Saturday, February 17, 1968 — 6:00 P. M.

ANNUAL BANQUET AND DANCE

Robert Treat Hotel  Newark, N. J.

See Page 2

The IEEE Newsletter
The Magazine of the North Jersey Section

Valentine's Day February 14
EXECUTIVE COMMITTEE COLUMN
Nominations and Appointments for Institute Activities

A major function of the executive committee of the North Jersey Section is the nominations function. Its immediate objective is to provide the continuity of direction that strengthens the section leadership and contributes to its growth. However, this is not the major portion of the nominations committee task; a much more important duty of the committee is the execution of the responsibility of the section to support and contribute to leadership at the Institute level. The North Jersey Section with its membership structure, has a unique responsibility to support headquarters staff with key committeemen and officers. This responsibility derives from the section size and its composition. Being the third largest section in the world implies an obvious noblest obligation. Furthermore, its professional composition, including as it does, BTL, RCA, GE, Westinghouse, ITT, Public Service and others, provides an impressive source of leadership from which to draw.

It is to this latter responsibility that the nomination committee addresses itself at this time. The search for competent and willing nominees for international offices and appointments must start at the membership. Your committee is now preparing nominations for the 1969 year and solicits recommendations. The opportunities range from membership on technical and administrative committees to the president of the Institute. Typical nominations cover, Group activities both administrative and technical; Financial, Sections, Editorial and Nomination Committees of the Institute as well as Regional offices and committees. A more complete list can be found in the Spectrum.

Many of you know of outstanding engineers who can contribute of their skills to the Institute and who heretofore have not had this opportunity. Your suggestions are requested. Please indicate name and proposed activity of any member who wishes to participate to the nominating committee.

W. L. GLOMB
ITT Defense Communications Division
492 River Road
Nutley, New Jersey 07110

ANNUAL DINNER DANCE
HONORING NEW FELLOWS

The North Jersey Section Annual Dinner Dance and Reception honoring the newly elected Fellows of the Section will take place on Saturday, February 17, 1968, at 6:00 P.M., in the Georgian Room of the Robert Treat Hotel, 50 Park Place, Newark, New Jersey.

This year, unlike previous years, the dinner will be preceded by a cocktail hour and reception. The price of the dinner includes cocktails and a full course prime rib dinner. Following the presentation of the awards, there will be dancing until 1:00 A.M. Adequate parking is available at several nearby locations.

THE LADIES ARE INVITED!

This year, the North Jersey Section is singularly honored to have as the guest speaker, Major General William B. Latta, commander of the United States Army Electronics Command at Fort Monmouth, New Jersey. Major General Latta will speak on the subject, "Fort Monmouth — Highlights of a Half-Century."

For reservations, write, enclosing a stamped, self-addressed envelope, to

MR. J. G. O'GRADY
Public Service Electric and Gas Company
200 Boyden Avenue
Maplewood, New Jersey 07040
(Phone: (201) 621-6800, Ext. 57-702)

Please forward tickets at $9.75 each to

Name ____________________________________________
Street ____________________________________________
Town ____________________________________________ State ______ Zip ______

NORTH JERSEY COMPUTER
ILLIAC IV

Hardware Organization (Part 1) and Applications (Part 2)

Speakers:
David J. Rachofsky (Part 1)
John Seward (Part 2)
Burroughs Corporation
Paoli, Pennsylvania

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

Date:
Thursday, February 8, 1968

Time:
8:00 P.M.

Pre-meeting Dinner:
6:00 P.M. at Wally's-Tavern-on-the-Hill
Watchung, N. J.

The impending era of LSI (Large Scale Integration) promises to make logic gates — the building blocks of electronic computers — extremely inexpensive. Emphasis in central processor design will shift from minimization of the number of gates to finding new organizations which provide expanded computing capacity. ILLIAC IV, conceived by Prof. D. L. Slotnick of the University of Illinois and being constructed at Burroughs, is a pioneering effort in this direction with a planned 256 parallel arithmetic units.

Part 1 will deal with functions and organization of the ILLIAC IV hardware, including Processor Element, Processor Element Memory, Control Unit, and the I/O system which includes a B6500 fixed head disc, the I/O Controller, and the Switch.

Part 2 will deal with a number of problems analyzed and programmed for the new organization, including matrix inversion, linear programming, Eulerian flow, a circulation model for the earth’s atmosphere, and signal processing. Timing simulation results and use of the machine on sample problems will be illustrated.

Mr. Rachofsky received the B.S. in Electrical Engineering from the Massachusetts Institute of Technology in 1958 and has worked in the field of design and application of data processing equipment since graduation. He is the Project Manager responsible for Processing Unit and I/O design of ILLIAC IV. His previous projects have included: a real time signal correlator, development and system application of an airborne alphanumeric display system including the general purpose D84 Computer, and a one-million component 7me data processor.

Mr. Seward holds a B.S. in mathematics from the University of Reading (England) and received an M.S. in applied mathematics from Harvard in 1960. He is a Senior Mathematician of the Advanced Development Department and is presently assigned to the ILLIAC IV group to work on application. Before joining Burroughs in 1960, he was a member of the Staff of the Harvard Computation Laboratory.
STUDENT NEWS

Stevens Institute of Technology

The General Electric Co. has invited the student branch of the IEEE to tour their High Voltage production facilities in Philadelphia, Pa.

