NORTH JERSEY SECTION RECIPIENTS

of

IEEE NATIONAL AWARDS

W. R. G. BAKER PRIZE

A. G. CHYNOWETH

D. E. Mc CUMBER

LAMME MEDAL

W. P. MASON

To be Honored at

(See page 13)

ANNUAL BANQUET & DANCE

Palsfair House, West Orange, N. J.

Saturday, February 4, 1967 — 6:30 P. M.

The IEEE
Newsletter
The Magazine of the North Jersey Section

NORTH JERSEY SECTION SYMPOSIUM ON RELIABILITY

Newark College of Engineering

February 16, 1967 Thursday — 5:00 P.M.

(See page 14)

Volume 13 / Number 6 FEBRUARY 1967

Seniors Receive Valuable Advice

The 1966 version of the Annual Students' Night was held on Friday, 9 December, at the Newark College of Engineering Alumni Center for Continuing Engineering Studies.

The theme of the program was "After College — What." Five speakers and a student moderator comprised the panel. The evening's discussion involved advice for the seniors of the colleges in the North Jersey Section's area. Among the attendees were the chairman and vice-chairman of the Electrical Engineering Department of NCE, the chairman of the FDU EE Department, and the advisors from the Stevens and NCE branches. Among the student leaders were Roger Sabanosh, NCE Day Branch Chairman who moderated the panel, the chairman and vice-chairman from Fairleigh Dickinson, the vice-chairman of the NCE Day Branch, and both the chairman and the vice-chairman of the NCE Evening Branch.

The following five engineers generously offered their services for the program: Barry Soloway, FDU '64, Bell Telephone Laboratories at the Western Electric Allentown Works; James Boyle, NCE '58, Public Service Electric and Gas Co.; Hirsh Marantz, FDU '59, Rockaway Division of Hewlett-Packard; John Lacz, Stevens, Lacz and Lacz;

(Continued on page 14)

National Awards and Prizes

In this month of February, we honor those members of our profession who have received recognition for distinguished achievement and service. The annual Fellow Awards dinner is the occasion for the presentation of certificates to those who have been elected to the grade of Fellow in the Institute, and to publicly recognize those upon whom an Institute Award has been conferred.

The IEEE National Awards fall into five categories:

1. Medal of Honor.
2. Major Annual Awards aiming at recognition of achievements having general significance for the profession.
3. The various Field Awards recognizing unusual accomplishment in a particular field of interest.
4. Prize Papers recognizing publications significant for their excellence.
5. Scholarships aiming at the support of worthy superior students.

Every member of the IEEE is eligible to nominate candidates for awards, medals, scholarships and prizes, and for the election of a Senior Member to the grade of Fellow. A comprehensive summary, listing the various awards and their distinctive features, is listed on pages 12 and 13 of the November, 1966, issue of IEEE Spectrum. The true value and worth of these awards will be realized only to the extent that the recipients consistently represent the most worthy available candidates. Every member should give serious thought to bringing forward outstanding candidates of whose qualifications and contributions he has personal knowledge. It is a serious mistake to assume that *"they"* — meaning the Awards Board, or the IEEE leadership in general—"know all about him." The tremendous scope of today's technology and the large membership of IEEE precludes such knowledge. It is *you*, the members, who are closely associated with deserving candidates, that have the intimate knowledge of their worthiness for nomination.

The Awards Committee of the Section has been set up to provide local assistance in searching out deserving candidates, and to assist the National Committee in its evaluations and decisions. The responsibility for nominating deserving candidates and preparing the forms, of necessity lies with the individual members. Your nomination forms may be sent direct to National headquarters, but by submitting them instead through the Section Awards Committee for evaluation and recommendation, your deserving candidate nomination receives the added prestige and backing of the Section. Members of this committee are as follows:

	PHONE
R. D. Chipp	748-0777
J. T. Cimorelli	485-3900
A. R. D'heedene	538-0632
C. H. Hoffman	622-7000
J. T. Jatlow	284-2930
Dr. J. B. Johnson	736-1000
Prof. S. Fishman	624-2424
Dr. J. D. Tebo	582-5684
L. J. Lunas, *Chairman*	465-2303

