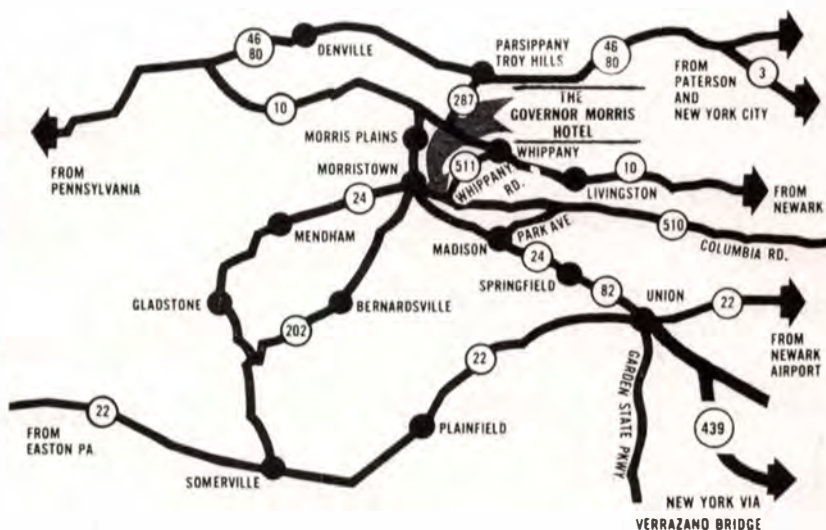


# Annual Banquet and Dance

Saturday, February 19, 1966, 6 P.M.

at  
**Governor Morris Hotel**  
**2 WHIPPANY ROAD**  
**Morristown, N. J.**

*See page 4 for banquet reservations*



The IEEE

## Newsletter

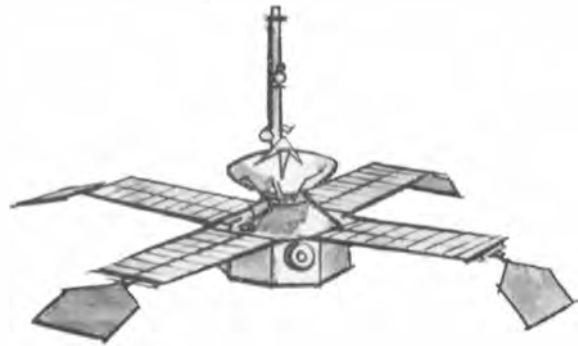
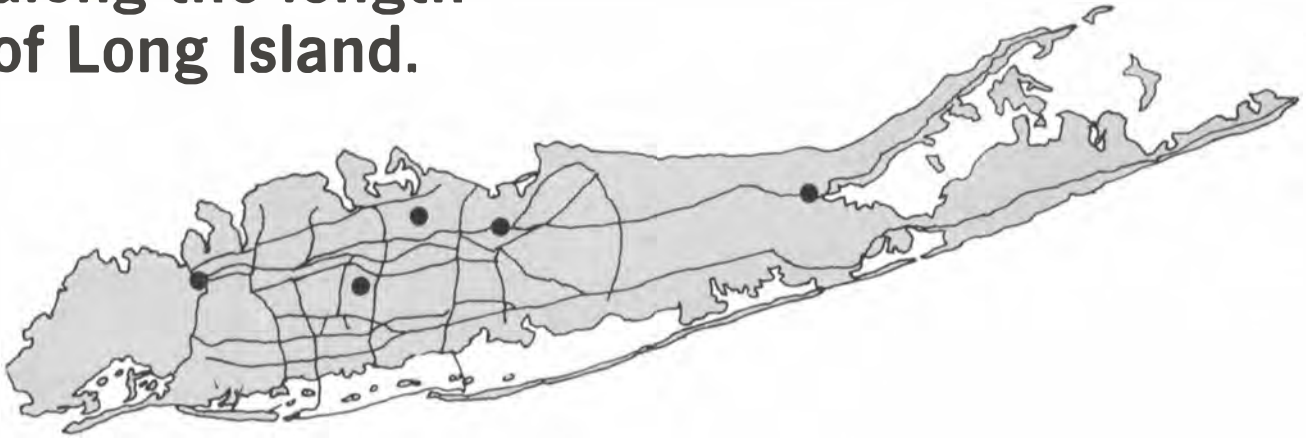
The Magazine of the North Jersey Section

GUEST SPEAKER

Edwin H. Snyder

President of Public Service Electric  
and Gas

# Hazeltine is a familiar sight along the length of Long Island.



## Our electronic expertise extends a lot further.

Our IFF Systems... Radar Systems and Displays... ASW and Sonar Systems... Data Processing Systems... and Spacecraft Imaging Devices are only a part of our broad electronics expertise used by government agencies, NATO and foreign governments, and by industries here and abroad.

Our greatest asset is the quality of our engineering staff. If you like working in small groups on large electronic problems where unconventional approaches are called for, and if you are qualified in any of the areas listed below, let us hear from you.

**RADAR ENGINEERING.** Senior openings in Radar and ECM systems design. Intermediate and junior openings in RF and IF solid state circuit design. Junior openings in general solid state circuit design.

**DISPLAY DEVELOPMENT.** Engineers with 5 or more years of experience and general background in CRT and storage tube work.

**RFI ENGINEERING.** Evaluate equipment for RFI spec compliance, provide design guidance. Graduate EE with experience in RFI analysis and practice.

**CIRCUIT DESIGN.** BS in EE (MS preferred), with 2 or more years experience in the design and development of solid state circuitry for military electronic systems. Assignments in diversified programs working from specification to prototype.

**SYSTEMS ENGINEERING.** Graduate EE required with several years experience in design of military systems involving RF, data processing and display components. Background in logic or equipment design and familiarity with MIL specs desirable.

