

Every manager knows that equating a return on investment to an erudite, but undeveloped, idea is a real challenge to

his managerial skill. With today's emphasis on research, this challenge grows even greater.

Here, five experts on engineering management and research present and discuss their experiences in directing the results of research into profitable products. Associated with each speaker is a separate two-member, guest panel. The panels, together with the audience, will discuss each presentation.

Registration

Registration fee is \$20 for members of IEEE or other Engineers Joint Council societies. The fee for non-members is \$25. At-the-door registration adds an additional \$5 fee.

The fee includes luncheon and one copy of the Proceedings, to be issued at a later date. The Proceedings may be ordered separately for \$10.

Make checks payable to "IEEE Basic Sciences Committee" and remit to: J. J. Golembesky, Bell Telephone Laboratories, Room 2D-211, Murray Hill, N. J. 07971

**Liquid Laser Generates Energy
Equal to Million Watts**

A liquid laser the size of a thick pencil was demonstrated recently that is capable of producing a burst of energy equivalent to one million watts in a fraction of a second.

Only 15.2 cm (six inches) long, the General Telephone and Electronics Laboratories' laser emits a power pulse equaling that generated simultaneously by 10,000 100-watt lamps. It is more economical than solid-state lasers and comparable in performance. The radiation emitted by the pulse-type liquid laser occurs at a wavelength of 1.06 micrometers. Since this is in the infrared region of the electromagnetic spectrum, the radiation from the laser is invisible.

The GT&E laser utilizes an active medium formed by dissolving neodymium, a rare earth, in selenium oxychloride, an inorganic compound. An external flash tube is used to activate the medium. The pumping energy required is similar to that needed for a solid-state or glass laser of comparable size.

The following meetings are planned for the coming year.

*November 8, 1967

Damming the Long Island Sound
December 12, 1967

Programmed Design Engineering
Concept of Manufacturing
Automation

February 20, 1968

The All Electric
Commercial Building

March 19, 1968

New Trends in Elevator Engineering
April 23, 1968

The Electric Car

* Joint meeting with New York Academy
of Science.

1. All meetings will be held at 6:30 P.M.
2. The March 19, 1968 program will include nominations for the Executive Committee.
3. The April 23, 1968 program will include election of the Executive Committee.



C. B. Burckhardt

**Jt. Metropolitan Electron Devices
Principles and Applications
of Holography**

Presented by:

C. B. Burckhardt
Bell Telephone Laboratories, Inc.
Murray Hill, New Jersey 07971

Date and Time:

Thursday, September 28, 1967
at 8:00 P.M.

Place:

General Telephone and
Electronics Labs
208-20 Willets Point Boulevard
Bayside, Long Island, N. Y.

Pre-Meeting Dinner:

Kam-Fong Restaurant (6:00 P.M.)
19-11 Francis Lewis Boulevard
(near Willets Point Boulevard)
Whitestone, Long Island, New York

Abstract:

Holography is the science (or art) of recording the amplitude and phase of a light wave. This tutorial talk will cover the following topics: Principles of hologram formation and reconstruction, properties of the thick emulsion and formation of color holograms, some practical aspects of hologram formation. Fourier transform property of a lens and spatial filtering, applications of holography.

Biography:

C. B. Burckhardt obtained the degree of Dr.sc. techn. from the Swiss Federal Institute of Technology in 1963. He has been with Bell Telephone Laboratories since then. Until the end of 1964 he was engaged in the analysis of varactor multipliers and the large signal behavior of parametric amplifiers. Since then he has been working on various aspects of holography such as properties of thick holograms, storage capacity of optically formed filters, white-light reconstruction and information reduction in holograms and has published several papers on these subjects. C. B. Burckhardt is a member of IEEE and of the Optical Society of America.

The dates of future meetings are as follows:

November 16 at IT&T
January 11 at GT&E
February 29 at IT&T
April 11 at GT&E
May 16 at UEC

**Technical Discussion
Group Meeting**

Subject: Insulated Conductors
Date: Tuesday, October 10, 1967
Time: 6:30 P.M. to 8:30 P.M.
Location: Union Carbide Building
270 Park Avenue
3rd Floor Meeting Room
New York, N. Y.

Jt. Metropolitan GAES Field Trip

The September Meeting of the New York Metropolitan Chapter of the Group on Aerospace and Electronics Systems will be a tour of the Grumman Aircraft Engineering Corporation facilities at Bethpage, Long Island, New York.

Date:

Friday, September 29, 1967

Time:

9:30 A.M.

Place:

Grumman Aircraft
Engineering Corporation
South Oyster Bay Road
Bethpage, Long Island, New York

Tour Schedule:

1. Lunar Module (LM) Facility (Formerly known as LEM)
 - a) Final LM Assembly and checkout
 - b) Automatic Checkout Equipment (ACE)
 - c) Data Reduction Center
 - d) Cold Flow Facility
2. Systems Center
 - a) Electronic Support Systems
 - b) RF Anachroic Chamber
 - c) Aircraft Simulator Test System
 - d) F111B Support Systems Test Stations
3. SACE (Semi-Automatic Checkout Equipment)
 - a) Demonstration of SACE final checkout
 - b) SACE — stands for Semi-Automatic Checkout Equipment which Grumman builds for Navy use for intermediate level testing of E2A, A6A, F111B, etc. It is used to check selected electronic systems in these aircrafts, usually at carrier level.

