



## Newsletter The Magazine of the North Jersey Section

## Communications For The National Political Conventions

Pre-Meeting Dinner: 5:45 P.M. Wally's Tavern on the Hill Watchung, N. J. Make Reservations by Sept. 21 Meeting: 7:45 P.M. Arnold Auditorium Bell Telephone Laboratories Murray Hill, N. J.

## **\$525 FREQUENCY MEASURING SYSTEM**

SER IIO

REQUENCY METER

DISCRIMINATOR TYPE 1142-A GENERAL RADIO COMPANY

NET FREQUENCY" SWITCH

AND

#### With High Sensitivity from 3c to 1.5 Mc

FINET DIGIT OF METER

#### SPECIFICATIONS:

INTERP CAL

RD CURRENT

- Frequency Range 3 cps to 1.5 Mc in five decade ranges.
- Input Sensitivity 20 mv from 20c to 150 kc, rising to 200 mv at 3c and 1.5 Mc (except for very short pulses). Impedance: 100 KΩ, dropping to a minimum of 5 KΩ above 500 kc.
- As a Frequency Meter Logarithmic meter maintains constant accuracy; calibrated interpolator effectively expands meter scale by a factor of 10. Higher frequency measurements can be made by heterodyne techniques - permits drift measurements to at least one part in 10° when used with frequency standards; readings independent of waveform.
- As a Discriminator Output is 15v, full scale. Low noise; residual fm is down more than 100 db.
- Accuracy In the "direct" mode, 1% of read-ing. In the "interpolate" mode, 0.2% of full scale.
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You could make this "system" yourself with a 1.5-Mc counter, a sensitive preamplifier, a digital/analog converter, and an analog readout ... at a cost of a few thousand dollars. Or, you can get it ready-made in the GR Type 1142-A Frequency Meter and Discriminator, for \$525.

DIRECT CAL

66

OWER

150 KC

While you can't beat a counter for absolute accuracy, the accuracy of the 1142-A is  $\pm 0.2\%$  when used to best advantage, more than adequate for many frequency measurements. It is, as its name implies, both a sensitive frequency meter and an extremely low-noise fm discriminator for the measurement of incidental fm and fm deviations (residual fm is at least 100 db below full output). The analog dc outputs, available directly at the terminals of the 1142-A, make this an excellent instrument for the recording of frequency drift and stability. Its usefulness is still further extended by the availability of photocells, tachometers, geiger tubes, magnetic pickups and other transducers.

Make your own Evaluation — Ask for a Demonstration

#### GENERAL RADIO COMPANY

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Sales Engineering Office in NEW YORK: Broad Avenue at Linden, Ridgefield, New Jersey George G. Ross • J. P. Eadie • Tom H. Mujica • Richard K. Eskeland Tel: N. Y. 212-964-2722 • N. J. 201-943-3140 • TWX: 201-943-8249

#### LOCAL SERVICE AND REPAIR

For your convenience, the New York Office has a Service Department, manned by factory-trained service engineers. This Department can supply prompt and efficient repairs or recalibration of any G-R equipment. Considerable time con be saved by taking advantage of these facilities.

#### Editorial Notes

#### If not now! When?

As you can see in this issue, activities for 1964-65 have started. The Executive Committee has labored diligently to present a program for your interest. You will be requested, invited, and exhorted to attend these sessions, and in turn questioned (not directly) if you don't. When less than one percent of the membership turns out for meetings, doubts arise whether the program is the kind you want.

This recalls a statement attributed to Hillel who lived from 30 B.C. to 3 A. D. He said:

"If I am not for myself, who will be for me? If I am for myself only, what am I? If not now, when?"

Our potential advertisers and non-attending members might consider this. For, after all, if they do not take care of their own professional self-interest, there is no one to protect them. However, if they make no provision to take care of others (not social benefits) then there will be no one around to carry on their functions in the future.

It seems to us that professional performance is both cumulative and sequential. We build upon the past in order to project into the future, and what we do now is a basis for what others will accomplish in the future, when we are no longer active.

Now, how does this apply to you?

As a member, you have spent years in preparation for your profession, both scholastically and work-wise. During this period, you have been led, directed, and inspired as you accumulated knowledge so that you are now able to perform your function. In order to make our profession continuous, you must lead, direct, and inspire your contemporaries and followers. This you may achieve within your professional societies, schools, and at work by writing, speaking, and teaching. The font of knowledge that is drawn upon is not a bottomless well; new soundings must be continuously taken to keep the supply fresh.

We don't believe that you want to see the drying up and disappearance of your professional society. Rather, we believe that you wish to see it prosper and expand its many functions. If it doesn't do what you want it to do, it is your prerogative to alter this. You can effect change by participating in its activities. Modification has never been accomplished by will only, you must stop sitting on your hands or ideas.

So, if not now, when?

#### Calendar

#### Saturday, September 12

All-Day Conference "Quality Control & Statistics in Industry" Rutgers University, New Brunswick, N. J.

Tuesday, September 22

Joint Meeting:

North Jersey Section and Communications Technology Group

James D. Parker, CBS

5:45 P.M. — Dinner — Wally's,

Watchung, N. J. 7:45 P.M. — Meeting Arnold Auditorium, Bell Labs.,

Murray Hill, N. J.

Wednesday, September 23 North Jersey Section Lecture Series starts: "Overall Communications

Systems Planning'

Thursday, September 24 Engineering Writing and Speech "Symbols for Electricity and Electronics" Howard L. Cook, RCA 6:00 P.M. — Dinner — Pomptonian, Cedar Grove, N. J. 8:00 P.M. — Meeting Kearfott Auditorium, Little Falls, N. J. NY Computer Group "Hardware or Software" Drs. J. P. Mauchly and S. Lubkin

#### **OCTOBER**

Electronic Computer Group "Project MAC" Richard G. Mills, MIT

#### Tuesday, October 6

NY Section-Communications and Electronics Division Start Lecture Series: "Engineering Applications of Computer Programming"

Monday, October 19 Start Lecture Series: "Electronic Switching Communications Systems"

#### Wednesday, October 21

Reliability Group "Components Industry in Transition" Start 1st of 6 Meetings

#### The Cover

CBS photograph of the recent Republican National Convention at San Francisco.

#### The IEEE Newsletter

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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: FOxcroft 6-1580

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#### ABOUT ADDRESS CHANGES

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.

REPORT ALL ADDRESS CHANGES TO: INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, BOX A, LENOX HILL STATION, NEW YORK 21, N. Y.

#### NEWSLETTER STAFF

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#### **Executive Committee Meetings**

at Verona Public Library September 2, 1964 October 7 November 4 December 2 January 6, 1965 February 3 March 3 IEEE Convention March 22-25 April 7 May 5 June 2

## **BALLANTINE SENSITIVE DC VOLT/AMMETER**

**MODEL 365** 

Measures 1 µV to 1,000 V dc  $0.001 \ \mu A$  to  $1 \ A \ dc$ 

EXTREMELY WIDE VOLTAGE AND CURRENT RANGE

UNMATCHED ACCURACY FOR ALL INDICATIONS

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#### Price \$650

DC voltages with the extremely wide voltage range of 1  $\mu$ V to 1 kV and currents from 1 nA to 1 A can now be displayed on an analog indicator and measured with unmatched accuracy. The Ballantine Model 365 Sensitive DC Volt/Ammeter, with a single logarithmic scale and range selector, will measure voltages above 1 mV with a constant accuracy of 1% of indication. Currents above 0.1  $\mu$ A are measured with an accuracy of 2% of indication.