**FIELD ENGINEERING.** Engineering representative at field site where Hazeltine equipment is installed. BS in EE or Physics required, with one or more years practical experience in installation, maintenance or servicing electronic systems and equipment. Military experience in electronics preferred.

Write in confidence to Mr. W. Speer



**HAZELTINE CORPORATION**

Little Neck, Long Island, N. Y.

An Equal Opportunity Employer, M/F

## The IEEE Newsletter

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 12 February, 1966 No. 6

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THE NEWSLETTER  
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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  
at Morris Plains, N. J.

### 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

Editor: Sam Petrokofsky  
IEEE Group Editor: A. R. D'heedene  
School Affairs Editor: Gene R. O'Brien  
Advertising Manager: M. M. Perugini  
Office Manager: A. J. LaRouche

**Executive Committee Meeting**  
at Verona Public Library—February 2

### North Jersey Section IEEE Executive Committee

#### Section Officers

Chairman ..... Walter L. Glomb  
Vice Chairman ..... Stephen A. Mallard  
Treasurer ..... James W. Gordon  
Secretary ..... Joseph O'Grady  
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Awards ..... R. Chipp  
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Procedures ..... Frank Polkinghorn  
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Nominations ..... A. G. Kandoian  
Program ..... M. Irvine  
Publications ..... Marcel Kozuch  
Publicity ..... Harry Raven  
Student Affairs ..... J. W. Earle  
Group Coordinator ..... D. R. Campbell

## Wheeler Laboratories, Inc.

Subsidiary of Hazeltine Corporation

Consultation — Research — Development  
Radar and Communication Antennas  
Microwave Assemblies and Components  
Laser Devices and Applications  
Harold A. Wheeler and Engineering Staff  
Main office:  
Great Neck, N. Y. HUnter 2-7876  
Antenna Laboratory: Smithtown, N. Y.

## PHASE METERS

0.001 cps to 18 kmc

## DELAY LINES

## PRE-AMPLIFIERS • FILTERS

## AD-YU ELECTRONICS INC.

249 TERHUNE AVE., PASSAIC, N. J.

## CALENDAR

### Wednesday, February 9

#### N. J. AUTOMATIC CONTROL GROUP

8:00 P.M.—“Large-Signal Design & Evaluation of  
Complex Non-Linear Control Systems”  
Dr. Andrew U. Meyer, Newark College of Engineering  
At Auditorium of General Precision Inc., Little Falls, N. J.

### Thursday, February 10

#### N. Y. GAES

8:00 P.M.—“Fuel Cells Used on the Gemini Series of Spacecraft”  
Speaker: A leading scientist from General Electric Co.  
At Wilkie Memorial Auditorium, 20 West 40th St., N. Y. C.  
6:30 P.M.—Old Seidelburg Restaurant, 626 Third Avenue (between 40th & 41st St.)

### Tuesday, February 15

7:00 P.M.—“The World Trade Center”  
Joseph R. Loring, Joseph R. Loring Associates  
Fred H. Wilkin, Port of N. Y. Authority  
At United Engineering Center, Room 110 to 113, 345 East 47th St., N. Y. C.

#### N. J. COMTEC GROUP

8:00 P.M.—“Adaptive Communication”  
Dr. Michael J. DiToro, Cardion Electronics Inc.  
At Arnold Auditorium, Bell Telephone Labs., Murray Hill, N. J.

#### P.G.P.M.P. & P.G.R.

8:00 P.M.—“Army Activities in Development of Satellite Communications”  
Peter J. Kennedy, U. S. Army Satellite Communications Agency  
At Brass Rail, 100 Park Ave., N. Y. C.

### Wednesday, February 16

#### N. Y. COMTEC

7:00 P.M.—“Satellite Communications Earth Stations”  
W. L. Glomb, ITT Federal Labs.  
At N. Y. Telephone Bldg., 140 West St., N. Y. C.

#### JERSEY COAST

8:00 P.M.—“New Telephone Services with the Electronic Central Office”  
Raymond W. Ketchledge, Bell Telephone Labs.  
At The Admiral's Table, State Highway No. 35, West Deal, N. J.  
Social Hour 6:00 P.M., Dinner 6:45 P.M., IEEE Section Awards 8:00 P.M.  
Tickets: Price per ticket is \$4.85, including gratuity. For reservations call (201) 542-1141.

### Thursday, February 17

#### N. Y. COMPUTER GROUP

8:00 P.M.—“The Nervous System Explored By Neural Models, Automata Theory”  
Leon D. Harmon, Bell Telephone Labs.  
At IBM Bldg., 590 Madison Ave., N. Y. C.

#### ENGINEERING MANAGEMENT GROUP

8:00 P.M.—“Systems Management Problems in American Power Industry”  
Mr. A. F. Gabrielle, American Electric Power Service Corp.  
At United Engineering Center, Room 125, 345 East 47th St., N. Y. C.

### Tuesday, February 23

#### L. I. N. Y. AUTOMATIC CONTROL GROUP

8:00 P.M.—“System Transient Performance on Large Interconnected Power Systems”  
Charles Concordia, General Electric Co.  
At Polytechnic Institute of Brooklyn Graduate Center, Route 110, Farmingdale, L. I. N. Y.

### Wednesday, March 16

#### N. Y. COMTEC & TRANSPORTATION DIV.

7:00 P.M.—“N. Y. C. Traffic Control Program”  
N. Y. Traffic Commissioner Barnes  
At Carnegie International Center Bldg., N. Y. C.