Date and time to be announced on Campus IEEE bulletin board.

On Dec. 20, 1967 forty four members of the Stevens Institute of Technology student branch of the IEEE were bussed by IBM to their Fishkill, N. Y. components plant where they observed the production of IBM's SLT logic substrate. The group was impressed with the use of an IBM 1401 computer in the quality assurance monitoring of the devices built onto the substrates.

The trip was arranged by Professor Stanley Smith. The tour was conducted by Professor Harry W. Phair.

CALENDAR

Thursday, February 8

JOINT METROPOLITAN — ENGINEERING MANAGEMENT

8:00 P.M. — "Are Engineers Properly Trained to Enter the Engineering Profession" — Panel Discussion at Island Inn Motel, Old County Road, Westbury, Long Island.

NORTH JERSEY COMPUTER

8:00 P.M. — ILLIAC 4, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J.

Wednesday, February 14

NEW YORK — POWER AND INDUSTRIAL

6:30 P.M. — "The All Electric Commercial Building" Round Table Meeting moderated by Vic Buick of Pope, Evans & Robbins at General Electric Company Auditorium, 570 Lexington Avenue, New York, N. Y.

WESTCHESTER-ROCKLAND SUB-SECTION — EDUCATION

8:00 P.M. — Computer Assisted Instruction at IBM — J. J. Watson Research Center, Yorktown Heights, New York.

Thursday, February 15

N. Y. SECTION AND COMPUTER GROUP

7:45 P.M. — Turning Points in Computer Design at Burroughs Corp., 605 Third Avenue (40th St.), New York.

Saturday, February 17

NORTH JERSEY SECTION ANNUAL DINNER DANCE AND RECEPTION

6:00 P.M. - 1:00 A.M. — The Georgian Room, Robert Treat Hotel, 50 Park Place, Newark, New Jersey.

Wednesday, February 21

PRINCETON MAGNETICS

6:00 P.M. — BORAM (Block Oriented Random Access Memory) at Murray Hall, Room 120, Rutgers University, New Brunswick, N. J.

NORTH JERSEY SECTION STUDY GROUP

7:00 P.M. — Fundamental Concepts and Design Systems at Jersey Central

Sunday, February 25

NORTH JERSEY RELIABILITY

8:00 P.M. — Reliability and failure analysis of MOS circuits.

Tuesday, February 27

NEW YORK POWER AND INDUSTRIAL DIVISION

12:30 P.M. — Thomas & Betts Plant Tour at 36 Butler Street, Elizabeth, New Jersey.

JOINT METROPOLITAN INSTRUMENTATION AND MEASUREMENT

9:00 A.M. — A one day seminar on modern D.C. radiometric instrumentation and technique—Western Union Auditorium, 60 Hudson Street, New York, N. Y.

Wednesday, March 6

JOINT METROPOLITAN INSTRUMENTATION AND MEASUREMENT

7:00 P.M. — Western Union Auditorium, 160 West Broadway, New York, N. Y.

First of seven lectures on standards of electrical measurements.
NORTH JERSEY RELIABILITY
Reliability and Failure Analysis of MOS Circuits

Time: February 25th — 8:00 P.M.
Place: Kearfott Systems Division
Aerospace Group
Plant #10 Auditorium
General Precision Systems Inc.
150 Totowa Road
Wayne, New Jersey

Speaker: John Cocking, Mgr. of Quality Assurance

New York Power and Industrial Division
Thomas & Betts Plant Tour
The New York Power and Industrial Division has arranged a tour of the Thomas & Betts plant in Elizabeth on Tuesday, February 27, 1968. In addition to the tour a buffet lunch, compliments of the Thomas & Betts Company, will be provided.

The details are as follows:
Date: February 27, 1968

PROFESSIONAL GROUP OFFICERS

Automatic Control (G-23)

Chairman
Dr. J. A. Norton
Bell Telephone Labs.
Whippny, N. J. 07981
Tel: 386-3000
33 Skyline Drive
Morristown, N. J.
Tel: 539-7248

Secretary
Myron Rosenthal
General Precision Laboratory
Wayne, N. J.
Tel: 201 - 256-4000

Treasurer
Harold Rosenberg
General Precision Laboratory
Pleasantville, N. Y.
Tel: 914 - 9 RO 9-5000

Program Chairman
Irving Meltzer
General Precision Laboratory
Wayne, N. J.
Tel: 201 - 256-4000

Aerospace and Electronic Systems (G-10)

Chairman
J. Lane Ware
ITT Federal Laboratories
Nutley, N. J.
Tel: 201 - 284-3781

Vice Chairman
Bob Nyeberg
Aircraft Radio Corp.
Boonton, N. J.
Tel: 201 - 334-1800

Secretary
R. Colen
Hewlett Packard Co.
100 Locust Avenue
Berkeley Heights, N. J. 07922
Tel: 201 - 464-1234