Joint Metropolitan Engineering Management
NEW JERSEY MANAGEMENT SYMPOSIUM

The Metropolitan chapter of the Professional Group on Engineering Management will hold a New Jersey regional meeting at ITT Federal Laboratories on Febuary 9, 1967. The meeting will feature a symposium on

"Keys to Better Management of Scientists and Engineers"

The following program has been prepared for this symposium:

Business Goals and the Utilization of Engineers, S. J. Raiter, IBM Corporation, Armonk, New York

As new engineers enter industry, management should not expect them to make all the adjustments. Management must accept new ideas and allow engineers to utilize their capabilities even if alien to present concepts.

Mr. Raiter is a Consultant, R & E Personnel, IBM Corporation and is deeply involved in management research. He has written many papers on engineering management for company use and was a lecturer at AMA and ASQC courses.

Engineering Organization for Successful Program Management, W. L. Glomb, ITT Communications, Nutley, New Jersey

The organization of an engineering team to develop a communication system will be described. Problems and their solutions will be presented.

Mr. Glomb is the Director of Transmission Systems Engineering at ITT Communications and is responsible for the development of space and satellite communications systems.

The Creative Environment, Dr. C. Bahn, The City College, New York, New York

It is possible to identify the optimum environment for creativity at different levels. It will be shown how the selection of appropriate conditions will allow the creative individual the best context to work at a given problem solving task.

Dr. Bahn is the Acting Director of Institutional Research Services at City College. He has done extensive work in creativity and personnel psychology and was a consultant to AT & T and the New York Telephone Company.

Managing the Engineer, R. P. Hinton, Communications Systems Incorporated, Paramus, New Jersey

The speaker will stress the peculiar difficulties and similarities in the managing of engineers as compared to managing non-engineers. This will lead into a discussion of the engineer as a manager.

Mr. Hinton is the Vice-President of Engineering at Communications Systems and has been active in electronic systems development for many years. He is the holder of over 50 patents. He is an AMA lecturer and is North Jersey chairman of the IEEE ComTech Committee.

The symposium will be held on February 9, 1967 at 7:30 P.M. in the Auditorium at the ITT Federal Laboratories, Kingsland Road and Washington Avenue, Nutley, New Jersey. Get there by exiting Route 3 at Main Avenue, Nutley and proceeding south and east. There will be a pre-meeting dinner at 5:45 P.M. at the Copperhood Restaurant, 1 Park Avenue, Lyndhurst, New Jersey (off Route 3). For additional details and dinner reservations, contact Dr. M. Katz, (201) 481-0461.

Joint Metropolitan
The Silicon Silicon Dioxide Interface

Presented by:
Dr. A. Goetzberger
Bell Telephone Laboratories, Inc.
Murray Hill, New Jersey

Date and Time:
Thursday, February 23, 1967 at 8:00 P.M.

Place:
International Telephone and
Telegraph Laboratories,
Nutley, New Jersey

Pre-Meeting Dinner:
Copperhood Restaurant (6:00 P.M.)
South of Route 3 at Park Avenue Exit

Abstract:
The present state of the silicon-silicon dioxide interface studies with the MOS technique will be reviewed.

Speaker:
Adolph Goetzberger received the Ph.D. degree in Science in 1955 at the University of Munich. He joined Bell Telephone Laboratories in 1963 and is currently supervisor of the metal-insulator-semiconductor studies group. Prior to 1963, he was with the Shockley Laboratory in Palo Alto, where he worked on junction imperfections and avalanche breakdown phenomena in silicon, and participated in power transistor development. He is a member of the American Physical Society, IEEE and Electrochemical Society.