**NORTH JERSEY SECTION SPRING STUDY GROUP  
C. P. M. (CRITICAL PATH METHOD)  
— THE MODERN PLANNING TOOL —**

For the first time in our history, we are offering a Study Group tailored to those in planning, engineering and management. A powerful management technique has been perfected for planning, scheduling, and controlling all types of projects such as maintenance, installation, construction, and engineering.

This Study Group is intended for men in industry who plan maintenance, installations of equipment, construction and associated functions. Maintenance shut-downs that were planned with C.P.M. have made substantial savings in both dollars and downtime to industry.

This important C.P.M. technique will be given in practical, easy-to-understand terms, numerous examples, case histories, sample problems, and questions and answers. You will receive a practical picture of what C.P.M. is and how to compute it. Other planning tools such as PERT will be discussed. Participation in this Study Group should enable you to offer savings and greater efficiency to your operation. No previous C.P.M. experience is assumed necessary. Our presentation makes this tool valuable in any management, engineering or foreman level.

**REGISTRATION INFORMATION**

**TIME:** 7:00-9:00 starting Tuesday, March 15, 1966 and ending Tuesday, April 19, 1966.  
**LOCATION:** Public Service Electric and Gas Company — Room 3171A, 80 Park Place, Newark, New Jersey.

**REGISTRATION FEE:** \$20.00 to Members IEEE, ASME, ASCE, AIME, etc.  
\$25.00 to Non-members.  
For advance registrants (registration received at least one week before the first session) there will be a \$5.00 discount reducing the cost to \$15.00 for Members and to \$20.00 for Non-members.

**ADVANCED REGISTRATION FORM**

Name ..... Position .....  
Technical Society Affiliation .....  
Company Affiliation .....  
Location .....  
Telephone ..... ☐ Member \$15.00 ☐ Non-member \$20.00  
Send Registration Forms to and/or call the following for copy:

Mr. C. G. Engstrom  
Public Service Electric & Gas Co.  
90 Park Place Newark, N. J. 622-7000 — Ext. 2603  
Please make checks payable to: *North Jersey Section IEEE*

**NORTH JERSEY SECTION  
ANNUAL BANQUET-DANCE**

**SATURDAY FEBRUARY 19, 1966 6:00 P.M. to 1:00 A.M.**

**GOVERNOR MORRIS HOTEL  
2 Whippany Road Morristown, N. J.**

**RESERVATION COUPON:**

To: Mr. Merle M. Irvine  
Room 3E127  
Bell Telephone Laboratories  
Whippany, N. J.

Enclosed please find my check (or money order) made payable to the North Jersey Section IEEE in the amount of \$ ..... (\$7 each) for which please reserve in my name ..... tickets for the North Jersey Section's Annual Section Dinner and Dance on February 19, 1966.

Name (please print) .....

Address .....

Enclosed also is a stamped, self-addressed envelope to expedite return of the tickets to me. (If reservation coupon is received after February 5, or without stamped self-addressed envelope or payment, tickets will be held at the door.)

I would appreciate having the following member(s), who I expect to request reservations, seated at my table: .....

Thanks —

**P.G.P.M.P. & P.G.R.  
ARMY ACTIVITIES IN DEVELOPMENT  
OF SATELLITE COMMUNICATIONS**

**Date:** February 15, 1966  
**Time:** 8:00 P.M. Sharp  
**Speaker:** Peter J. Kennedy  
**Location:** Brass Rail (100 Park Restaurant)  
100 Park Ave., New York, N. Y.  
**PREF-MEETING SOCIAL  
SPONSORED BY EASTERN  
RADIO CORP.**  
**Time of Dinner:** Champagne Dinner will start at 6:45 P.M. Sharp  
Cost \$2.00 per person  
(Limited to 50)

The reliability programs at the U. S. Army Satellite Communications (SATCOM) Agency will be presented along with the Agency's role in the development of Satellite communications and its support of NASA's SYNCOM program. The present emphasis of reliability on ground terminals and the future needs of Satellite communications systems will be discussed.

Mr. Peter J. Kennedy is a staff engineer in the engineering directorate of the U. S. Army Satellite Communications Agency. Prior to this, he had been a mechanical engineer and an aeronautical engineer with the U. S. Army Signal Research and Development Laboratories at Fort Monmouth.

**N. Y. LAND TRANSPORTATION  
RAILWAY SIGNALLING**

The Land Transportation Group — New York Section of the IEEE is planning a Study Group on "Railway Signalling" for Wednesdays beginning February 23, 1966 and continuing for seven (7) consecutive Wednesdays. All sessions will be held at the General Electric Auditorium, 570 Lexington Avenue, New York and will start at 6:30 P.M.

The Study Group will develop a criteria for both the railroad and rapid transit signalling and the basic differences between their operation will be indicated.

The cost per person for the Study Group will be:

1. Member of IEEE and associated societies \$10.00.
2. Student members of above societies \$2.00.
3. All others \$15.00.

Advance enrollment in the Study Group is requested and checks or money orders should be made payable to the "NY Section IEEE Transportation Division" and forwarded to:

Mr. Edward W. Kevins  
c/o Port of New York Authority  
111 - 8th Avenue, Room 1115  
New York, New York 10011

**ENGINEERING  
MANAGEMENT GROUP  
A Call For Papers**

The April 21, 1966 meeting will cover an open symposium on Engineering Management. You are invited to present a 15-minute paper (1500 word maximum). An abstract of your paper or any questions should be sent before Feb. 28, 1966 to Donald Selwyn, ITT Federal Labs., Nutley, N. J., (201) 284-0123. Non-members invited.



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

N. Y. Section, IEEE

Metropolitan Section



# EDUCATIONAL PROGRAM — SPRING — 1966



Power and Industrial Div.