Treasurer
S. Kramer
General Instrument Corp.
240 Wythe Avenue
Brooklyn, N. Y. 11211
Tel: 212 - 388-6416

Vehicular Communications (G-6)

Chairman
R. G. Buck
American Telephone and Telegraph Room 1710
195 Broadway
New York, N. Y. 1007
Tel: 212 - 393-3029

Vice Chairman
Alex V. Mitchell
Amperex Electronics
230 Duffy Avenue
Hicksville, L. I., N. Y. 11802
Tel: 516 - 931-6200

Secretary-Treasurer
G. W. Walton
Motorola C & E Inc.
15-00 Pollitt Drive
Fair Lawn, N. J. 07410
Tel: 201 - SW 1-1700

Electromagnetic Compatibility (G-27)

Chairman
Mervin First
R. F. Interonics
100 Pine Street
Baysire, L. I., N. Y.
Tel: 516 - 231-6400

Vice Chairman
Herbert Bostrom
Metex Electronics
Walnut Avenue
Clark, N. J. 07066
Tel: 201 - 381-7272

Secretary
Robert Hassett
Fairchild Space & Defense
300 Robbins Lane
Syosset, L. I., N. Y. 11791
Tel: 516 - WE 1-4500
EDUCATIONAL PROGRAM — SPRING 1968

Power and Industrial Div.

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)


MONDAYS, Starting Feb. 5, 1968, 6:15-8:30 P.M., 18 Sessions
North Cafeteria, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

ENGINEERING ECONOMICS AND PRACTICE (IEEE-ASME)

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

TUESDAYS, Starting Feb. 6, 1968, 6:30-8:30 P.M., 18 Sessions
Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

MECHANICAL ENGINEERING (ASME)

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, 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 Feb. 7, 1968, 6:30-8:30 P.M., 19 Sessions
Rm. 240, Ebasco Bldg., 2 Rector St., N. Y. C.

ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)


WEDNESDAYS, Starting Feb. 7, 1968, 6:30-8:45 P.M., 18 Sessions
Rm. 1427, Con Edison Co., 4 Irving Place, N. Y. C.

BASIC ENGINEERING SCIENCES (ASME-IEEE)


THURSDAYS, Starting Feb. 1, 1968, 6:30-8:30 P.M., 19 Sessions
North Cafeteria, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

REGISTRATION INFORMATION

FEES: For all courses except course No. 17 and 23:
$20 — to members of IEE, A.S.M.E., I.E.S., NYSSPE
$30 — to all others.

For course No. 17: $25 — to members.
$30 — to members.
$40 — to all others.

For advanced registration, except in Courses No. 17, 20 and 22 (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 course No. 17 make checks or money orders payable to:
"I.E.S. NEW YORK SECTION"
and mail to: D. L. Barnwell, Educational Chairman, I.E.S., PATH, Room 200, 265 West 14th St., New York, N. Y. 10011, Tel. (212) 620-7759.

For course No. 18, 19, 21 and 23 make checks or money orders payable to:
"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 course No. 20 and 22 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.

(Registration Forms on Back Page)
COURSE NO. 12

SYSTEM STABILITY

MONDAYS, 6:30 to 8:30 p.m.; Starting March 4, 1968
Ebasco Auditorium, 2 Rector Street, New York, New York
Course Coordinator: EMERY FABRI
Consolidated Edison Co.
Tel. (212) 460-6172

1. March 4 Introduction & Synchronous Machines
Review of direct and quadrature axis reactances and time constants and per unit system.
Speaker: G. LOEHR, Consolidated Edison Co.

Equivalent T and Pi, Phasor equations for power, circle diagram of transmission line.
Speaker: G. LOEHR, Consolidated Edison Co.

3. March 18 Transmission of Power — Part II
Control of megawatt and megavar flow.
Speaker: G. LOEHR, Consolidated Edison Co.

Phasor diagrams and equivalent circuit of generator and motor determination of steady state limit curve.
Speaker: J. OLIVER, Amer. Electric Power

5. April 1 Introduction to Steady State Stability
Single machine system, transmission system, operating connections.
Speaker: L. BRIEGER, Consolidated Edison Co.

6. April 8 The Swing Equation
Inertia, electromagnetic and shaft torque, swing curves, stored energy of large steam turbogenerators.
Speaker: H. Y. TSIEH, Public Serv. Elec. & Gas

7. April 15 Solution of the Swing Equation
Step by step swing curve calculations.
Speaker: H. Y. TSIEH, Public Serv. Elec. & Gas

8. April 22 Equal Area Criterion
Critical angle, discontinuity in the accelerating power, reclosing breakers.
Speaker: L. BRIEGER, Consolidated Edison Co.

9. April 29 Multimachine Stability and Stability Digital Computer Programs
Speaker: L. BRIEGER, Consolidated Edison Co.

10. May 6 Overall System Design
System design for stability with regards to transmission lines, generators, loads, shunt capacitors, frequency changes, system interconnections, etc.
Speaker: W. WOOD, Public Service Elec. & Gas

COURSE NO. 13

APPLICATION AND DESIGN OF PEAKING UNITS

TUESDAYS, 6:30 to 8:30 p.m.; Starting March 5, 1968
Brooklyn Union Gas Co. Auditorium, 195 Montague Street, Brooklyn, New York
Course Coordinator: JOHN TAMBASCO
Eastern Division F.E.C.
Tel. (212) 264-7367

Application of low cost packaged gas turbine and diesel units for peaking, area protection and power station cranking service has expanded tremendously over the past 10 years. Hydro and pumped storage peaking where available has also expanded. This course is aimed at providing an up-dated picture of the peaking art in theory and application.