The IEEE **Newsletter**

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Volume 13 **February, 1967** **No. 6**

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

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ABOUT ADDRESS CHANGES

REPORT ALL ADDRESS CHANGES TO:
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS INC., 345 EAST 47th STREET NEW YORK, N. Y. 10017

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

NEWSLETTER STAFF

Editor: A. R. D'heedene
School Affairs Editor: Gene R. O'Brien
Associate Editor: David Wiener
Associate Editor: Fred T. Grampp
Advertising Manager: M. M. Perugini

Executive Committee Meeting

at Verona Public Library
Wednesday, 7:30 P.M., March 1

North Jersey Section IEEE Executive Committee 1966 - 1967

Section Officers

Chairman ..... Stephen A. Mallard
Vice Chairman ..... Bernard Meyer
Secretary ..... Merle M. Irvine
Treasurer ..... Joseph O'Grady
Member-at-Large ..... Herbert Blaicher
Member-at-Large ..... Barry Mindes
Past Chairman ..... Walter L. Glomb

Standing Committee Chairmen

Awards ..... Lawrence J. Lunas
Education ..... John Zemkoski
Group Coordinator ..... Robert G. Sokolski
History and Procedures ..... Morris D. Hooven
Membership ..... William Heiser
Nominating ..... John K. Redmon
Publications ..... Sam Petrokofsky
Publicity ..... M. H. Nuechterlein
Program ..... Carl Torell
Student Affairs ..... Prof. J. W. Earle

Joint Metropolitan Information Theory

Detection of non-deterministic signals — theory and practice

Place:
Arnold Auditorium,
Bell Telephone Laboratories

Date:
Thursday, February 16, 1967

Time:
3:00 - 5:00 P.M.

No advance notice need be given to attend. For further information contact A. D. Wyner, Bell Telephone Laboratories, Murray Hill, New Jersey — 201 - 582-2760.

NORTH JERSEY SECTION
New Officers for 1967 - 68 Term

The Nominating Committee recommends the following slate of officers for the 1967-68 term of office:

Chairman ..... Bernard Meyer
Vice Chairman ..... Joseph O'Grady
Treasurer ..... Merle Irvine
Secretary ..... Herbert Blaicher
Members-at-Large ..... Robert Sokolski, Carl Torell

CALENDAR

Details on page

In Memoriam

The Newsletter was saddened to learn of three recent deaths, those of Rodney D. Chipp, of Sol Fishman, and of Mrs. John K. Redmon.

Rod Chipp was well known to us because of his activity on many committees, and his work with the Professional Group on Management. For years he was active in the New York Section, serving in many capacities. He was Chairman of the New York Section from 1950-51.

Prof. Fishman, of the Newark College of Engineering, was also well known because of his wide acquaintance among the electrical engineering fraternity. He helped a great deal in the establishment of a number of student branches. He also was active in the Groups and Sections.

Most recently, both Rod Chipp and Sol Fishman were members of the North Jersey Section Awards Committee.

Prof. Redmon also has been long active in Institute and Section affairs, serving in many capacities including Chairman of the North Jersey Section. Currently, he is Chairman of the Section's Nominating Committee.

The membership of the Section extend their sympathy to the families of Rod Chipp and Sol Fishman, and to John Redmon and his family in this time of grief.

New York Communications Technology

Energy Sources for Communications

A series of five lectures will be presented by the Communication Technology Group, New York Section, IEEE, on Monday nights beginning March 27th.

Schedule of Lectures:

1. March 27 — Fuel Cells
2. April 3 — Solar Cells
3. April 10 — Thermoelectric Devices
4. April 17 — Thermionic Devices
5. April 24 — Nuclear Techniques

The lectures will be held in the "Little Theatre" on the street floor of the New York Telephone Company at 140 West Street, New York City, from 7:00 to 9:00 P.M.

For information, contact F. E. Sellinger, ADT Company, Inc., 155 Sixth Avenue, New York 10013. A stamped addressed envelope must be included.

New York ComTech

INSPECTION TRIP FEBRUARY 17, 1967 NETWORK MANAGEMENT CONTROL CENTER Long Lines, AT & T Co.

A trip through some of the operations of the Long Lines Department of the American Telephone and Telegraph Company at 32 Avenue of the Americas, New York City, is being sponsored by the Communications Technology Group of the New York Section IEEE for February 17, 1967 at 9:45 A.M.

The trip, which will last about 2½ hours, will include a visit to the Network Management Control Center. For information, contact:

Mr. H. Friedman
New York Telephone Co.
140 West Street — Room 1300
New York, N. Y. 10007

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

N. Y. Section, IEEE

Power and Industrial Div.