ASME

## REVIEW STUDY GROUPS — FOR PROFESSIONAL ENGINEER EXAMINATIONS

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

ENDORSED BY NYSSPE

### STRUCTURAL PLANNING AND DESIGN (IEEE-ASME)

COURSE NO. 16

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

MONDAYS, Starting Feb. 14, 1966, 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. 17

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

TUESDAYS, Starting Feb. 8, 1966, 6:30-8:30 P.M., 19 Sessions  
Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

Instructors: T. ELIADES, Consolidated Edison Co., Inc.  
and P. ZARAKAS, Consolidated Edison Co., Inc.

### MECHANICAL ENGINEERING (ASME)

COURSE NO. 18

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 Feb. 9, 1966, 6:30-8:30 P.M., 18 Sessions  
Rm. 240, Ebasco Bldg., 2 Rector St., N. Y. C.

Instructor: E. STAMPER, Assoc. Professor  
Newark College of Engineering

### ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)

COURSE NO. 19

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 Feb. 9, 1966, 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. 20

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 Feb. 10, 1966, 6:30-8:30 P.M., 18 Sessions  
Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

Instructor: S. DUBLIN, Director of Research &  
Asst. Professor in Management, Newark College of Engineering

## REGISTRATION

**FEES:** For all courses except course No. 21 & 22  
\$20 — to members of I.E.E.E., A.S.M.E., A.S.C.E.,  
A.I.Ch.E., A.I.E.E., N.Y.S.S.P.E.  
\$30 — to all others.

For course No. 21 & 22

\$30 — to members (as above).

\$40 — to all others.

**FOR ADVANCE REGISTRATION (MAILED ONE WEEK  
BEFORE 1st SESSION) DEDUCT \$5.00 FROM FEE.**

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

For courses No. 12 to 15

make checks or money order payable to:

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

and mail to: R. A. Olsson, Vice Chairman Educational

Committee, I.E.E.E. Long Island Lighting Co., 175 E. Old  
Country Road, Hicksville, N. Y. 11801

For courses No. 16, 19, 20, 21 & 22

make checks or money order payable to:

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Committee, I.E.E.E., N.Y.C. Transit Authority, 3311 Giles  
Place, Bronx, N. Y. 10463, Tel. 852-5000 Ext. B 4247.

For courses No. 17 & 18

make checks or money order payable to:

**"ASME METROPOLITAN SECTION"**

and mail to: G. Evans, Vice Chairman Educational Com-  
mittee A.S.M.E., Zurn Industries, P.O. Box 1099, Mountain-  
side, N. J.

(REG. FORM ON BACK PAGE)



NEW YORK SECTION IEEE  
POWER & INDUSTRIAL DIV.



# EDUCATIONAL PROGRAM

## COURSE NO. 12

### AUTOMATION IN INDUSTRY AND GENERATING STATIONS

**MONDAYS, 6:30 to 8:30 p.m. Starting Feb. 28, 1966**

Ebasco Auditorium, 2 Rector Street, New York, New York

Course Coordinator: E. ELDRIDGE, *Thomas & Betts Co.*  
Tel. (201) 354-4321

A comprehensive review of a wide range of automated industries is offered in this course. The use of computers and other control devices in manufacturing and production facilities will be covered. Computers and their operations in the specific application in these industries along with practical applications to various areas.

**1. Feb. 28. Principles of Automatic Control**

*Speaker: DR. H. A. FERTIK, Leeds & Northrup, North Wales, Pa.*

**2. Mar. 7. Process Control Components and Applications**

*Speaker: D. VANDEVENTER, Leeds & Northrup, North Wales, Pa.*

**3. Mar. 14. Digital Computers — Application to an Automated System**

*Speaker: B. MURPHY, Westinghouse Elec. Co., Pittsburgh, Pa*

**4. Mar. 21. Analog Computers — Applications to an Automated System**

*Speaker: DR. R. VICHNEVETSKY, Electronics Associates, Princeton, N. J.*

**5. Mar. 28. Numerical Control of Machine Tools**

**6. Apr. 4. Automatic Control of a Major Production Line**

*Speaker: G. MURIE, Ford Motor Co., Birmingham, Michigan*

**7. Apr. 11. Automatic Control of a Generating Station**

*Speaker: E. N. SCHWALJE, Public Service Elec. & Gas Co.*

**8. Apr. 18. Automation of an Aircraft Production Line**

*Speaker: from Grumman Aircraft Engineering Corp.*

**9. Apr. 25. Automation in the Electronic Components Industry**

*Speaker: W. E. BAHL, Radio Corp of America*

**10. May 2. Trip to Con Edison Automated Warehouse—Astoria Plant**

## COURSE NO. 13

### SPECIFICATIONS AND ESTIMATING

**TUESDAYS, 6:30 to 8:30 p.m. Starting March 1, 1966**

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

Course Coordinator: M. ISAACS, *Amman & Whitney*  
Tel. (212) WA 4-8282

This course will cover the basic role specifications play in the total construction concept. Discussions will follow on a general outline, specifications and estimating. Lectures will be given by a panel of speakers from the Metropolitan New York Chapter of the Construction Specification Institute except as noted.

**1. Mar. 1. Requirements of Specifications**

Relation to and part of general contract. Role of specifications in construction concepts.

**2. Mar. 8. Bidding Concepts**

Information and requirements for making and submitting bids.

**3. Mar. 15. General Considerations**

Insurance, Payments, Extras, Partial and Final Completion.

**4. Mar. 22. General Specifications**

Work required, Condition, Precautions, Safety, Governmental Regulations, Workmanship, Inspection, and Material Approval.

**5. Mar. 29. Construction Specifications**

Owners detailed requirements for construction. Divided by type and class of work.