The accuracy of the Model 365 is supported by a high order of stability gained by both ac and dc feedback techniques and conservative operation of all components. For further assurance of accuracy, a simple and reliable internal standard is available to check calibration accuracy and panel controls can correct the calibration, if necessary, in seconds.

Signal-ground isolation allows floating measurements to 500 volts above panel ground, and ac rejection is provided to reduce the effects of common-mode signals.

The new 365 is available in both portable and rack versions.

#### PARTIAL SPECIFICATIONS

Voltage $1 \mu V - 1 kV$	Current 1 nA - 1 A
Accuracy 1% of indication above 1 mV	Accuracy 2% of indication above 0.1 $\mu A$
Impedance 1 M $\Omega$ above 1 $\mu V;$ 5 M $\Omega$ above 0.1 mV; 10 M $\Omega$ above 0.1 V	Impedance

Impedance Between Signal and Panel Grounds: R  $>100~M\Omega,~C=0.1~\mu\text{F},~500~V$  Peak Max Usable as DC Amplifier: 100 db max gain, 0.1 to 1 V output for each decade input range



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Engineering Writing and Speech

#### **"SYMBOLS FOR ELECTRICITY & ELECTRONICS**"

Howard L. Cook of RCA Electronic Components and Devices, Harrison, New Jersey, will speak at a meeting sponsored by the North Jersey Chapter



of the IEEE Group on Engineering Writing and Speech. His talk will be entitled "Symbols for Electricity & Electronics".

The meeting will take place on September 24, 1964 at 8:00 P.M. in the auditorium of Plant 3 of the Kearfott Company at 1225 McBride Avenue, Little Falls, New Jersey. The plant is located just North of Route 46 at the exit after Great Eastern Mills going West, or after the Clifton Lumber Company going East.

#### Choice of Proper Symbol is of Practical Interest

This talk should be of most interest to those members of the IEEE who have to write or otherwise communicate on Engineering subjects - Engineers, Technical-Report Writers, Technical Editors, Publications Engineers, Standards Engineers, Standardization Engineers, Technical-Advertising Copywriters, etc. Any person, though, who has need to speed communication to a world audience will find this subject of vital interest.

#### Questions and Controversy Welcomed

At the conclusion of the talk, a question and discussion period will open the way for comments on the proposed standard. It is hoped that as many possible will actively participate by raising controversial questions and problems in the use of symbols (For example: Which is preferred - Mc or Mc/s? Is NF for Noise Factor an abbreviation or a quantity symbol? Should ma or mA be used for milliampere or milliamperes?). Visitors to this meeting are especially invited.

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	Meeting Notice	
Date:	Thursday, Sept. 24, 1964	
Dinner:	6:00 P.M.	
Place:	Pomptonian Restaurant 1041 Pompton Avenue (Route 23, opposite The Meadowbrook, 2 Miles South of Route 46) Cedar Grove, New JerSey	
Meeting:	8:00 P.M. Kearfott Auditorium Kearfott Division G.P.A. 1225 McBride Avenue Little Falls, New Jersey	
	Continued on Page 5	

Continued on Page 5

#### From Page 4

#### The Speaker

#### (See attached photo) Page 4.

Howard L. Cook is extremely active in the field of Symbols Standardization. At present, he is Secretary of the IEEE Symbols Committee; the representative of the Symbols Committee on the Editorial Committee of the ASA Y32.2 Task Group on Graphic Symbols for Electrical and Electronics Diagrams; an alternate on the ASA Y32.2 Task Group on IEC (International Electrotechnical Commission) Affairs; and has been active in the work of the JT-8 Committee on Mechanical Standardization Task Group on Electron-Tube Terminal Diagrams.

Mr. Cook (M'59) received the B.S. (Ch.E.) degree from the Columbia University School of Engineering in 1950, after which he joined the Radio Corporation of America, and was assigned to the Cathode-Ray-Tube Activity of the Electron Tube Division at Lancaster, Pa.

In 1954, he transferred to the Commercial Engineering Activity, RCA, Harrison, New Jersey and, as an Engineer, has specialized in the preparation, editing, and production of technical data for electron tubes and semiconductor devices.

#### IEEE Group on Engineering Writing and Speech

#### Officers 1964-5

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Membership Chairman: MRS. E. S. BLAIR Bell Telephone Laboratories Murray Hill, New Jersey Phone: (201) 582-4457

#### Annual All-Day Conference

The 16th Annual All-Day Conference on "Quality Control and Statistics in Industry" offers an opportunity to visit the Rutgers Campus on Saturday, September 12, 1964. You have your choice of topics: Accounting, Inspection, MIL-Q-9858A, Experiment design, etc. Send your advance registration to: Reginald F. Johnson, Chairman of Registration, Ethicon, Inc., U.S. Highway #22, Somerville, N. J. Early registration \$7.00. Door Registration \$7.50.

#### The Newsletter, September 1964

#### Joint Meeting: North Jersey Section and Communications

#### COMMUNICATIONS FOR THE NATIONAL POLITICAL CONVENTIONS

Mr. James Parker, Director of RF Engineering of the CBS Television Network will be the discussion leader at the September joint meeting of



the North Jersey Section of the IEEE and the North Jersey Chapter of the IEEE Group on Communications Technology. He will lead a group discussing the communications provided for the recent national political conventions held in San Francisco and Atlantic City. Communications include those internal to the convention hall, outside communications on the common carriers and other communications for TV and radio. Representatives of groups providing these communications will be the speakers.

The meeting will be held at 7:45 P.M. on Tuesday, September 22, 1964 at Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, New Jersey. The pre-meeting dinner begins at 5:45 P.M. at Wally's Tavern on the Hill, Watchung, New Jersey.

Following one and a half years of graduate study at Massachusetts Institute of Technology, where he majored in electrical engineering as an undergraduate, Mr. Parker joined the Engineering Department of CBS in February, 1937. While an undergraduate he was elected to Tau Beta Pi, the national engineering honor society. Except for two military leaves of absence (World War II and the Korean War) he has been with CBS continuously since that time, and was appointed to his present position in August, 1954. In this capacity, his responsibilities encompass transmitter station installation, station coverage studies, and FCC activities including allocation matters.

He has maintained a continuous association with the military, currently holding a commission as Colonel in the Air Force Reserves, and from 1954 until 1960 was in command of an active Air Force Reserve organization in New York City. On October 1, 1960 he was made Mobilization Assistant to the Commander, ROAMA Griffiss Air Force Base.