1. March 5 System Peaking Problem
Economic evaluation and justification of peaking capacity, model studies.
Speaker: From Westinghouse

2. March 12 Steam Unit Approach
Steam unit applications — base load; peak load and spinning reserve requirements.
Speaker: R. R. BENNETT, Ebasco Services Inc.

3. March 19 Hydro Peaking
Pumped storage plants and applications.
Speaker: From Allis-Chalmers

4. March 26 Diesel Plant Applications
Design characteristics, economics, typical installations.
Speaker: J. G. CRONIN, Electro-Motive Div., General Motors

5. April 2 Gas Turbine Plant Applications
System requirements and economics.
Speaker: From General Electric

6. April 9 Gas Turbine Plant Design — Part I
General Electric Co. plant concepts.
Speaker: From General Electric

7. April 16 Gas Turbine Plant Design — Part II
Westinghouse plant concepts.
Speaker: From Westinghouse

8. April 23 Gas Turbine Plant Design — Part III
Worthington plant concepts.
Speaker: From Worthington

9. April 30 Gas Turbine Plant Design — Part IV
Pratt & Whitney plant concepts.
Speaker: From Pratt & Whitney

10. May 7 Future Peaking Plant Development
Peaking requirements and types at peaking plant amid nuclear base load units.
Speaker: From Westinghouse
COURSES ARE OPEN TO THE PUBLIC

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### COURSE NO. 14

**INTRODUCTION TO COMPUTERS AND PROGRAMMING**

**WEDNESDAYS, 6:30 to 8:30 p.m.; Starting Mar. 6, 1968**

Consolidated Edison Co., Rm. 1701-3, 4 Irving Place, New York, New York

Course Coordinator: **VINCENT DE VINCENZO**
Consolidated Edison Co.
Tel. (212) 460-6162

This course covers two computer languages, numerical methods, and computer programs and techniques available for engineering solving. Future hardware and techniques will also be discussed.

1. **March 6 Computer Systems**
   - Basic computer hardware and their functions, numbering systems.
   - **Speaker:** From General Electric Co.

2. **March 13 Computer Language — Part I**
   - Flow diagrams, programming in BASIC and FORTRAN.
   - **Speaker:** From General Electric Co.

3. **March 20 Computer Language — Part II**
   - Programming in BASIC and FORTRAN.
   - **Speaker:** From General Electric Co.

4. **March 27 Engineering Problems**
   - Critical Path Scheduling, design calculations, economic evaluations, heat losses.
   - **Speaker:** J. A. Salin, Ebasco Services

5. **April 3 Matrix Theory**
   - Definitions, Matrix addition, subtraction, and multiplication with computers.
   - **Speaker:** From General Electric Co.

6. **April 10 Power System Studies**
   - Load flow, stability and short circuit studies.
   - **Speaker:** From General Electric Co.

7. **April 17 Distribution System Studies**
   - Economic design of distribution systems.
   - **Speaker:** M. W. Gangel, General Electric Co.

8. **April 24 Engineering Data Banks**
   - Storage of data for engineering planning, designing, pricing, construction, operating, maintaining and accounting.
   - **Speaker:** Don Lyle, Ebasco Services

9. **May 1 Digital Control**
   - Event logging load frequency control, load dispatching, time sharing performance calculations.
   - **Speaker:** I. E. Campbell, General Electric Co.

10. **May 8 Graphics**
    - Description of latest hardware and software advances in graphic display area.
    - **Speaker:** From IBM

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### COURSE NO. 15

**NEW DEVELOPMENTS IN POWER ENGINEERING**

**THURSDAYS, 6:30 to 8:30 p.m.; Starting Mar. 7, 1968**

Consolidated Edison Co., Rm. 1701, 4 Irving Place, New York, New York

Course Coordinator: **VINOD KOTICHA**
Consolidated Edison Co.
Tel. (212) 460-6293

The course provides a comprehensive survey of the new developments in the power engineering in both Europe and the United States.

1. **March 7 Nuclear Power**
   - Present and future outlook with special emphasis on economy and Breeder Reactor Developments in the United States.
   - **Speaker:** From Westinghouse

2. **March 14 Nuclear Power**
   - History and the present state of Nuclear Power Generation Developments in Europe.
   - **Speaker:** AKB MOLINB, ASEA Electric, Vasteras, Sweden

3. **March 21 New Developments in ERV**
   - 500 KV, 750 KV and 1150 KV Substation and Transmission.
   - **Speaker:** From English Electric, England

4. **March 28 High Voltage Direct Current**
   - Transmission Systems and recent developments in HVDC.
   - **Speaker:** Olson Bergland, ASEA Electric, Sweden

5. **April 4 Underground Cable Developments**
   - Special emphasis on EHV underground transmission and distribution.
   - **Speaker:** Dr. R. Burrell, Con Edison, New York

6. **April 11 Underground Residential Distribution**
   - New developments in URD and Transmission.
   - **Speaker:** From General Electric Co.