**6. Apr. 5. Drawings**

Relation to specifications — Types and Classes of drawings.

**7. Apr. 12. Estimating Part I**

Preliminary, comparative, Engineers estimates — use of drawings and specifications.

*Speaker: from Bechtel Corporation*

**8. Apr. 19. Estimating Part II**

Special precautions, temporary facilities, labor units.

**9. Apr. 26. Estimating Part III**

Pricing, labor and job costs, profit, overhead, extras, design changes.

*Speaker: from Bechtel Corporation*

**10. May 3. Estimating Part IV**

Specific estimating problem—The Kitchensink Building.



# - Special Study Groups SPRING — 1966

**COURSE NO. 14****SWITCHGEAR AND CIRCUIT BREAKERS****WEDNESDAYS, 6:30 to 8:30 p.m. Starting March 2, 1966**

Con Edison Co., Rm. 1701, 4 Irving Place, New York, N. Y.

Course Coordinator: R. K. SULLIVAN, Con Edison Co.  
Tel. (212) 460-4689

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

**1. Mar. 2. Introduction**

Arc ionization, fundamentals of circuit breakers and switchgear.

*Speaker: L. J. HOLLANDER, New York University***2. Mar. 9. Circuit Interruption**

Voltage recovery, natural frequency of system, effects of resistors and asymmetrical currents.

*Speaker: L. J. HOLLANDER, New York University***3. Mar. 16. Switchgear Rating**

Ratings — current, voltage and frequency.

*Speaker: from ITE Circuit Breaker Co.***4. Mar. 23. Kinematics of Switchgear**

Closing and opening movement, speed, mechanical advantage, link pressure and stored energy.

*Speakers: R. S. SMITHLEY AND W. G. HARLOW, Federal Pacific Electric Co.***5. Mar. 30. Medium Voltage Applications**

Air magnetic, air blast, oil and vacuum breakers.

*Speaker: G. SAKATS, General Electric Co., Philadelphia, Pa.***6. Apr. 6. High Voltage Applications**

Air blast, oil, sulfur hexafluoride and vacuum breakers.

*Speaker: R. A. BEDNARIK, Consolidated Edison Co.***7. Apr. 13. Switchgear Testing & Maintenance**

Design, factory, and field testing.

*Speaker: R. E. BAUER, Consolidated Edison Co.***8. Apr. 20. Relays & Circuit Breakers—Part I**

Protective and supervisory — line relaying, relay and breaker operating times and schemes.

*Speaker: J. L. BLACKBURN, Westinghouse Elec. Corp.***9. Apr. 27. Relays & Circuit Breakers—Part II***Speaker: J. L. BLACKBURN, Westinghouse Elec. Corp.***10. May 4. New Development in EHV Switchgear Design***Speaker: R. J. KATES, General Electric Co., Philadelphia, Pa.***COURSE NO. 15****MANAGEMENT****THURSDAYS, 6:30 to 8:30 p.m. Starting March 3, 1966**

Consolidated Edison Co., Rm. 1101S,

4 Irving Place, New York, N. Y.

Course Coordinator: R. CASTENSCHILD, Automatic Switch Co.  
Tel. (201) 377-4600

The course will be given by men from top industry management and outstanding academic institutions. Their knowledge and personal experiences will benefit those already in management and also provide a guide to individuals aspiring to become part of management.

**1. Mar. 3. General Nature of Management**

Objectives and responsibilities of management to its owners, employees, customers and community.

*Speaker: L. E. THOMPSON, Associate Director Research Institute of America***2. Mar. 10. Organization**

Principles of good organization and coordination of departmental functions.

*Speaker: D. J. McLAUGHLIN, Associate, McKinsey & Company, Inc.***3. Mar. 17. Effects of Business Size**

Differentiating problems and solutions for small, medium and large business. Adjusting to company growth.

*Speaker: PROF. S. RANHAND, Ph.D., C.P.A. City College of New York***4. Mar. 24. Qualifications and Selection of Managers**

Executive qualifications, recruiting and developing managers.

*Speaker: J. A. VAUGHN, Vice President Maxson Electronics Corp.***5. Mar. 31. Delegation of Authority**

Matching authority to responsibility for efficient performance. Criteria for sufficient and effective authority.

*Speaker: PROF. J. W. LORSCH, Harvard Business School, Boston, Mass.***6. Apr. 7. Human Relationship**

Psychology of personnel and labor-management relations.

*Speaker: PROF. J. H. METZLER, Newark College of Engineering***7. Apr. 14. Motivation of Employees**

Participative management, work procedures, incentives, communication and recognition.

*Speaker: PROF. J. H. METZLER, Newark College of Engineering***8. Apr. 21. Utilization of New Tools**

Where and how new computer techniques and data processing equipment should be applied.

*Speaker: W. H. MORROW, JR., Marketing Coordinator, International Business Machines Corp.***9. Apr. 28. Engineering Management**

Organizational setups and new programs for greater utilization of engineering and technical talent.

*Speaker: W. M. GORYL, Associate Director, Esso Research & Engineering Co.***10. May 5. Planning Future Strategy**

Planning for present operation, growth, change and emergency — and implementing the decision.

*Speaker: PROF. R. T. LIVINGSTON, Columbia Univ. and The Livingston Institute*





Power and Industrial Div.

ASME

# EDUCATIONAL PROGRAM — SPRING — 1966

## INDIVIDUAL IMPROVEMENT STUDY GROUP

### COURSE NO. 21

### *Speed Reading for Engineers*

THURSDAYS, 6:30-8:30 p.m. Starting Feb. 24, 1966

Room 1806-S 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 25 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. Feb. 24. Introduction to Speeded Reading**

Objectives of the course; variables relative to rate, materials, and comprehension; Test for diagnosis of individual rate, comprehension, and vocabulary.