	Meeting Notice
Subject :	Communications for the National
Discussion	Fontical Conventions
Leader :	James Parker, CPS Television Network
Place :	Arnold Auditorium Bell Telephone
Date :	Laboratories, Incorporated Murray Hill, New Jersey Tuesday, September 22, 1964 at 7:45 P.M.
Pre-Meeting	
Dinner:	Wally's Tavern on the Hill, Watchung, N. J.

#### For Reservations Contact (By September 21):

G. K. HELDER Bell Telephone Laboratories, Incorporated Murray Hill, New Jersey 582-6669



#### Chairman's Column by John Redmon

As your Chairman for 1964-65, I want to express my appreciation to the membership for their confidence in electing me to serve the Section. I will try to carry out the duties of the office in a proper manner.

Many steps forward were taken during 1963-64 and we hope to take more forward steps during the next year.

The second year of the merger requires your Executive Committee to review all operations of the Section in the view of the needs of the membership and to determine how these needs can best be fulfilled. Some of these include: Our past Program operations versus more Section Co-Sponsorship with the Groups of the monthly meetings; a strengthening of the Section-Student Chapter relationships started under Chairman Vadersen; a review of our Educational-Lecture Series program to insure a maximum service to the membership; a further up-dating of the Section Operating Procedures as necessary; membership approval, early in October, of the Section By-Laws; and many other ideas not yet formalized.

Some of our Fall plans are being implemented as you can see from the publicity in this issue of the Newsletter. More activities will be planned and scheduled and you will hear of these in a later Newsletter.

We are very much concerned by the fact that only a small percentage of the over 5000 members of the Section actually take part in the Section activities in any way. We want to know why this condition exists and what we should do to improve this situation. If you have any ideas or suggestions, why not sit down and drop me, or any member of the Executive Committee, a note giving us the benefit of your thinking. My address is:

> Newark College of Engineering Department of Electrical Engineering 323 High Street, Newark, N. J.

You are also encouraged to take part in the services and activities of the Section and to make our institute truly a professional society and to make our profession truly professional.

Your 1964-65 Executive Committee is (as of this writing in July) almost complete and a final listing will appear in an early NewSletter.

We are all striving to take, in 1964-65, another stride forward for YOUR organization and to build on the good foundation passed on to us by our predecessors.



The newly elected officers of the North Jersey Section are, left to right: Mr. John Van Duyne — Member-at-Large; Mr. Walter Glomb — Vice-Chairman; Mr. John Red-

mon — Chairman; Mr. Roger McSweeney — *Member-at-Large;* (Mr. Steven Mallard (*Treasurer*) and J. W. Gordon (*Sec'y.*) not present.)

#### North Jersey Section IEEE Executive Committee

#### Section Officers

Chairman	John K. Redmon
Vice Chairman	Walter L. Glomb
Treasurer St	ephen A. Mallard
Secretary	James W. Gordon
Member-at-Large Jo	ohn P. Van Duyne
Member-at-Large	Roger McSweeny
Past Chairman Ch	narles W. Vadersen

#### Standing Committee Chairmen

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Membership	. A. Paparozzi
Nominations	A. W. Parkes
Program	J. O'Grady
Publications	Bernard Meyer

#### **IEEE Group Chairmen**

Group Coordinator Raymond Kudisch
Group Automatic Control
(AC) Dr. Andrew Meyer
Group Communications
Technology (CT) R. D. Chipp
Group Engineering Writing
& Speech (EWS) L. G. Lee
Group Electronic
Computers (EC) D. Perry
Group Microwave Theory &
Techniques (MTT) B. Mindes
Group Power (P) Herbert Blaicher

#### N. Y. IEEE GROUP ON RELIABILITY 1964-65 Meetings

For the coming 1964-65 professional group activities, the Metropolitan New York Chapter of PTGR is joining with the Metropolitan New York Chapter of PTGCP in co-sponsoring a series of six panel discussions and lectures. The general theme for these meetings shall be "The Components Industry in Transition".

The six meetings are scheduled for October 21, November 18, 1964 and January 27, February 24, April 28 and May 26, 1965.

The meetings will take place at Schweiber Electronics facility in Westbury, L. I. beginning at 7:30 P.M. Dinner will precede the meeting at 6:30 P.M.

#### "Hardware or Software"

The Metropolitan N. Y. Chapter of the Computer Group has scheduled a major meeting on September 24th as its first of the 1964-65 season. The theme of the meeting is "Hardware or Software: How to Fix the Mix."

Dr. J. P. Mauchly, president of Mauchly Associates, Philadelphia, will present the case for trading-off in favor of software. Dr. Samuel Lubkin, chairman of the board of Digital Electronics Corp., Westbury, will discuss the merits of hardware.

The presentations will be followed by organized discussion led by two other distinguished computer authorities.

Further details will be announced in a letter to metropolitan-area members of the IEEE Group on Computers. For specific information the new chairman of the chapter is Dr. Larry Jones at 16 Bonny Brook Road, Westport, Conn. or call (203) 227-6758. The Secretary-Treasurer A. Corneretto may be called at (212) PLaza 1-5530.

N. Y. Section, IEEE

EDUCATIONAL PROGRAM - FALL - 1964







**REVIEW STUDY GROUPS – FOR PROFESSIONAL ENGINEER EXAMINATIONS** 

**ENDORSED BY NYSSPE** 

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".

#### COURSE NO. 5

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

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. 14, 1964, 6:15-8:30 P.M., 18 Sessions Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C. Instructor: O. ONDRA, Professor in Civil Engineering Manhattan College

#### COURSE NO. 6

#### BASIC ENGINEERING SCIENCES (ASME-IEEE)

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. 8, 1964, 6:30-8:30 P.M., 19 Sessions Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C. Instructors: A. PAULLOW, Senior Engineer, Consolidated Edison Co., Inc. and R. JACOBS, Assoc. Professor, Newark College of Engineering

#### COURSE NO. 7

#### **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, refrigeration, heat transfer, air conditioning and other special subjects.

WEDNESDAYS, Starting Sept. 9, 1964, 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

#### COURSE NO. 8

#### ELECTRICAL ENGINEERING AND APPLICATIONS (IEEE)

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. Only Review of Electrical Engineering for Part III available in Metropolitan area.

WEDNESDAYS, Starting Sept. 9, 1964, 6:30-8:45 P.M., 18 Sessions Rm. 1421, 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.

#### COURSE NO. 9

#### 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.

THURSDAYS, Starting Sept. 10, 1964, 6:30-8:30 P.M., 18 Sessions Instructor: S. DUBLIN, Director of Research & Asst. Prof. in Management Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C. Newark College of Engineering

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NEW YORK SECTION IEEE POWER & INDUSTRIAL DIV.



## **EDUCATIONAL PROGRA**

#### COURSE NO. 1 **RELAYING AND SOLID STATE CONTROL**

#### MONDAYS, 6:30 to 8:30 p.m. Starting Sept. 28, 1964

Ehasco Auditorium, 2 Rector Street, New York 6, New York

Course Coordinator: K. BROCKWELL, Ebasco Services, Inc. Tel. Dlgby 4-4400, Ext. 524

This course is designed to introduce Solid State Control and to demonstrate the application, utilization and service of transistorized circuits for protective, regulating, auxiliary and verification relaying.