Metropolitan Section

ASME

EDUCATIONAL PROGRAM - SPRING 1967

REVIEW STUDY GROUPS — FOR PROFESSIONAL ENGINEER EXAMINATIONS

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

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. 6, 1967, 6:15-8:30 P.M., 18 Sessions
Auditorium, 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.

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

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

MECHANICAL ENGINEERING (ASME) — COURSE NO. 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. 8, 1967, 6:30-8:30 P.M., 18 Sessions
Rm. 240, Ebasco Bldg., 2 Rector St., N. Y. C.

Instructor: H. MANUEL, Lummus Co.

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

Instructors: P. ZARAKAS, Consolidated Edison Co., Inc. and J. F. BATES, 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. 9, 1967, 6:30-8:30 P.M., 18 Sessions
Auditorium, 19th fl., Con Edison Co., 4 Irving Place, N. Y. C.

Instructor: F. BLACKWOOD, American Can Co.

REGISTRATION

INFORMATION AND FORMS ON BACK PAGE

PLEASE POST ON BULLETIN BOARD — A

NEW YORK SECTION IEEE
POWER & INDUSTRIAL DIV.

EDUCATIONAL PROGRA

COURSE NO. 12

PUMPED STORAGE GENERATION

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

Ebasco Auditorium, 2 Rector Street, New York, N. Y.

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

A comprehensive survey of pumped storage peaking power generation including history, development, economic and long range planning, design features, specific projects and future prospects.

1. **Mar. 6 Introduction**
   Peaking power necessity, methods of supply, pumped storage principles, history and development.
   Speaker: G. S. VASSELL, *American Electric Power Corp.*

2. **Mar. 13 Pumped Storage Generation Planning**
   Economic and operating factors, general planning criteria and licensing.
   Speaker: J. M. MULLARKEY, *C. T. Main, Inc.*

3. **Mar. 20 Mechanical Design Factors**
   Equipment requirements, for flow and head variation, capacity, life, reliability.
   Speaker: From General Electric Co.

4. **Mar. 27 Muddy Run Pumped Hydro Plant Planned Operation and Economic Consideration**
   Development, capabilities, planned and coordinated operation and economics.
   Speaker: FREDERICK H. LIGHT, *Philadelphia Electric Co.*

5. **Apr. 3 Smith Mountain Multiple-Use Pumped Storage Project**
   Planning, design, construction, operating practices and experience, similar projects.
   Speaker: A. F. GABRIELLE, *American Electric Power Corp.*

6. **Apr. 10 Taum Sauk Recirculation Pumped Storage Project**
   Planning, design, construction, operating practices and experience, similar projects.
   Speaker: From Union Electric Co.

7. **Apr. 17 Yards Creek Recirculation Project and Kittatinny Mountain Development**
   Planning, design, construction, operating practices and experience.
   Speaker: From Jersey Central P & L Co.

8. **Apr. 24 Prospects for Future Pumped Storage Developments**
   Planned and contemplated projects. Place of pumped storage generation in future power systems.
   Speaker: B. M. ZAMBOTTI, *C. T. Main, Inc.*

COURSE NO. 13

PROBABILITY & STATISTICS FOR ENGINEERS

TUESDAYS, 6:30 to 8:30 p.m. Starting Mar. 7, 1967

Brooklyn Union Gas Co. Auditorium, 195 Montague Street, Brooklyn, New York.

Course Coordinator: DAVID HAWKINS, *Consolidated Edison Co.* Tel. (212) 460-6166

This course provides a broad view of probability and statistical application techniques to load forecasting, system planning, equipment outages, quality control, reliability and life testing and operations research.

1. **Mar. 7 Introduction**
   Review of probability theory and statistical methods.
   Speaker: DR. R. J. RINGLEE, *General Electric Co.*

2. **Mar. 14 Curve Fitting and Regression Techniques**
   Method of least squares, curvilinear regression, multiple regression and correlation.
   Speaker: GORDON CARTER, *General Electric Co.*

3. **Mar. 21 Statistical Techniques for Load Forecasting**
   Analysis of weather and loads, projection of load growth.
   Speaker: From Westinghouse Corp.