There will be a lunch break at 12:00 Noon. The tour is expected to end at 4:00 P.M.

As attendance is limited, reservations for the tour will be required. Please call or send a post card to:

IRVING M. MELTZER
General Precision — Aerospace
150 Totowa Road
Wayne, New Jersey 07470
Dept. 5344, Ext. 829

Joint Metropolitan Instrumentation & Measurement Field Trip

In addition to the GIM tour of the facilities at Grumman by the Aerospace and Electronics Systems Group, the Joint Chapter on Instrumentation and Measurements will have an evening tour of the LM facilities on Monday, Oct. 23, 1967. Only citizens may attend. For additional information prior to next months complete announcement contact:

HOWARD JACKSON
General Instrument
100 Andrews Road
Hicksville, N. Y. 11802
516 - 681-4300

North Jersey MTT N. Y. Aerospace and Electronics Microwave Radiometry

Microwave Radiometry may be called Passive Radar. It may be used in all weather because it uses the millimeter wave region of the electromagnetic spectrum and most important it is a passive device. As the state of the art receivers has improved, the applications for Radiometry have grown. Microwave Radiometric Equipment has been developed for a variety of purposes: Astronomy, terminal guidance, military acquisition, target discrimination, navigation, and reconnaissance.

Date:

Thursday, October 19, 1967

Time:

8:00 P.M.

Place:

General Precision Inc.
150 Totowa Road
Wayne, New Jersey
(Turn North from Route 46 at exit between Topps and Two Guys. One mile — then right at Golf Course on Totowa Road, 2/10 miles to 150 Totowa Road)

Speaker:

Myron M. Rosenthal
(Radiometric Section Head)
General Precision Inc.
Kearfott Systems Division
Wayne, New Jersey

Pre-Meeting Dinner:

Pomptonian Restaurant
Cedar Grove, New Jersey
Route 23, 2 miles South of Route 46

Time:

6:30 P.M.

Biographical Note:

Mr. Rosenthal received his BEE from CCNY and a MS in Math from Adelphi College. He is an Engineering Section Head in the Systems Research Department of General Precision Inc. He has taught courses at Polytechnic Institute of Brooklyn for the past 13 years. He is Secretary of the GAES Metropolitan Chapter of the IEEE. He received the 1967 "Best Presentation Award" at the National Aerospace and Electronics Conference.

New York ComTech

Fall Lectures

Three different series of lectures are planned for the Fall of 1967.

The Study Group Committee has prepared the lecture series on data systems, described in detail in a separate article.

The Education Committee of the Communication Technology Group, New York Section, IEEE, is sponsoring a new series of lectures, "Integrated Circuits" and because of popular demand, a repetition of last year's very successful lectures on "Switching Systems and Their Application." Starting dates, location, cost and speakers will be given as soon as they are available.

Power & Industrial Division PATH Tractive Power System

Conversion to Static Rectifiers

1. PATH — Its Antiquated Power System and Conversion to Static Rectifiers

Speaker: Mr. Henry W. Wenson, Jr., Consulting Engineer (Retired Chief Electrical Engineer, Port of New York Authority)

Slides and discussion of PATH, its antiquated tractive power system, studies undertaken to improve it, and its conversion to silicone rectifiers.

2. D.C. Switchgear and Control

Speaker: Mr. Daniel L. Goldberg, Chief Electrical Engineer, Port of New York Authority

Slides and discussion of the D.C. switchgear in PATH's Substations and their control.

3. Design and Manufacture of Static Rectifiers

Speaker: Mr. William B. Plasket, Specialist Diode Equipment, General Electric Static Power Conversion Section Switchgear Department, Philadelphia, Penn.

Slides and discussion of design and manufacturing problem of static rectifiers.

Moderator:

R. A. Keeler, R. A. Keeler Associates

BACKGROUND

Henry W. Wenson, Jr.

Graduated Cooper Union Engineering School, BEE, 1939. Chief Electrical Engineer of Port Authority. Has been with P.A. seventeen years. Member of IEEE, IES, AIEI, etc. (numerous associations). Now Consulting Engineer (P.E.). Chief Electrical Engineer of P.A. on following Projects:

- a. Third Tube of Lincoln Tunnel
- b. Second Deck of George Washington Bridge
- c. Terminal City and International Arrivals Building at Kennedy International Airport
- d. Start of Newark Airport Rehabilitation
- e. PATH Rehabilitation

Daniel L. Goldberg

Graduated Bachelors and Masters from Newark College of Engineering (1949 and 1951 respectively). P.E. and spent three years working in test department of General Electric Co., Bloomfield, New Jersey. He has been with P.A. eighteen years. Last assignment for five years was as head of an electrical section performing major electrical rehabilitation throughout the P.A. Current assignment is Chief Electrical Engineer of the Port Authority.



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