7. **April 18 Magnetohydrodynamics**
   - Background and the present state of technology in MHD.
   - **Speaker:** Dr. J. Teno, AVCO, Everett Research, Mass.

8. **April 25 Electrogasdynamic Power Generation**
   - **Speaker:** Meredith Gourchine, Gourchine Systems Inc., Livingston, N. J.

9. **May 2 Cryogenics**
   - **Speaker:** Dr. H. M. Long, Linde Products, Division of Union Carbide, Tonawanda, N. Y.

10. **May 9 Engineering Aspects of Fluidics**
    - **Speaker:** From Automatic Switch Co., N. J.

11. **May 16 Super Batteries and Electric Vehicles**
    - New developments in electric storage systems.
    - **Speaker:** Robert Aronson, Electric Fuel Propulsion, Inc., Ferndale, Michigan

12. **May 23 The Art of Pollution Control**
    - Developments in pollution control and outlook.
    - **Speakers:** R. G. Ramedell, O. G. Hanson, Consolidated Edison Co. of New York
COURSE NO. 16 — FACILITIES ELECTRICAL DESIGN

This will be a 20 session course in Facilities Electrical Design for Industrial, Commercial and Governmental Applications. The course will be oriented toward the man with engineering school background and about five years of design experience. In addition to lectures on voltage problems, equipment selection, fault currents and distribution methods, there will be an emphasis on System Planning and the Coordination problems between the Electrical Design group and the other design groups involved in the design of the whole facility. Examples of specific facilities, such as industrial plants (and perhaps a hospital or shopping center) will be offered. Homework assignments will be assessed by both students and instructors. Each lecturer will present 10 sessions.

THURSDAYS, Starting Feb. 1, 1968, 6:30-8:30 P. M., 20 Sessions
General Electric Auditorium, 370 Lexington Ave. (51st St.), N. Y. C.

COURSE COORDINATOR: HARRY JOHNSON, Automatic Switch Co.,
Tel: (212) 414 9765

Instructors: C. Goldstein, P.E., Walter Kidde Construction
and H. Wolcott, M.E., Naval Facilities Engineering Command

COURSE NO. 17
FUNDAMENTALS OF LIGHTING

THURSDAYS, 7:00-9:00 p.m.; Starting February 1, 1968
Holophane Light & Vision Institute, 1120 Ave. of Americas,
13th Floor, New York, N. Y. (Entrance: West 43rd St.)
Course Coordinator: D. L. BARNWELL
The Port of N. Y. Authority
Tel: (212) 620-7759

A basic course covering the important fundamentals, problems, and techniques of the various lighting fields. Special attention is given to current problems and trends. All subjects will be discussed from the practical standpoint of the contractor, engineer or designer in the field.

1. February 1 Science of Lighting
   Speaker: E. Berger, Holophane Co.

2. February 8 Lighting Fundamentals
   Speaker: E. Berger, Holophane Co.

3. February 15 Light Sources
   Speaker: B. V. McLean, General Electric Co.

4. February 29 Control of Light
   Speaker: C. W. Clarkson, Corning Glass

5. March 7 Lighting Design
   Speaker: Irving Fishman, Wald & Zigas

6. March 14 Circuit Design
   Speaker: Irving Fishman, Wald & Zigas

7. March 21 Current Concepts of Office and Store Lighting
   Speaker: Jules Horton, Syka & Hennessy, Inc.

8. March 28 Industrial Lighting and Economics of Lighting Installations
   Speaker: Donald Rowan, Holophane Co.

9. April 4 Outdoor Lighting
   Speaker: W. C. Clement, Westinghouse Electric

10. April 11 "Heat with Light"
    Speaker: Donald Thomas, Sylvania Electric

ADVANCE-REGISTRATION FORM

Name (printed)____________________Position____________________
Firm____________________Business Address____________________
Home Address____________________Phone No.____________________
Course No. & Study Group____________________
Member of:
☐ IEEE
☐ ASME
☐ OTHER
☐ NON-MEMBER
(Do Not Write In This Space)
Admission Card No.____________________Refund Certificate No.____________________
Fee Paid $________ (Cash, Check, M.O.)____________________
Date____________________By____________________

COURSE NO. 23
SPEED READING FOR ENGINEERS

THURSDAYS, 6:30-8:30 p.m.; Starting March 7, 1968
Room 503, Con Edison Co., 4 Irving Place, N. Y. C.
Instructor: E. E. Coing, Assistant to Director of Educational Work,
Public Service Electric & Gas Co. Former member of
NYU School of Commerce faculty. Has over 30 years
experience teaching courses for business and industry.