4. **Mar. 28 Probability of Outage of Power Plants and Other System Equipments**
   Availability, forced outage rates, probability states and sample selection.
   Speaker: JAMES W. KLEIN, *Public Service Electric & Gas*

5. **Apr. 4 Probability Application in System Capacity and Pool Interconnection Studies**
   Use of probabilities in system capacity studies and in power pool interconnection contracts.
   Speaker: From Westinghouse Corp.

6. **Apr. 11 Monte Carlo and Simulation Techniques**
   Gaming Technique applications to engineering problems.
   Speaker: From Westinghouse Corp.

7. **Apr. 18 Statistical Quality Control — Part I**
   Control charts for measurements tolerance limits and specifications.
   Speaker: L. PASTEELNICK, *American Chickle Co.*

8. **Apr. 25 Statistical Quality Control — Part II**
   Control charts for attributes and acceptance sampling.
   Speaker: L. PASTEELNICK, *American Chickle Co.*

9. **May 2 Application to Reliability and Life Testing**
   Failure-time distributions, the exponential model in reliability and life testing, and the Weibull model in life testing.
   Speaker: DR. MARTIN SHOOMAN, *Polytechnic Institute of Brooklyn*

10. **May 9 Role of Probability and Statistics in Operations Research**
    Speaker: RALPH ORAVEC, *Price Waterhouse & Co.*

The Institute of Electrical and Electronics Engineers, Inc.

North Jersey Section

SPRING 1967 **LECTURE SERIES**

APPLICATION OF MICROELECTRONICS TO MODERN DESIGN

(Detailed description on next page)

A Series of Seven Lectures

Starting on Thursday, February 9 and

Ending on Thursday, March 23

TIME — **6:30 - 8:30 P.M.**

LOCATION — **N. J. Bell Telephone Company — Vail Hall**

540 Broad Street, Newark, New Jersey

REGISTRATION FORM

(At least one week in advance)

Name ..... Job Title .....

Business Address .....

..... Phone .....

Technical Society Affiliation .....

Check enclosed — (Member $20) ..... (Non-Member $30) .....

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

APPLICATION OF MICROELECTRONICS TO MODERN DESIGN

This course is designed to introduce the subject of microelectronics. Sufficient theory is presented to enable the attendee to understand the fundamental problems but the major emphasis is on the use of microelectronics in practical design. The lecturers represent researchers, manufacturers, and users. No previous knowledge of microelectronics is required.

February 9 ..... **Fundamentals of Solid State Electronics**

February 16 ..... **Fabrication of Microelectronic Devices** — Mask preparation, diffusion, testing, and circuit design restrictions.

February 23 ..... **Interconnections and Packaging** — Techniques available; physical, electrical and economic limitations.

March 2 ..... **Linear Applications** — Video amplifiers, RF and IF amplifiers, oscillators, differential amplifiers.

March 9 ..... **Digital Applications** — Logic gates, flip-flops, drivers-characteristics and limitations.

March 16 ..... **Field Effect Devices** — Differences from current mode circuits, advantages and disadvantages, applications as switches, choppers, and amplifiers.

March 23 ..... **Hybrid Techniques** — Thin and thick film circuits, deposited diodes and transistors, pellet type components, interconnection means, applications.

Place — N. J. Bell Telephone Co., Vail Hall, 540 Broad St., Newark

Time — 6:30 P.M. to 8:30 P.M. — Thursday Evenings — Feb. 9 - March 23, 1967

Fee — $25.00 Members, $35.00 Non-members. $5.00 discount for registrations received at least 1 week before the first session.

Limitation: Registration will be limited to the first 120 applicants.

Send Registration Forms to: Mr. Alex Richardson
I.T.T. Federal Laboratories
P. O. Box 413, Paramus, N. J. 07652
Phone: 262-8800, Extension 577

The American Society of Mechanical Engineers

and

The Institute of Electrical and Electronics Engineers, Inc.