**2. Mar. 3. The First Step**

Individual analysis; using different methods to find the structural patterns of written materials.

**3. Mar 10. Mechanics of Reading**

Role of the eyes and eyespan; using verbal and printed clues to structure.

**4. Mar. 17. Paragraph Patterns and Functions**

Using paragraph functions and patterns to identify organization and structure in materials.

**5. Mar 24. Adjusting Rate**

Using paragraph functions as an aid to achieving optimal rate.

**6. Mar. 31. Article Patterns**

Using the author's organization to get ideas more quickly.

**7. Apr. 7. Article Patterns**

Using the author's organization to organize ideas into useful sequences and patterns for greater retention.

**8. Apr. 14. Summarizing**

Reducing ideas to basic components for more rapid and greater retention.

**9. Apr. 21. Broadening Horizons**

Reading to "keep up" and "get ahead". Evaluation and planning for continued improvement.

**10. Apr. 28. Evaluation and planning for continued improvement**

### COURSE NO. 22

### *Theory and Mechanics of Technical Reports*

WEDNESDAYS, 6:30-8:30 p.m. Starting Feb. 23, 1966

Room 1806-S 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. Feb. 23. Introduction**

Course description, purpose, communication of ideas.

**2. Mar. 2. Written Communication**

Types, purpose and for whom.

**3. Mar. 9. The Outline**

Purpose, value, mechanics—Use of

**4. Mar. 16. First Draft—Part I**

(General)—Style, grammar, effectiveness.

**5. Mar. 23. First Draft—Part II**

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

**6. Mar. 30. Final Report**

Draft review, production, final check.

**7. Apr. 6. Oral Reports**

Principles of speaking, outline, presentation.

**8. Apr. 13. Preparation of Oral Report**

Use of index cards, timing, use of aids.

**9. Apr. 20. Delivery of Student Reports**

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

**10. Apr. 27. Delivery of Student Reports**

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

### ADVANCE-REGISTRATION FORM

Name (printed) .....

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

Business Address .....

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

Home Address .....

Course No. & Study Group .....

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☐ ASME ☐ ASCE

☐ OTHER .....

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## NORTH JERSEY AUTOMATIC CONTROL GROUP

### Large-Signal Design & Evaluation of Complex Non-Linear Control Systems

**Speaker:** Dr. Andrew U. Meyer,  
Newark College of Engineering  
**Date:** Wednesday, February 9, 1966  
**Time:** 8:00 P.M.  
**Place:** Auditorium of  
General Precision Inc., Plant 3  
Little Falls, N. J.



Dr. Andrew U. Meyer of Newark College of Engineering will speak on "Large Signal Design and Evaluation of Complex Non-Linear Control Systems" at the February 9, 1966 meeting of the Group on Automatic Controls. The meeting will be held at the auditorium of General Precision, Inc., Plant 3, 1150 McBride Avenue, Little Falls, New Jersey, at 8:00 P.M.

#### Abstract:

The designer of non-linear control systems must assure stable dynamic performance for every signal level that may occur. For example, a system that was designed to be stable for small perturbations about its operating points might become unstable in the presence of large transients or disturbances. This may happen especially in systems with several non-linearities and systems that are complex in structure.

#### About the Speaker:

Dr. Meyer is an Associate Professor of Electrical Engineering at Newark College of Engineering since September 1965. He was a member of the technical staff of Bell Telephone Laboratories at Whippany, New Jersey where he conducted research and development in satellite attitude control auto-pilot design problems for missiles. He commenced his undergraduate training in Germany and attended Northwestern University from which he received his MS in 1958 and his PhD in 1961, both in Electrical Engineering.

## NORTH JERSEY SECTION INSPECTION TRIP

### SEWAREN GENERATING STATION

**Wednesday Evening  
March 9, 1966  
7:30 P.M.**

The Public Service Electric and Gas Company has kindly agreed to arrange an inspection of their Sewaren Generating Station for members of the North Jersey Section of the IEEE. This is an unusual opportunity since this station has such a wide variety of equipment. In addition to four conventional steam turbines, there is a new machine equipped with computer controls. Another item, of particular interest since the last blackout occurred, is a quick reaction turbine which can be quickly put into service. It may be a long time before we get another chance to inspect such an array of interesting equipment.

Make your reservation by dropping a card or note to Maury Irvine, 3E127, Bell Telephone Laboratories, Whippany, New Jersey. Upon arrival at the station, please inquire for Mr. E. C. McMahon, Superintendent, or his representative.

## NORTH JERSEY SECTION EXECUTIVE COMMITTEE NOMINATIONS

The Nominating Committee of North Jersey Section IEEE met on December 8 and selected the following candidates for the 1966-67 IEEE Executive Committee of the North Jersey Section period:

*Chairman* ..... S. A. Mallard  
*Vice Chairman* ..... B. Meyer  
*Treasurer* ..... J. O'Grady  
*Secretary* ..... M. Irvine  
*Members-at-Large* ..... H. Blaicher, Jr.  
R. L. Whittle

Respectfully submitted,

A. G. Kandoian, Chairman  
A. Parkes  
R. McSweeney  
J. Schwanhaussner  
L. J. Varnerin  
Professor C. Redmon, ex-Officio

## STUDENT AFFAIRS NCE Continues Activities

During the week of December 13 the student branches presented twelve showings of a NASA color documentary film entitled, "The Four Days of Gemini IV." The movie featured Major Edward White's historic space walk and showed the entire Gemini IV mission, including exclusive motion picture shots of the re-entry from within the spacecraft.