1. Sept. 28. General Introduction to Protective Relaying

The role of protective relaying in electric power-system design & operation. Fundamental principles and characteristics and evaluation of its services.

Speaker: C. R. MASON, General Electric. Schenectady, N.Y.

Oct. 5. Fault Current Calculations 2.

> Phasors, per unit and polarity review, symmetrical components, sequence networks and short circuit calculations. Speaker: J. L. BLACKBURN, Westinghouse

Oct. 12. Solid State Protective Relays — Part I 3

Basic philosophy and principles, review of the relays and systems available.

Speaker: J. L. BLACKBURN, Westinghouse

- Oct. 19. Solid State Protective Relays Part II 4. Evaluation of acceptance and trends for the future. Speaker: J. L. BLACKBURN, Westinghouse
- 5. Oct. 26. Protective Relay Applications

Modern practices in protection of machines, transformers, busses and distribution circuits.

Speaker: H. G. ERDMAN, JR., Public Service Electric & Gas Co.

#### 6. Nov. 2. Protection of Transmission Lines

Impedance relays, carrier current microwave and pilotwire schemes. Transferred tripping in line and transformer protection. Effect of system design on solid state relays.

Speaker: H. G. ERDMAN, JR., Public Service Electric & Gas Co.

7. Nov. 9. Transistor Theory and Applications

Basic transistor theory & applications in amplifier & switching circuits.

Speaker: PROF. E. J. ANGELO, JR., Polytechnic Institute of Brooklyn

- 8. Nov. 16. Transistors as Negative Resistance Elements Description & analysis of basic semi-conductor negative resistance devices and circuits. Speaker: PROF. K. K. CLARKE, Polytechnic Institute of Brooklyn
- 9. Nov. 23. Principles of Automatic Process Control Fundamentals of feedback control systems as applied to process control. Speaker: L. R. HULLS, Leeds & Northrup
- 10. Nov. 30. Automatic Process Control Components Theory and description of automatic control components. Speaker: L. R. HULLS, Leeds & Northrup

#### COURSE NO. 2 **ELECTRICAL DESIGN FOR MODERN BUILDINGS & PLANTS**

TUESDAYS, 6:30 to 8:30 p.m. Starting Sept. 29, 1964

Port of New York Authority — Room 206 111 8th Ave. (between 15th & 16th Sts.) New York 11, New York

Course Coordinator: M. ISAACS, Ammann & Whitney,

111-8th Ave., New York 11, New York, Tel. WAtkins 4-8282

This course will introduce new methods and developments in electrical design of interest to Engineers, Designers, Draftsmen and Architects. The registration fee will include a copy of the 1962 National Electrical Code and an excellent text: "Constructing Electrical Systems" by J. F. McPartland and editors of Electrical Construction and Maintenance. This book is a new issue correlating requirements and recommenda-tions of the 1962 National Electrical Code with many special illustrations to clarify code points.

Sept. 29. General Considerations 1.

Discussion of the accumulation of data for estimating and design, the coordination of information from mechanical, structural, etc., and the scheduling of the project to meet a specific completion date.

Speaker: M. ISAACS, Ammann & Whitney

2. Oct. 6. Feeders and Branch Circuits Lecture covering voltage regulation and allocation of voltage drops; calculation of loads for branch and feeder circuits and the selection of equipment required.

Speaker: A. J. KLEINBERGER, Consulting Engineer

3. Oct. 13. Service and Distribution

Talk will cover load calculation, the factors involved in the selection of distribution voltages and the types of networks to be used in buildings and plants. Speaker: A. H. Moore, General Electric Co.

Oct. 20. Selection of Switchgear and Fault 4 Coordination

Discussion will cover short circuit currents in low voltage systems, the application of available protective devices and the coordination of these protecting devices.

Speaker: H. W. REICHENSTEIN, Port of N. Y. Authority

- Oct. 27. Selection and Application of Conductors 5. Lecture covering types of available cables, insulation levels and cable construction and terminations. Speakers: R. KEITH & F. CABROL, Kaiser Aluminum, Bristol, R. I.
- Nov. 10. Lighting Systems 6. Quick review of lighting calculation by standard methods with emphasis on new applications and design for lighting systems in buildings and plants.

Speaker: B. C. COUPER, Electrical Construction & Maintenance 7. Nov. 17. Signal & Communication Systems Code requirements and refinements in application of sig-

nal and communication systems in buildings and plants. Speaker: L. T. CHANDLER, Edwards Co., Norwalk, Conn.

- 8. Nov. 24. Heating and Air Conditioning Basic calculations for determining heating and air conditioning requirements in buildings and plants with emphasis on electric heating. Speaker: W. J. NOVAK, Electrical Construction & Maintenance
- 9. Dec. 1. Codes — National & Local Discussion of recent changes in N.E.C. including changes

now under discussion or study. Speaker: CARLTON SCHAAD, State Supt. of N.Y. Board of Fire Underwriters

Dec. 8. Electrical Design of World Trade Center 10. Application of Electrical Design to a new building complex. Speaker: J. LOHING, Joseph Loring Associates COURSES ARE OPEN TO THE PUBLIC

## **N-Special Study Groups**

#### COURSE NO. 3

#### DESIGN ASPECTS OF HV AND EHV

#### OVERHEAD TRANSMISSION

#### WEDNESDAYS, 6:30 to 8:30 p.m. Starting Sept. 30, 1964

Con Edison Co., Room 1701, 4 Irving Place, New York 3, New York

Course Coordinator: E. RAULA, Burndy Corp., Norwalk, Conn. Tel. 203 TEmple 8-4444

This course is designed to aid in the resolution of problems experienced in the design of modern H.V. and E.H.V. overhead transmission lines.

#### 1. Sept. 30. Introduction

Historical and future developments of HV and EHV transmission lines, including the role of DC. Speaker: L. O. BARTHOLD, General Electric Co., Schenectady, N.Y.

#### 2. Oct. 7. Planning I

HV and ERV transmission in the overall design of an electric power system. Speaker: G. VASSELL, American Electric Power, N.Y.C.

#### 3. Oct. 14. Planning II

HV and EHV transmissions' role in interconnections and power pooling.

Speaker : G. VASSELL, American Electric Power, N.Y.C.

#### 4. Oct. 21. Overhead Conductor Design

System requirements, Conductor design, clearances, sags plan and profile etc.

Speaker: EARL HAZAN, Kaiser Aluminum, Newark, Ohio

#### 5. Oct. 28. Vibration

Vibration problems and solutions.

Speaker: R. E. LARSON, Rome Cable Division of ALCOA, Rome, N.Y.

6. Nov. 4. Lightning & Switching Surges

Phenomena and protection. Speaker: J. W. SKOOGLUND, Westinghouse Electric Corp.,

#### 7. Nov. 18. Tower Design

Speakers: MR. WALTON, MR. FORTNEY, American Bridge Div. U. S. Steel Corp., Pittsburgh, Pa.