North Jersey Section

SPRING 1967 **LECTURE SERIES**

INTRODUCTION TO NUCLEAR POWER

(Detailed description on next page)

A Series of Eleven Lectures

Starting on Monday, February 27 and

Ending on Monday, May 8

TIME — **6:30 - 8:30 P.M.**

LOCATION — **Newark, New Jersey**

REGISTRATION FORM

(At least one week in advance)

Name ..... Job Title .....

Business Address .....

..... Phone .....

Technical Society Affiliation .....

Check enclosed — (Member $20) ..... (Non-Member $30) .....

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

INTRODUCTION TO NUCLEAR POWER

JOINT ASME-IEEE LECTURE SERIES

This lecture series is designed as a basic course to acquaint the engineer with the principles of nuclear reactors.

February 27	**Foundations of Atomic and Nuclear Theory** — Introduction to atomic physics covering history, nuclear particles, basic theory of a nuclear chain reaction.
March 6	**Reactor Principles** — A review of the physics of a nuclear power reactor core and development of engineering factors which must be considered in the design of that core.
March 13	**Power Reactor General** — A review of the rationale for the development of nuclear power plants covering the total fuel reserves picture, the current cost status, and the effect on electrical generating systems.
March 20	**Light Water Reactions** — A discussion of the current viable reactor systems, namely — the Pressurized Water Reactor (PWR) and the Boiling Water Reactor (BWR).
March 27	**Nuclear Fuel Cycle** — A review of the nuclear fuel cycle, including mining, enrichment, fuel fabrication, reprocessing and waste disposal.
April 3	**Economics of Nuclear Power** — A summary of the total economics of nuclear generating stations, developing not only current plant status, but, in addition, reviewing their lifetime economic considerations.
April 10	**Health Physics and Radiation Protection** — A review of the biological effects of radiation, as well as the basis for establishing protection limits.
April 17	**Nuclear Safety and Licensing** — The application of radiation protection criteria to nuclear power facilities will be reviewed, and the safety provision of a plant and the analysis of their operation will be discussed.
April 24	**Fast Breeder and Advanced Concepts** — Future development trends anticipated in advanced types of reactors and their application in a changing economic environment will be discussed.
May 1	**Radioisotopes Production and Utilization** — The application of non-power forms of nuclear radiation such as utilization of isotopes in medicine, research, and food preservation will be covered.
May 8	**Nuclear Futures** — Other non-central power station applications of nuclear energy, including nuclear excavation, desalination, propulsion system and fusion, as well as a review of the total lecture series content will be given.

Place — Newark, N. J.

Time — 6:30 P.M. - 8:30 P.M.

Fee — Members $25.00, Non-members $35.00. There will be a $5.00 discount for registrations received at least 1 week before the first session.

Limitation: Registration will be limited to the first 120 applications.

Send Registration Forms to: Mr. Clifford G. Engstrom
Public Service Electric and Gas Company
90 Park Place, Newark, N. J. 07101
Phone: 622-7000, Extension 2603

COURSES ARE OPEN TO THE PUBLIC

— Special Study Groups SPRING - 1967

COURSE NO. 14

SOLID STATE AND MODERN RELAYING

WEDNESDAYS, 6:30 to 8:30 p.m. Starting Mar. 1, 1967
Consolidated Edison Co., Room 1701S, 4 Irving Pl., N. Y., N. Y.

Course Coordinator: JAMES E. WALSH,
Long Island Lighting Co.
Tel. (516) WE 1-6300, Ext. 680

This course is designed to review the latest techniques in the application, utilization and service of transistorized circuits for protective, regulating, auxiliary and verification relaying.

1. **Mar. 1 General Introduction to Protective Relaying**
Role of protective relaying in power system design and operation. Fundamental principles, characteristics and evaluation.
Speaker: J. L. BLACKBURN, *Westinghouse Elec. Corp.*

2. **Mar. 8 Fault Current Calculations**
Phasors, per unit and polarity review, symmetrical components, sequence networks and short circuit current calculations.
Speaker: ROBERT W. PASHLEY,
Long Island Lighting Co.

3. **Mar. 15 Solid State Protective Relays**
Basic philosophy and principles, review or relays and systems available.
Speaker: KENNETH WINICK, *General Electric Co.*

4. **Mar. 22 Protective Relay Applications I**
Protection of generator and motors.
Speaker: FRANK VON ROESCHLAUB,
Ebasco Services, Inc.