On December 17 Mr. Everett D. Hines from Public Service Electric and Gas Company spoke about the electric utility industry. Mr. Hines' talk was entitled, "Creating For the Future."

In a previous issue this column reported the plan to place at the NCE library a file of past EE quizzes as an academic reference. Chairman Jose Vazquez of the *Test File Committee* reports the plan now to be in operation. He urges the use of these tests as one would use a reference text.

With this committee and the *Feedback Committee* reporting successful beginnings, another working committee has been appointed. Its four members are charged with reviewing activities at the branch and recommending methods for report and assignment forms as well as written procedures and instructions.

Junior Class IEEE student members will assume the planning responsibility for the Day and Evening Branches as the spring semester commences. The theme of the program will be technical subjects allied with course material.

## NORTH JERSEY COMTEC GROUP ADAPTIVE COMMUNICATION

**Speaker:** Dr. Michael J. DiToro  
Cardion Electronics, Inc.  
**Date:** Tuesday, February 15, 1966  
**Time:** 8:00 P.M.  
**Place:** Arnold Auditorium,  
Bell Laboratories  
Murray Hill, New Jersey

Dr. DiToro will discuss transmission media which are characterized by an impulse response which is both time-variable (frequency spread) and dispersive (time spread). Examples of such media are electromagnetic HF ionospheric and troposcatter transmission, underwater sonic transmission and, to a lesser extent, transmission on voice quality telephone lines. For the transmission of random data, such time-variable dispersion generates a self-noise or intersymbol interference. This produces errors which do not decrease with increase of channel signal/noise at the receiver.

Dr. DiToro is presently Vice President for Research at Cardion Electronics, Inc. His experience comprises extensive work and original contributions in such fields as electroacoustics, piezoelectric and electromagnetic transducers, tracing distortion analysis, phase distortion and transmission analysis, and others.

Dr. DiToro has an E.E., M.E.E., and D.E.E., all from the Polytechnic Institute of Brooklyn. He is a Fellow of the IEEE and Acoustical Society of America and a member of Sigma XI and Eta Kappa Nu. He is a registered Professional Engineer in New York and an Adjunct Professor at Polytechnic Institute of Brooklyn.

## N. Y. COMTEC SYMPOSIUM ON COMMUNICATIONS ELECTRONICS IN THE TRANSPORTATION FIELD

*Note:* There has been a change in schedule from that in the January Newsletter Issue.

There will be no meeting on March 21; instead this meeting, whose topic will be, "Application of Electronic Computers to Far-Flung Cargo Operations" will be held on April 4—For registration forms to this symposium, see January Newsletter Issue.

## DAVISSON - GERMER PRIZE ANNOUNCED FOR ELECTRON AND ATOMIC PHYSICS

New York, N. Y., Dec. 8 — The American Physical Society and Bell Telephone Laboratories today announced creation of a new prize for outstanding contributions in the fields of electron and atomic physics.

The biennial award will be given in honor of the late Clinton J. Davissan and of Lester H. Germer of Millington, N. J., former members of Bell Laboratories' research staff and pioneers in the study of the wave-like quality of electrons.



# Ballantine AC-DC Digital Voltmeter

Model 355

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**1/4% Accuracy f.s. for AC & DC Voltages up to 500 and for mid-band AC Frequencies**

## Measures Full Scale ac to 10 mV ...ac & dc from 0 to 1,000 V

Ballantine's Model 355 is the only digital voltmeter of its type in the U.S.A. . . with a versatility that makes it ideal for production line and quality control applications.

Use the 355 in place of analog instruments, for example, in reducing personnel errors, for speeding up production. You can depend on Ballantine's high standards of accuracy, precision, and reliability to reward you with savings of time and money the first day you place it in service.

The instrument features a servo-driven, three-digit counter with over-ranging . . . combines many virtues of both digital and analog voltmeters in one small, compact, economical package. Its large, well-lighted readout with illuminated decimal point, range and mode information, allows fast, clear readings, while the indicator can follow and allow observation of slowly varying signals. The position of the last digit can be interpolated to the nearest tenth, thus avoiding the typical "± 1 digit" restriction of a fully digitized display.

Desire even faster production? An optional foot-operated switch of the Model 355 retains voltage readings, and enables you to cut materially the time between readings. Another aid in reducing personnel errors is provided by an over-range indicator that signals excessive input of the wrong polarity.

### PARTIAL SPECIFICATIONS

Voltage Range	AC	DC	Accuracy in % of Full Scale	AC	DC
Full scale, most sensitive range	0 to 1000 10 mV	0 to 1000 100 mV	1 mV to 500 V	1/4%, 50 Hz to 10 kHz 1/2%, 30 Hz to 50 kHz 1%, 50 kHz to 250 kHz	1/4%
Frequency Range	30 Hz to 250 kHz	DC	Power Requirements	115/230 V, 50-60 Hz, 52 W	
Optional Model 600 Resistors are available for measuring current directly in volts			Relay Rack Version	Model 800 rack mounting kit is optional	

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## N. Y. COMTEC SATELLITE COMMUNICATIONS EARTH STATIONS

Mr. W. L. Glomb of ITT Federal Laboratories will talk *February 16, 1966* on "Satellite Communications Earth Stations" at the *New York Telephone Building*, 140 West Street in New York City. The meeting starts at 7:00 P.M.

Mr. Glomb will make a general presentation of satellite communications systems concepts with emphasis on the role of the medium size station. Material will be based on design, development, fabrication, and over three years of operational experience with seven medium size stations in Brazil, Spain, Hawaii and Continental U. S. with the Moon, Courier, Relay, Telstar, Syncom and Early Bird satellites.