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

1. March 7 Introduction to Speeded Reading
2. March 14 The First Step
3. March 21 Mechanics of Reading
4. March 28 Paragraph Patterns and Functions
5. April 4 Adjusting Rate
6. April 11 Article Patterns
7. April 18 Article Patterns
8. April 25 Summarizing
9. May 2 Broadening Horizons
10. May 9 Evaluation and Planning for Continued Improvement

ADVANCE-REGISTRATION FORM

Name (printed)____________________Position____________________
Firm____________________Business Address____________________
Home Address____________________Phone No.____________________
Course No. & Study Group____________________
Member of:
☐ IEEE
☐ ASME
☐ OTHER
☐ NON-MEMBER
(Do Not Write In This Space)
Admission Card No.____________________Refund Certificate No.____________________
Fee Paid $________ (Cash, Check, M.O.)____________________
Date____________________By____________________
NORTH JERSEY SECTION  
Study Group  
Spring, 1968  
8 Sessions

Electrical Underground Residential Distribution

Sessions will cover various design, installation and operating criteria.

Feb. 21 — Fundamental Concepts and System Design
Evolution of URD—plat layout analysis—Primary system design — Transformer and secondary system design.

Feb. 28 — Cable Design and Application
Primary, secondary and service cable designs for direct burial, duct, and cable in conduit systems — Cable construction, standards and tests — Cable ampacity.

March 6 — Terminations and Splicing
Design theory — Dielectric stresses, Environmental factors, Application Engineering — Terminal devices, splice devices.

March 13 — Transformer Design and Application

March 20 — System Sectionalizing and Protection
Sectionalizing equipment — types and designs available, manual and automatic schemes. Protective equipment — overcurrent and lightning.

March 27 — Installation Practices, Operation and Maintenance

April 3 — High Rise Apartment Distribution Systems (Vertical URD Systems)
System layout, Equipment available, Grounding, System Protection and coordination.

April 10 — Three Phase Commercial and High Density Garden Apartments
Primary System Design — Sectionalizing and overcurrent protection — Ferroresonance — Transformer and secondary system design — Equipment types and designs.

Time ........ 7:00 P.M. to 9:00 P.M. — Wednesday Evenings — Feb. 21 to April 10, 1967.

Location ........ Punchbowl Room, Jersey Central Power and Light Company, Madison Avenue at Punchbowl Road, Morristown, New Jersey.

Fee ........ $25.00 to members (I.E.E.E., ASME, etc.); $35.00 to non-members. $5.00 discount for early registrations.

Registration will be limited to 75.

Send Registration Forms To: MO. E. WATSON  
Jersey Central Power & Light Co.  
Madison Avenue at Punchbowl Road  
Morristown, New Jersey  
Phone: 539-6111, Extension 417

REGISTRATION FORM — U.R.D.

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

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

Check Enclosed Member: $20.00 ....; $25.00 after Feb. 14 ....

Non-Member: $30.00 ....; $35.00 after Feb. 14 ....

Please make checks payable to: North Jersey Section, I.E.E.E.
Westchester-Rockland Sub-Section
Computer Assisted Instruction

The February meeting of the Westchester-Rockland Subsection will feature a talk on "Computer Assisted Instruction" by Dr. E. N. Adams, Director of Assisted Instruction at the IBM T. J. Watson Research Center.

The concept of "Teaching Machines", developed over the past decade, has advanced to a state where considerable experimentation and trial use is being made with educational computer terminals.

Three techniques encompassing both aural and visual interactions with the student, can take advantage of the highly flexible control possible through modern digital computers. This meeting will feature a "hands-on" demonstration of typical educational terminals. The featured section for this meeting will be the IEEE group on education.

Date: February 14, 1968
Time: 8:00 P.M.
Place: IBM — T. J. Research Center Yorktown Heights, New York (Taconic Parkway at Route 134)
Coffee will be available during a social period starting at 7:30 P.M. Members and their guests are cordially invited.

Atomic Second Adopted As International Unit of Time

A new definition of the international unit of time, the "second," was adopted by the 13th General Conference on Weights and Measures at its meeting on October 13 in Paris. The second has now been defined in terms of a characteristic rate of the cesium-133 atom.

The General Conference on Weights and Measures, convened every few years, is a meeting of delegates from the countries (now numbering 40 and including the United States) adhering to the Treaty of the Meter. It is the principal body concerned with working out international agreements on physical standards and measurements. At the conference it was agreed overwhelmingly that the time had come to replace the existing definition, based on the earth's orbital motion around the sun, by an "atomic definition," that is the duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the fundamental state of the atom of cesium-133.

The frequency assigned to the cesium is carefully chosen to make it impossible, by any existing experimental evidence, to distinguish the new second from the "ephemeris second" based on the earth's motion. Therefore, no changes need to be made in data stated in terms of the old standard in order to convert them to the new one.

However, the atomic definition has two important advantages over the preceding definition: (1) it can be realized (i.e. generated by a suitable clock) with sufficient precision, ±1 part in a hundred billion (10^10) or better, to meet the most exacting demands of current metrology; and (2) it is available to anyone who has access to or who can build an atomic clock controlled by the specified cesium radiation, and one can compare other high-precision clocks directly with such a standard in a relatively short time—an hour or so as against years with the astronomical standard.

Joint Metropolitan Engineering Management

What:
Are engineers properly trained to enter the engineering profession? A panel discussion.

When:
Thursday, February 8, 1968
6:00 P.M.