Pittsburgh, Pa.

#### 8. Nov. 25. Insulators

Suspension hardware, corona and radio noise protection. Speaker: D. C. FIERO, Lapp Insulator Co., Leroy, N.Y.

#### 9. Dec. 2. Modern Construction Practices

Clearing methods, tower erection, conductor stringing, etc. Speaker: CLEMENT STREIFUS, Ebasco Services, Inc., N.Y.C.

#### 10. Dec. 9. 500KV Line Design

Design of Keystone 500kv Transmission System. Speaker: W. C. FREEMAN, Stone & Webster Engineering Corp., Boston, Mass.

#### COURSE NO. 4

#### SYMMETRICAL COMPONENTS

#### THURSDAYS, 6:30 to 8:30 p.m. Starting Oct. 1, 1964

Con Edison Co., Room 1101S, 4 Irving Place, New York 3, New York Course Coordinator: J. ZELLER, Con Edison Co., Tel. 460-4280

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

1. Oct. 1. The Per Unit System of Notation Calculation of short circuit currents. Common KVA base, conversions to per unit values. Shert cut calculations.

Speaker: LAWRENCE J. HOLLANDER, New York University

2. Oct. 8. Review of Phasor Algebra & A-C Power Circuit Theory

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

Speaker: LAWRENCE J. HOLLANDER, New York University

3. Oct. 15. 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: LAWRENCE J. HOLLANDER, New York University

4. Oct. 22. Sequence Current & Voltage Components During Faults

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

Speaker: LAWRENCE J. HOLLANDER, New York University

5. Oct. 29. 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. Nov. 5. 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. 12. Mechanics of Fault Current Calculations III Large system fault study with computers, and by Analog and Digital methods. Speaker: H. Y. TSIEN, Public Service Electric & Gas Co.
- 8. Nov. 19. Transformer Characteristics & Connections Fundamental equation and vector diagram, phase shifts through transformer banks. Auto transformers. Speaker: Mr. J. L. BLACKBURN, Westinghouse
- 9. Dec. 3. Rotating Machinery Characteristics Generator characteristics, transient, subtransient, synchronous and negative sequence reactances.
  - Speaker: Mr. J. L. BLACKHURN, Westinghouse
- Dec. 10. Symmetrical Components Applied to Relaying Use of zero sequence currents, voltages and combinations of both. Directional ground relaying.

Speaker: Mr. J. L. BLACKBURN, Westinghouse

## FALL-1964

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

N. Y. Section, IEEE

Power and Industrial Div.

EDUCATIONAL PROGRAM - FALL - 1964



ASME

#### INDIVIDUAL IMPROVEMENT STUDY GROUP

COURSE NO. 10

Effective Speaking for Engineers

WEDNESDAYS, 6:30-8:30 p.m.

Starting Sept. 9, 1964

Room 1806-S Con. Edison Co., 4 Irving Place, N. Y. C.

Instructor: PROF. WM. WALTER DUNCAN Dept. of English and Speech Bronx Community College of the City University

A Study Group designed for engineers who desire training in the fundamentals of the art of addressing and influencing audiences.

- 1. Stage fright and how to control it; basic principles of effective speech. Each man will introduce himself.
- 2. How to use the voice to express thoughts and feelings in a dynamic, communicative manner. Drills with the use of a tape recorder.
- 3. Good articulation for effective speech. Drills with the use of a tape recorder.
- 4. Vocabulary and the use of words with precision. Reports on word study.
- 5. How to express ideas clearly and vividly. Reports.
- 6.7.8. How to use visual aids effectively. Carefully prepared visual aid speeches.
- 9.10.11. The subtle art of persuasion: Selling ideas, products and services. Carefully prepared, persuasive speeches.
- An introduction to General Semantics. The analysis of language and communication with applications from the engineer's professional environment. Guest lecturer: George M. Bernard, Past Chairman, Metropolitan Section.

Each man will have an opportunity to speak at each session. Constructive criticism will be presented by the instructor. Those enrolled in the course will be encouraged to participate in the critique sessions, thus allowing each person to know the instructor's opinions as well as the reaction of his peers regarding his speech, his ideas and overall effectiveness.

All students registered for the Effective Speech course are automatically invited to participate in the activities of the Engineers' Forum, a division of our Metropolitan Section Program Committee. The Forum, a discussion group, organizes monthly meetings. They are selected from subjects of current interest, usually of a non-technical nature. Some times there are informal round-table discussions, other times lectures followed by group participation in questions and answers. The Engineers' Forum provides our Section with a unique workshop for continued practice in self-expression.

#### REGISTRATION

FEES: For all courses except course No. 10 \$20. — to members of I.E.E.E., A.S.M.E., A.S.C.E., A.I.Ch.E., A.I.I.E., N.Y.S.S.P.E. \$30. — to all others.

> For course No. 10 \$30. — to members (as above). \$40. — to all others.

For Advance Registration (mailed at least one week before 1st session) deduct \$5.00 from approp. fee.

**Registration:** Fill out form below & mail with your check or money order to the following:

#### For courses No. 1 to 4

make checks or money order payable to: "POWER & IND. GROUP, N.Y. SECT., I.E.E.E." and mail to: A. Starone, Vice Chairman Educational Committee, I.E.E.E.; Public Service Electric & Gas Co., 80 Park Place, Newark, N. J.

#### For courses No. 5, 8 & 9

make checks or money order payable to: "POWER & IND. GROUP, N.Y. SECT., I.E.E.E." and mail to: N. M. Moreira, Vice Chairman Educational Committee, I.E.E.E., Con Edison Co., 4 Irving Place, New York 3, N. Y.

#### For courses No. 6, 7 & 10

make checks or money order payable to: "ASME METROPOLITAN SECTION" and mail to: R. G. Trabulsi, Vice Chairman Educational Committee A.S.M.E. Factory Mutual Engr. Div. 355 Lexington Ave., New York 17, N. Y.

ADVANCE-REGISTRATION FORM

Name (printed)		
Firm	Position	
Business Address	Phone No	
Home Address		
Course No. & Study Group		
Member of: IEEE AIME ASME ASCE OTHER NON-MEMBER Listend to emply	(Do Not Write In This Space) Admission Card No. Refund Certificate No. Fee Paid \$	
for membership in	DateBy	

#### By-Laws to be approved at October Section Meeting

#### **BY-LAWS OF THE** NORTH JERSEY SECTION Institute of Electrical and **Electronics Engineers, Inc.**

#### 1. OFFICERS

The officers of the Section shall consist of:

Chairman Vice-Chairman Secretary Treasurer Junior Past-Chairman Member-at-Large 1 Member-at-Large 2

#### 2. EXECUTIVE COMMITTEE

The Executive Committee of the Section shall consist of the officers, the Chairmen of all standing committees listed in the Section Operating Procedures, and the Chairmen of the Professional Technical Group Chapters.

#### **3. COMMITTEES**

The chairmen of the various committees represented on the Executive Committee shall be appointed by the Section Chairman with the approval of the Executive Committee.