Walter L. Glomb is deputy director of the Space Communication Laboratory at ITT Federal Laboratories, Nutley, New Jersey. He is responsible for system design and analysis involving the company's space communication projects.

Mr. Glomb received his B.S. degree in 1946 and his M.S. in 1948, from Columbia University. He is Executive Committee Chairman of the North Jersey Section of the Institute of Electrical and Electronics Engineers.

### THE WORLD TRADE CENTER

Date: Tuesday, February 15, 1966

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

Place: United Engineering Center,  
Room 110 to 113  
345 East 47th Street  
New York City

Speakers: Mr. Joseph R. Loring  
Mr. Fred H. Wilken

Port of New York Authority

The new World Trade Center, with its two 110 story towers each soaring 1350 feet above street level, presents one of the major engineering challenges of the decade.

The major engineering problems encountered, will be discussed, with emphasis upon the electrical systems. A scale model of the center will be available for review and inspection.

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## Type 549

**split screen permits simultaneous operation as a storage and conventional oscilloscope**

Split-screen storage offers a distinct advantage to the user in waveform-comparison applications — by permitting quick comparison of dynamic signals appearing on one half of the crt with a reference trace stored on the other half, or the Type 549 can be used for full screen storage or full screen conventional displays.

### SAMPLING AND STORAGE

The storage capacity of the Type 549 provides easy-to-study displays—and with a Type 1S1 Plug-In adds new convenience to sampling applications. With this new dc-to-1 GHz sampling unit, you need no pretriggers or external delay lines—the 1S1 has internal triggering with a built-in delay line. The Type 549/1S1 combination gives a stored display that is steady and, because more samples can be displayed, there is high resolution of the sampled information.

### storage features:

**Unparalleled Writing Speed** — up to 5 cm/ $\mu$ s, with enhancement.

**2 Independent 3x10 cm Display Areas** — with separate upper half and lower half controls.

**Bistable Storage.**

**Automatic Erase** — with selectable viewing times from 0.5 seconds to 5 seconds. Erase can be selected for recurrent or after-sweep operation.

**Erase-and-Reset** — with push-button control for erasing display and rearming single sweep. Erase-and-Reset can be controlled remotely, if desired.

### other features:

**Precision Sweep Delay**—from 1 microsecond to 10 seconds.

**Wide Sweep Range** — 5 s/cm to 0.1  $\mu$ s/cm (Time Base A) and 1 s/cm to 2  $\mu$ s/cm (Time Base B). 5X Magnifier extends fastest sweeps to 20 ns/cm (Time Base A) and to 0.4  $\mu$ s/cm (Time Base B).

**Single Sweep** — manually, automatically, or remotely.

**Full-Passband Triggering** — with flexible, easy-to-use facilities.

**Simplified Trigger Logic** — with lever control of trigger functions.

**Size and Weight** — dimensions are 17" high x 13" wide x 24" deep; net weight is  $\approx$  67 lbs.

Type 549 Oscilloscope . . . . . \$2375  
(without plug-ins)

The plug-in units range in price from \$145 (B high-gain unit, K fast-rise unit) to \$1100 (1S1 sampling unit, illustrated).

U.S. Sales Prices f.o.b. Beaverton, Oregon

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## UNDER-\$1000 DIGITAL VOLTMETER TAKES PLUG-INS

Model 3439A all solid state digital voltmeter accepts the full range of Hewlett-Packard's 3440-series plug-in. All six available plug-ins, including the simplest (Model 3441A), provide for dc measurements with manually controlled full scale ranges of 10, 100, and 1000 v. One plug-in adds autoranging and remote ranging (Model 3442A); another adds to these 100-milli-

volt and 1 volt full-scale ranges (Model 3443A). Still another gives current and resistance measuring capability (Model 3444A). The fifth (3445A) provides ac voltage-measuring facilities with automatic and remote ranging. The newest plug-in (Model 3446A) adds remote function selection to the AC/DC unit.

Designed for bench and production applications, Model 3439A gives DVM accuracy and multi-function flexibility. Omission of coded printer output and external triggering, and adoption of a fixed sample rate (between 2 and 3 per second) makes possible a price of under-\$1000.

The four-digit HP Model 3439A digital voltmeter is silent in operation. Input, with any plug-in, is floating. With its push-button self-check feature it may be recalibrated in a few seconds. The Model 3439A costs \$950.00.

For complete information on all Hewlett-Packard products contact your local HP Field Engineer.



## HP MAKES CUSTOM CALIBRATION A STANDARD FEATURE

Higher measurement accuracy of microwave power is now available, because custom calibration is standard with Hewlett-Packard's Model 478A Coaxial and Model 486A Waveguide Thermistor Mounts.

Both Calibration Factor and Effective Efficiency are furnished to reduce measurement uncertainty by at least a factor of two, even more when dc substitution techniques are used. For example, Calibration Factor is used as the correction factor for

general applications, swept-frequency power measurements, etc., when a tuner is not used; Effective Efficiency is used whenever a tuner is part of the measurement system, whether to tune the mount to the impedance of the transmission line or to the complex conjugate of the source impedance.

Model 478A Thermistor Mount is designed for 50-ohm coaxial systems which operate from 10 Mc to 10 Gc. The RF thermistor pair presents a good match to 50-ohm systems over its full frequency range. No tuning is required, and the Model 478A costs \$155.00. Model 486A Thermistor Mounts are designed for 2.6 to 40 Gc waveguide systems. Each carefully designed mount provides a good match over the entire waveguide range and no tuning is required. Model 486A Thermistor Mounts are available from \$145.00 to \$375.00.

Both the 478A coaxial mount and the 486A waveguide mounts may be used to measure pulse power as well as CW.

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