5. **Mar. 29 Protective Relay Applications II**
Protection of transformers and buses.
Speaker: WAYNE M. MOODY, *Gibbs & Hill, Inc.*

6. **Apr. 5 Protective Relay Applications III**
Protection of distribution systems including networks.
Speaker: From General Electric Corp.

7. **Apr. 12 Protection of Transmission Lines I**
Review of protection available, discussion of solid state distance relays, pilot wire relaying.
Speaker: HERBERT G. ERDMAN,
Public Service Electric & Gas

8. **Apr. 19 Protection of Transmission Lines II**
EHV pilot relay schemes utilizing microwave channels, power line carrier, and audio tone. Transferred tripping in line and transformer protection.
Speaker: HERBERT G. ERDMAN,
Public Service Electric & Gas

9. **Apr. 26 System Stability and Load Saving**
Influence of system stability on relaying, out of step protection, principles of load saving.
Speaker: ROBERT J. FELTON,
Public Service Electric & Gas

10. **May 3 Trends and Future of Protective Relaying**
Evaluation of solid state relaying, trends for the future and test and maintenance.
Speaker: J. L. BLACKBURN, *Westinghouse Elec. Corp.*

COURSE NO. 15

MODERN DESIGN OF ELECTRICAL SYSTEMS IN BUILDINGS AND PLANTS

THURSDAYS, 6:30 to 8:30 p.m. Starting Mar. 2, 1967
Consolidated Edison Company, Room 1701S, 4 Irving Place, New York, New York.

Course Coordinator: MORTON ISSACS, *Ammann & Whitney,*
Tel. (212) WA 4-8282

This course covers modern engineering principles and practices in the design of electrical systems for commercial and industrial buildings. Emphasis is placed on new methods and trends and equipment.

1. **Mar. 2 General Design Considerations**
Acquiring data, preparing cost estimates, comparisons and recommendation; coordinating and scheduling design and construction.
Speaker: HENRY WENSON, *Port of N. Y. Authority*

2. **Mar. 9 System Design I**
Loads, demand factors, power factor, selection of distribution and utilization voltages; voltage spread and drop limitations.
Speaker: CLARENCE TSUNG, *Syska & Hennessy*

3. **Mar. 16 System Design II**
Fault currents, selection and application of switchgear.
Speaker: HERMAN REICHENSTEIN,
Port of N. Y. Authority

4. **Mar. 23 System Design III**
Incoming service, coordination and interface with utility. Sub-stations, utility furnished; owner furnished.
Speaker: D. C. NOLAN, III, *Consolidated Edison Co.*

5. **Mar. 30 Conductors**
Selection and application of conductors for power and lighting; conductor materials, insulation, shielding and jacketing; standards, specifications and test requirements.
Speaker: R. KEITH, *Kaiser Aluminum*

6. **Apr. 6 Codes, National and Local**
Scope, applications, recent changes; potential revisions.
Speaker: CARLTON E. SHAAD,
N. Y. Board of Fire Underwriters

7. **Apr. 13 Lighting**
Calculations for interior general illumination. Equipment, lamps, accessories; industry standards for contract specifications.
Speaker: B. C. COOPER,
Electrical Construction & Maintenance

8. **Apr. 20 Electric Heating**
Space, industrial heating, snow melting. Equipment control, standards and cost data. Heating calculation methods.
Speaker: ANTHONY E. FASOLINO,
Nelson Electric Mfg. Co.

9. **Apr. 27 Signal and Communications Systems**
Systems and equipment applications for status indication and voice communication.
Speaker: L. T. CHANDLER, *Edwards Co.*

10. **May 4 Airline Terminals Building**
Electrical systems planning and design.
Speaker: NORMAN BUTLER, *Burns & McDonnell*

N. Y. Section, IEEE

Power and Industrial Div.