#### Automatic Control

#### Officers 1964-5

Chairman	Dr. A. U. Meyer, BTL
Vice-Chairman	R. G. Sokalski, Kay Electric

Secretary

### L. E. Sutton III,

Gibbs & Cox

#### **Electronic Computer**

#### **NEW OFFICERS**

The Computer Group begins its second year of existence in North Jersey with the following newly elected officers:

Chairman: DAVID P. PERRY

ITT Communication Systems Inc.

Vice-Chairman: EDWARD R. BYRNE Bell Telephone Laboratories Inc.

Secretary:

LOUIS M. SMALL ITT Communication Systems Inc.

A vote of thanks is due last year's officers who guided the group through a successful first year: David P. Perry - Chairman,

#### 4. DUTIES OF OFFICERS AND COMMITTEE CHAIRMEN

The duties of the officers and committee chairmen are as listed in the Section Constitution and Section Operating Procedures.

#### 5. CONDUCT OF MEETINGS

The conduct of business at the general meetings of the Section and the Executive Committee shall be governed by Roberts' Rules of Order, Revised, when not incompatible with the Constitution of the Institute. the By-Laws, or the Section Constitution.

#### 6. ELECTION OF OFFICERS

The Nominating Committee shall present at least one nomination for each Section office (with the exception of Junior Past-Chairman) and the nominations shall be announced in the March issue of a Section publication. Additional nominations may be made by a petition signed by not fewer than 25 voting members of the Section and transmitted to the Secretary for submission to the Executive Committee not later than April 30th. The petition must certify that the persons nominated have agreed to serve, if elected.

#### 7. TERMS OF OFFICE

The officers of the Section shall take office on July 1st and their term expires on the June 30th following with the exception that

Thomas H. Crowley - Vice-Chairman and Harry Clark - Secretary.

#### FALL PROGRAM

The program for this year will begin in October with a description of Project MAC by Richard G. Mills of M.I.T. Project MAC is an experiment to program a digital computer through remote input consoles using teletype machines and data links. Such a real-time link will be set up to demonstrate the system at the meeting. Further details will be in next month's Newsletter.

#### Microwave Theory and Technique

#### **New Group Officers:** 1964-5

Chairman

Vice-Chairman

Program

Program

Microlab

Committee

the outgoing Treasurer shall be responsible for his records until they are audited and the audit has been approved.

#### 8. AUDITING AND BONDING

The Treasurer shall be bonded at the expense of the Section in an amount determined by the Executive Committee. His books shall be audited at the close of his term of office by an auditor approved by the Executive Committee.

#### 9. REMOVAL OF APPOINTED MEMBERS

Any appointed member of a committee may be removed from his position by a two-thirds majority vote of the entire voting membership of the Executive Committee. Prior to such vote being taken, the member in question shall be notified in writing of the pending action and requested to present himself before the Executive Committee at a time and place, not less than 15 days in advance, designated in the notice for the purpose of showing cause why he should not be removed from the position.

#### 10. AMENDMENT OF BY-LAWS

These By-Laws may be amended by a twothirds majority vote of the full membership of the Executive Committee provided a written notice including the proposed amendment has been given to all members of the Executive Committee at least ten days in advance.

#### Communications Technology

#### **IEEE GROUP ON** COMMUNICATIONS TECHNOLOGY Officers — 1964-65

#### Chairman:

R. D. CHIPP 15 Ward Street Bloomfield, New Jersey

Vice-Chairman:

A. A. ROETKEN **Bell Telephone Labs** Murray Hill, New Jersey

#### Secretary:

J. HARVEY Sichak Associates 518 Franklin Avenue Nutley, New Jersey

Financial & Arrangements Officer:

> M. WESTHEIMER ITT Communication Systems Paramus, New Jersey

Barry Mindes, ITT

Michael J. Thompson, BTL

Chairman

John Vogler,

Lawrence Varnerin, BTI.

#### John K. Redmon Chairman

John Redmon has been an Associate Professor in Electrical Engineering at the Newark College of Engineering since February, 1960. He is



associated with the Public Service Electric and Gas Co. on a part-time basis.

After graduating from NCE with a BS in 1942, he received an MS from Stevens Institute in 1949. Additional graduate work followed at NCE and New York University.

Active in the former AIEE organization since 1953, he has held many positions in that organization, including these in the New Jersey Division: Chairman, Educational Committee, Member-at-Large, Secretary, Treasurer, Member of Merger Committee, and Member Student Guidance Committee.

Professor Redmon holds the rank of Captain in the United States Naval Reserve. He served in both World War II and the Korean conflict. He has over

#### **Executive Committee 1964-5**

22 years service in the Naval Reserve including two tours of active duty (World War II and Korean Conflict).

He is a Member of Tau Beta Pi, and the Alumni Association of NCE.

Professor Redmon has most recently served as Vice-Chairman of the North Jersey Section and was chairman of the 1963-64 Annual Section Dinner last March.

#### Walter L. Glomb

Vice-Chairman

Mr. Glomb received his BS degree in 1946 and his MS in 1948, both from Columbia University. In 1950, following a brief period at Paramount



Pictures, Incorporated, where he was concerned with the development of theater television systems, he joined ITTFL. Since that time he has been concerned with communication systems design, integration, and analysis. Since 1959 Mr.

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STAFF ASSOCIATES

CREATIVE | ADMINISTRATIVE | RESEARCH | STAFF FUNCTIONS PHONE: AREA CODE 201 366-1580 P.O. BOX 38, FORD ROAD • R.D. 1, DOVER, N. J. Glomb has been directly concerned with integration and analysis of communication satellite system performance.

Mr. Glomb is a member of the Institute of Electrical and Electronics Engineers and of Tau Beta Pi.

#### Stephen A. Mallard Treasurer

Stephen A. Mallard received his ME in 1948 and his MS in 1951, both from Stevens Institute of Technology. He was an Instructor in Elec-



trical Engineering at Stevens from 1948 to 1951. Mr. Mallard joined the Public Service Electric and Gas Co. in 1951, and has been serving in a number of positions in the Electric Distribution Department and System Planning Department. He is currently engaged in planning developments of future generation, transmission and interconnections.

Mr. Mallard has been active in the former New Jersey Division of AIEE, scrving on its Executive Committee, Program Committee, Education Committee, and Student Guidance Committee. He is a licensed Professional Engineer in New Jersey, a member of the National Society of Professional Engineers, and a member of Tau Beta Pi.

Mr. Mallard is married, has three children, and lives in Nutley, New Jersey.

James W. Gordon

Secretary

Mr. Gordon was born in 1920 in Pine Island, Minnesota. In 1942 he received a BEE degree from the University of Minnesota. He joined the



General Electric Test Program in 1942. He then had assignments in the Service Engineering, Control Engineering, and Application Engineering Divisions of the General Electric Company. He is presently employed in the East Orange Sales Office as an Application Engineer.

His work with the AIEE has been as member and Chairman of the Educational Committee, and he was Member-at-Large, Secretary, Treasurer, and Vice-Chairman of the New Jersey Division.