Where:
Island Inn Motel
(near Roosevelt Field) Old Country Road
Westbury, Long Island

Format:
Cocktails (at cash bar): 5:30 P.M.
Dinner: 6:30 P.M.
Program: 8:00 P.M.

Discussion by members of the teaching profession on the training of new engineers.
Discussion by members of engineering management on the problems associated with new engineers.
Discussion by participants and the panel.

The Panel:
Dr. A. Berlad, Chairman, Department of Mechanics College of Engineering State University of N. Y. Prof. Jerome Kloonar Department of Aerospace Engineering and Applied Mechanics Brooklyn Polytechnic Institute Prof. Richard Dolin Department of Engineering Science Hofstra University Hempstead, Long Island Mr. Wilfred O. Uhi Manager of Electrical Engineering Long Island Lighting Company Hicksville, Long Island Mr. A. J. Henler Director of Engineering Division Airborne Instrument Labs. Deer Park, Long Island Mr. Fred A. Donnennbrink Engineer Manager Grumman Aircraft Company Bethpage, Long Island

Moderator:
Mr. Joel Greene Deputy General Manager Special Projects Kollman Instrument Corporation Elmhurst, New York

Participants:
Engineers, supervisors, executives, professors and members of the teaching profession, (IEEE-EMG Members and Guests)

Reservation Only: Total price of dinner and workshop is $6.00 ("cash bar" is extra)

Make your check to "Met. EMG/IEEE" and mail to our Treasurer: Mr. Stanley Kramer, 14 Thunderbird Drive, Oakland, N. J. 07436

For more information call: Joel Green 212-899-5600, Ext. 508/509.
JOINT METROPOLITAN INSTRUMENTATION AND MEASUREMENTS  
SPRING 1968 LECTURE SERIES  
STANDARDS OF ELECTRICAL MEASUREMENTS  
A SERIES OF SEVEN LECTURES  
MARCH 6 TO MAY 1  
TIME — 7:00-9:00 P.M.  
LOCATION  
WESTERN UNION AUDITORIUM  
160 W. BROADWAY  
NEW YORK, NEW YORK  
Send registration forms to:  
ED BROWN  
Brogan Associates, Inc.  
80 Utrecht Street  
Westbury, New York 11590  
DAN COTTE, JR.  
RFL Industries, Inc.  
Powerville Road  
Boonton, New Jersey  
REGISTERATION FORM  
(At least one week in advance)  
Name  
Job Title  
Business Address  
Phone  
Technical Society Affiliation  
Check enclosed (Member $20)  
(Non-Member $30) (Student Member $1)  
Please make checks payable to: New York Joint Chapter of Instrumentation and Measurements.  

STANDARDS OF ELECTRICAL MEASUREMENT  
Rapid expansion of technology has focused considerable attention on the need to verify the accuracy and repeatability of all types of equipment used in industry. The Bureau of Standards provides the basis for absolute measurement in all fields of endeavor. Individual organizations maintain their own standards of measurement traceable to the Bureau of Standards. This study group will provide the engineer a much needed source of information about standards of measurement. Because the field is quite extensive, the scope will be limited to electrical measurements of high accuracy.  
I. March 6, 1968 — INTRODUCTION  
F. L. HERMACH, Chief  
Electrical Instrument Section  
National Bureau of Standards  
Washington, D. C. 20234  
... Principle and basic methods of establishing the fundamental electrical standards at the National Bureau of Standards (the volt ... the ohm) in terms of the defined units of CGS or MKS systems. Graphic illustrations of how standards for other electrical quantities are established at the National Bureau of Standards by chains of measurements based on those fundamental standards ... brief outline of the principles and basic methods for establishing the standards of resistance and reactance, DC and AC voltage, power and energy, and for extending the ranges of measurements by ratio standards ... how the accuracy of standards and laboratory measurements can be assured. In conclusion, the speaker will discuss the current problems of traceability of calibration at the National Bureau of Standards.  
II. March 13, 1968 — DIRECT CURRENT RESISTANCE MEASUREMENTS  
A. L. DANEMAN, Leeds and Northrup Company  
Philadelphia, Pennsylvania  
III. March 27, 1968 — CAPACITANCE AND INDUCTANCE STANDARDS  
JOHN F. HERSH, Engineer  
General Radio Company  
W. Concord, Massachusetts 01781  
IV A. April 3, 1968 — MEASURING DC VOLTAGE AND CURRENT  
J. C. MELCHER, Head of Instruments and Control Group  
Market Development Division  
Leeds and Northrup Company  
Philadelphia, Pennsylvania  
IV B. April 10, 1968 — VOLTAGE STANDARDS AT POWER FREQUENCIES  
WALTER TROEGER, Supervisor  
Product Engineering  
Winston Instrument Inc.  
Newark, New Jersey  
V. April 17, 1968 — AC VOLTAGE AND CURRENT MEASUREMENTS AT POWER FREQUENCIES  
WALTER TROEGER, Supervisor  
Product Engineering  
Winston Instrument Inc.  
Newark, New Jersey  
VI. April 24, 1968 — POWER AND ENERGY MEASUREMENTS  
JOHN PHILBRICK, Specialist  
Measurements Standards  
Meter Department  
General Electric Company  
Saugusworth, New Hampshire  
VII. May 1, 1968 — R.F. MICROWAVE VOLTAGE STANDARDS MEASUREMENTS  
WALLACE F. WHITE  
Project Engineer  
Ballantine Laboratories, Incorporated  
Boonton, New Jersey  
N. Y. SECTION AND COMPUTER GROUP  
Turning Points in Computer Design  
Computer users have already altered our society and are planning for even greater change. More rapid and far-reaching changes become possible with each new wave of machines. But what if computer design followed a different course to the present ... if designers at important decision points had turned differently? Would other decisions have produced far more "power" and change or less? Or would little be different? Computer authority James Pogorelc, senior staff member at the Armonk headquarters of International Business Machiness Corporation will discuss "What if ..." His critical review of some important turning points is intended to put computer development and some of its effects into perspective for the thoughtful engineer.  