## professional notices

#### **KAHANT ASSOCIATES**

Representatives for ASSOCIATED RESEARCH, INC. — AC & DC HYPOTS ranges 1500 volts to 150 kilovolts; Megohameters. GEMCO ELECTRIC CO. — Quality NEMA-7 explosion proof push-buttons, signal light, selector multi-stage switches; rotating, adjustable multi-stage cam limit switches; complete NEMA-7 control enclosures. Also NEMA-1 and 4 types. 60 Park Place, Newark 2, N. J. Cortlandt 7-5326 (N.Y.) Mitchell 2-3930 (N.J.)

#### 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.



Rates for professional notices (classified advertising): \$15 per inch. For ten consecutive insertions rate is \$12 per inch. For details write IEEE Newsletter, Box 275, Morris Plains, N. J.

Biographies of the Members-at-large John Van Duyne and Roger McSweeny will appear in the October Issue.

#### **NEW YORK SECTION** COMMUNICATIONS AND **ELECTRONICS DIVISION**

#### 1964-65 Lecture Series **Engineering Applications of Computer Programming**

"Engineering Applications of Computer Programming" is the subject of a series of eighteen lectures being sponsored by the Education Committee of the Communications and Electronics Division. These lectures are designed to present an up-to-date picture of the field of computer programming as applied to engineering problems. Computer demonstrations will be used in conjunction with the lectures to provide a working knowledge of the subject.

The series is divided into three parts. Each part will be presented by a recognized authority on the subject.

Part I "Introduction to Programming" will be presented by Professor T. R. Bashkow, Professor of Electrical Engineering at Columbia University and Director of Columbia's Computer Programming Laboratory. Three of Professor Bashkow's lectures will cover FORTRAN, a simple programming language for computers. The last three lectures show how this language can be used to solve some typical engineering problem (e.g. curve plotting). This part serves as the basis for subsequent lectures as it illustrates the notion of programming.

Part II "Design Applications" will be presented by Mr. R. A. Bragg, Program Administrator of Engineering Application Development, IBM Data Processing Division. Mr. Bragg will concentrate on the use of FORTRAN and modifications of that language to design circuits and systems and to analyze performance of circuits and systems.

As an example, Mr. Bragg will discuss customized transformer design. Methods for using computers to convert customer requirements automatically into parts lists and assembly instructions will be described. As an example of system design, a case study of the use of a computer to design another computer will be discussed. Finally, the use of computers to analyze DC, AC, and transient properties of electrical networks will be described.

Part III "Special Engineering Applications" will be presented by members of the Systems Programming Services Department of the Sperry Rand Corporation, Univac Division. This part will cover representative programs which are used with specially designed computers intended for one application. Because of the diversity of the topics, an expert on each specialty will present each lecture.

The entire lecture series is designed to be logically continuous. This is, Parts II and 111 follow and build upon the material presented in preceding parts.

#### **ATTENDANCE INFORMATION:**

All lectures will be held in the Western Union Auditorium, 160 West Broadway, New York City on Tuesday evenings from 7:00 to 9:00 P.M. This auditorium is convenient to all public transportation. Abundant parking facilities are available.

Dates for the three-part series are as follows:

Part	1:	Introduction to Programming October 6, 13, 20, 27; November 10 and 17, 1964
Part	11:	Design Applications January 19, 26; February 2, 9, 16 and 23, 1965
Dowt	ш.	Special Engineering

Special Engineering Part III: Applications April 13, 20, 27; May 4, 11 and 18, 1965

#### **REGISTRATION FEES:**

Three Part Series:

\$25 -	IEEE	Members	

\$30 — Non-Members

\$5 -	Full-Time	Students
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Individual Parts:

- \$10 IEEE Members
- \$12 Non-Members
- \$2 Full-Time Students

Please make checks payable to: IEEE, C. & E. Division. For further information or registration contact:

#### JOHN L. VOSSEN

Chairman, Education Committee Radio Corporation of America Communications Systems Division 75 Varick Street New York, New York 10013 (212) 925-3716, Ext. 229

#### **ELECTRONIC SWITCHING** COMMUNICATION SYSTEMS

A Fall lecture series on "Electronic Switching Communication Systems" will be given during October and November 1964 by the Communication and Electronics Division of the New York Section IEEE.

The lectures will be held at the Western Union Auditorium, 160 West Broadway, Manhattan, on six consecutive Mondays, 7:00 to 9:00 P.M. The area has adequate street parking after 6:00 P.M., and is easily

reached by IRT (Seventh Ave.) and IND subways.

Fee for the series is \$5.00 for members of the IEEE and associated technical societies. \$8.00 for non-members and \$1.00 for Full Time students. Registration must be made in advance. To register, make check payable to "Communication and Electronics Division, New York Section, IEEE." Send with a stamped self-addressed envelope to Mr. R. E. Sanner, General Telephone and Electronics Corp., 730 Third Avenue, New York, N. Y. 10017.

Continued on Page 14

From Page 13 1. October 19, 1964 Introduction OSCAR MYERS Director, Telephone Switching Development IT&T Co.

 October 26, 1964
 Space Division Switching — Voice RAYMOND W. KETCHLEDGE Director, Electronic Switching Laboratory Bell Telephone Laboratories

#### SPRING 1964 STUDY GROUP Overall Communications Systems Planning

The past decade has seen a change of significant proportions in the communications field. The advent of digital data communications and the emphasis upon datarecord systems has placed an increasing burden upon engineers engaged in the design and planning of communication systems.

It is the intention of this study group to survey the problems, tools and methods applicable to the subject matter and to enable those attending each session to acquire a basic understanding of the problems and methods encountered in overall communication systems planning and the interrelationships existing between the component parts of the communication system.

The text material will be a set of notes submitted by the individual lecturers and outside contributors, bound and published in two volumes.

NOTE: Early registration is solicited since there is a limited supply of notes available for distribution.

"The North Jersey IEEE Group on Communications Technology is aware of the Seminar being sponsored by the IEEE Educational Committee and recommends that its members attend."

Send Early Registrations to:

#### Mr. R. Kudisch

ITT Communications Systems, Inc. South 60, Route 17, Paramus, New Jersey

Make checks payable to: North Jersey Section IEEE

Name
Home Address
Firm
Position
Member of
Business Address
Business Phone

 November 2, 1964
 Time Division Switching — Voice J. G. PEARCE Principal Engineer, Electronic Switching Stromberg Carlson Corp.

 November 9, 1964
 Time Division Switching Data Voice Band HARTLEY KLEINBERG Project Engineer IT&T Federal Laboratories

Starting	Wednesday,
Date:	September 23, 1964
Time:	6:30 P.M. to 8:30 P.M.
Location :	Vail Hall, Bell Telephone Building 540 Broad Street Newark, New Jersey
Registration	
Fee*:	Early Registration: Members, \$25; Non-members, \$35
Door	

Registration: Members, \$30; Non-members, \$40

\*Non-members may apply the \$10 difference in registration fee towards membership in the IEEE by requesting a Refund Certificate.

#### FUNDAMENTAL CONCEPTS OF COMMUNICATION SYSTEMS PLANNING

(to be inserted as a set of notes)

Contributors:

MR. J. W. HALINA ITT Communications Systems, Inc. Paramus, New Jersey MR. E. H. HARWOOD ITT Communications Systems, Inc. Paramus, New Jersey MR. A. D. HALL Bell Telephone Laboratories Murray Hill, New Jersey

SESSION 1 — Wednesday, 23 September 1964

#### HIERARCHY OF USER REQUIREMENTS AND NEEDS

(Commercial, Governmental, or Military) Lecturer:

MR. CARL HARVEY ITT Communications Systems, Inc. Paramus, New Jersey

SESSION 2 — Wednesday, 30 September 1964

SESSION 3 - Wednesday, 7 October 1964

#### SYSTEM DEVELOPMENT

Lecturer: MR. HENRY HUTCHINSON ITT Communications Systems, Inc. Paramus, New Jersey

SESSION 4 - Wednesday, 14 October 1964

SESSION 5 - Wednesday, 21 October 1964

- November 16, 1964
  Data Switching Broad Band ROBERT VANIMAN
   Operating Engineer Automatic Electric Company
- November 23, 1964
  Future of Electronic Switching JOHN BEIERLE
   Manager, Electronic Switching Systems Plannning
   Automatic Electric Laboratories

#### METHODOLOGICAL CONSIDERATIONS

Lecturer: MR. WOLFGANG JAKOBSBERG Booz Allen Applied Research, Inc. 4815 Rugby Avenue Bethesda 14, Md. SESSION 6 - Wednesday, 28 October 1964 COMMUNICATIONS NEEDS VERSUS **EXISTING FACILITIES** (Matching of the Capabilities of the Existing Facilities to the Traffic Flow Requirements) Lecturer: DR. NOAH KRAMER Stelma, Inc. 200 Henry Street Stamford, Conn. SESSION 7 - Wednesday, 4 November 1964 CONDUCTIVE PATH (Coaxial Cables, Submarine Cables, etc.) Lecturer: MR. JACK WOLFF Radio Corporation of America 75 Varick Street New York 13, N. Y. SESSION 8 — Wednesday, 18 November 1964 RADIO PATH (HF, Tropo. Satellite) Lecturer: MR. ROBERT P. ADAMS Sichak Associates 518 Franklin Avenue Nutley 10, New Jersey SESSION 9 — Wednesday, 25 November 1964 MULTIPLEX (FDM, TDM) Lecturer: MR. CHARLES D. HANSELL G.T. & F. Service Corp. 730 Third Avenue New York City 10017 SESSION 10 - Wednesday, 2 December 1964 SESSION 11 Wednesday, 9 December 1964 Lecturer: MR. E. N. WELLS, AT&T SESSION 12 - Wednesday, 16 December 1964 Lecturer: MR. W. A. JONES, AT&T STANDARDIZATION Lecturer: MR. HOWARD H. SMITH ITT Communication Systems, Inc. Paramus, New Jersey

your Tektronix Field Engineer invites you to send or phone for this new booklet... describing the Type 564 Oscilloscope.

With the Type 564, you can:

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The booklet contains information on amplifier and time-base plug-in units as well as instrument performance characteristics.

Get your copy now!

Type 564

## **Storage and General-Purpose Oscilloscope**



STORED AND CONVENTIONAL TRACES DISPLAYED SIMULTANEOUSLY This oscilloscope display shows a stored trace (upper waveform) and a conventional trace (lower waveform). Single-exposure photograph.

The Tektronix Type 564 Oscilloscope can display both conventional and stored waveforms simultaneously with ease. This facility gives you the benefit of a stored oscilloscope combined with the value of a general-purpose oscilloscope.

Traces can be stored on either the upper or lower half of the unique split screen for up to one hour. Conventional waveform can be displayed on the other half, if desired. Or, you can present

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either kind of display on the full screen area. Only the Tektronix Storage Oscilloscope can give you this performance.

For the booklet listing complete specifications and information on the various amplifier and time-base plug-in units used to adapt the oscilloscope to particular application areas—

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The Newsletter, September 1964





HARRISON LABORATORIES SCR-3 POWER SUPPLY

#### HARRISON LABS' SCR-3 POWER SUPPLIES ARE COMPACT & EFFICIENT

Harrison Laboratories division of Hewlett-Packard is now marketing a new line of high power, regulated DC Power Supplies. This 3-phase series of Power Supplies offer excellent immunity to line transients. Other advanced features include:

- CONSERVATIVE DESIGN FOR RELIABILITY
  AND LONG-LIFE;
- SILICON DIFFERENTIAL AMPLIFIER CONTROL CIRCUITRY FOR IMPROVED STABILITY;
- CONTINUOUSLY VARIABLE OUTPUT VOLTAGE & CURRENT;
- AUTO-SERIES, AUTO-PARALLEL, AND AUTO-TRACKING OPERATION.

Voltage regulation is 0.25% and current regulation is 1%. Ripple is less than 0.5% to 1%, depending on model number.

Transient load recovery time is less than 50 ms. All Supplies are short-circuit proof.

These three SCR-3 Models, 6453A, 6456A, and 6459A, are Constant Voltage/Constant Current with automatic crossover ... Prices range from \$1250 to \$1435. Call your RMC Field Engineer for full specs and application info on these new Power Supplies.



HEWLETT-PACKARD MODEL 851A/8551A SPECTRUM ANALYZER

## SPECTRUM ANALYZER HAS 2 GC SWEEP, FULL CALIBRATION

Model 8551A/851A Spectrum Analyzer is one of the most important new instruments Hewlett-Packard will introduce this year. Features of this new Spectrum Analyzer are 2-gc bandwidth from 10 mc to 40 gc, accurately calibrated 60 db dynamic range, and sensitivity of -100 dbm.

Designed to give a large increase in the scope, speed, and accuracy of spectrum monitoring, spectrum signature identification, and RFI analysis, the entire instrument occupies only 19" of rack space.

By contrast with previous analyzers, all basic functions are fully calibrated. Spectrum width accuracy is  $\pm 5\%$  from 100 kc to 3 Mc,  $\pm 5\%$ at 10 Mc, and  $\pm 4$  Mc from 30 Mc to 2 Gc. A significant contributor to performance and operating convenience is a newly-developed rf attenuator which may remain constantly in the circuit without penalizing sensitivity, since it has zero loss at dc, and less than 2 db at 10 Gc.

Price of the 851A Display Section is \$2400 while the 8551A RF Section is \$7100. Why not call your Field Engineer at RMC for complete specs and a demonstration of this remarkably advanced Hewlett-Packard Spectrum Analyzer?

**TINC** SALES DIVISION, HEWLETT • PACKARD COMPANY FIELD ENGINEERS • ELECTRONIC INSTRUMENTATION 236 EAST 75th STREET, NEW YORK, NEW YORK • TRafalgar 9-2023 391 GRAND AVENUE, ENGLEWOOD, NEW JERSEY • LOwell 7-3933