N. Y. POWER AND INDUSTRIAL  
General Meeting  
Subject: "ELEVATORS—Present and Future"  
Speakers:  
Charles W. Lerch  
President of Charles W. Lerch & Associates, Elevator Consulting Engineers  
John Lusty  
Chief Engineer  
Otis Elevator Company  
John Szuzio  
Manager of Engineering Dept.  
Elevator Division  
Westinghouse Electric Corp.  
William Sturgeon  
Editor, Elevator World Magazine  
Place: Consolidated Edison Company  
4 Irving Place  
New York, N. Y.  
19th Floor Auditorium  
Date: Wednesday, March 27, 1968  
Time: 6:30 P.M.  
Refreshments: 6:00 P.M.  

New York Power and Industrial  
Round Table Meeting  
Subject: The All Electric Commercial Building  
Under discussion will be the pro's and con's of "The All Electric Commercial Building" in the New York Metropolitan area, having representative sizes of 10,000 sq. ft., 100,000 sq. ft., and 1,000,000 sq. ft. areas. Operating costs, relative maintenance, utility, service, entrance equipment, economic considerations, and architectural treatments will be included in the presentation. Time for questions and discussion from the floor will be provided.  
Moderator:  
Vic Duck—Chief Electrical Engineer  
Pope, Evans & Robbins  
11 East 50th Street  
New York, N. Y. 10016  
Speakers:  
Paul Greiner — Technical Director  
Electric Heating Assoc. Inc.  
750 Park Avenue  
New York, N. Y.  
An additional speaker from Westinghouse Corporation will also be present.  
Place: General Electric Company  
Auditorium  
570 Lexington Avenue  
New York, N. Y.  
Date: Wednesday, February 14, 1968  
Time: 6:30 to 8:30 P.M.  

The Newsletter, February 1968
Two Ballantine Voltmeters for Laboratory, Production, and Q.C. Needs

Ballantine solid state, wide-band voltometers, 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 powered.

**BALLANTINE VOLTMETER**

2 Hz to 6 MHz

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

**MODEL 303**

- Voltage range 300 µV 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) $360; Model 303-01 (line only/no probe) $305; Model 303-50 (Battery/line/with probe) $410; Model 303-51 (line only/with probe) $355.

**BALLANTINE TRUE RMS VOLTMETER**

10 Hz to 20 MHz

Battery or line-powered

**MODEL 323**

- Voltage range 300 µV — 330 V (as null detector to 70 µV) • 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) $560; Model 323-01 (line only) $505.

Write for brochures giving complete details

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**Joint Metropolitan Instrumentation and Measurement**

**Modern DC Ratiometric Instrumentation and Technique**

Within the past decade the requirement for precision "DC" observations has increased in volume by orders of magnitude. Not only has the need increased for quick and accurate knowledge of the basic DC parameters — voltage, current, resistance and ratio — but also of many DC related variables such as temperature, strain, AC voltage and current and RF power. Thus, there is a rapidly growing population of workers using precision "DC" or DC related instrumentation and an urgent need for knowledge in the latest DC techniques.

**Date:**
February 27, 1968

**Speaker:**
Loeb Julie—Julie Research Labs.

**Time:**
9:00 A.M.

**Place:**
Western Union Auditorium
60 Hudson Street, New York, N. Y.

**Topic:**
Ratiometrics
A Review of Fundamental Theory and its Applications in Test, Calibration and Research.

Relatively recently there have been many significant inventions of DC instrumentation and improvements in measurement technique. Specifically a x10 to x100 advance in accuracy is achievable in the industrial environment. This has led to a rebirth of interest and revolutionary growth in DC related engineering, as applied to precision resistance networks, Zener diodes, DC bridges and transducers.

**Speakers:**
Ronald Embry and Gavino Spanpanato
Electronic Associates, Incorporated

**Registration Fee:** $5.00.

Enclosed is a check for $ for _______ attendees to the seminar on DC Ratiometric Measurement Techniques.

**Names**

__________________________

__________________________

__________________________

__________________________

Company ________________________

Mailing Address ________________________

Telephone No. ________________________

Make check payable to: N. Y. IEEE Joint Chapter 1-M.

Mail check and registration to:
W. A. KNOOP
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