Metropolitan Section

ASME

EDUCATIONAL PROGRAM - SPRING 1967

INDIVIDUAL IMPROVEMENT STUDY GROUP

COURSE NO. 21

SPEED READING FOR ENGINEERS

THURSDAYS, 6:30-8:30 p.m. — Starting Feb. 23, 1967 — Room 503 Con Edison Co., 4 Irving Place; *Instructor:* E. E. COING *Assistant to Director of Educational Work, Public Service Electric & Gas Co. Former member of NYU School of Commerce faculty. Has over 30 years experience teaching courses for business and industry.*

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

1. **Feb. 23 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. 2. The First Step**
   Individual analysis; using different methods to find the structural patterns of written materials.
3. **Mar. 9. Mechanics of Reading**
   Role of the eyes and eyespan; using verbal and printed clues to structure.
4. **Mar. 16. Paragraph Patterns and Functions**
   Using paragraph functions and patterns to identify organization and structure in materials.
5. **Mar. 23. Adjusting Rate**
   Using paragraph functions as an aid to achieving optimal rate.
6. **Mar. 30. Article Patterns**
   Using the author's organization to get ideas more quickly.
7. **Apr. 6. Article Patterns**
   Using the author's organization to organize ideas into useful sequences and patterns for greater retention.
8. **Apr. 13. Summarizing**
   Reducing ideas to basic components for more rapid and greater retention.
9. **Apr. 20. Broadening Horizons**
   Reading to "keep up" and "get ahead." Evaluation and planning for continued improvement.
10. **Apr. 27. Evaluation and Planning for Continued Improvement**

REGISTRATION INFORMATION

FEES: For all courses except course No. 21
$20 — to members of I.E.E.E., A.S.M.E., A.S.C.E., A.I.Ch.E., A.I.I.E., A.I.M.E., N.Y.S.S.P.E.
$30 — to all others.
For course No. 21
$30 — to members (as above). $40 — to all others.

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

Registration:
Fill out ONE form for EACH course attended & mail with payment to the following:

For courses No. 12 through 15
make checks or money order payable to:
"POWER & IND. GROUP, N.Y. SECT., I.E.E.E."
and mail to: Frank J. Wells, Vice Chairman, Educational Committee, I.E.E.E. Long Island Lighting Co., 175 E. Old Country Road, Hicksville, N. Y. 11801, Tel. (516) WE 1-6300, Ext. 2036.

For courses No. 16, 19, 20 & 21
make checks or money orders payable to:
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and mail to: I. Marvin Berger, Vice Chairman, Educational Committee, I.E.E.E., N.Y.C. Transit Authority, 3311 Giles Place, Bronx, N. Y. 10463, Tel. 852-5000, Ext. B 4496.

For courses No. 17 & 18
make checks or money orders payable to:
"ASME METROPOLITAN SECTION"
and mail to: George Evans, Educational Committee, A.S.M.E., Metropolitan Section, Zurn Industries, P.O. Box 1099, Mountainside, N. J. (212) DI 9-0569 or (201) 233-8435.

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Three North Jersey Section Members Win National Awards

The IEEE Awards Board has announced that for 1967 the Lamme Medal has been awarded to Warren P. Mason. This gold medal and the accompanying certificate is awarded annually to a member of the IEEE for meritorious achievement in the development of electrical or electronic apparatus or systems. The specific citation for Warren Mason is "For his outstanding contributions in fields of sonics and ultra sonics and for his original work in designs of and applications for electromechanical transducers." The Award will be presented at the banquet of the International Convention, March 1967. His biography is on page

The W. R. G. Baker Prize Award for 1967 has gone to A. G. Chynoweth and D. E. Mc Cumber. This prize of $1000 and the accompanying certificate is awarded annually for the outstanding paper published in any of the IEEE Transactions during the period July 1 through June 30. The 1967 Award is for "Theory of Negative-Conductance Amplification and of Gunn Instabilities in 'Two-Valley' Semiconductors" published in the Group Transactions on Electron Devices of January 1, 1966, under the joint authorship of Chynoweth and Mc Cumber. The prize will be presented at the Director's Reception on March 21, 1967 during the International Convention.

WARREN P. MASON

Warren P. Mason, head of the Mechanics Research Department of the Bell Telephone Laboratories, retired September 30, 1965 after 44 years of service.

Dr. Mason came to Bell Labs in 1921 as a member of the Physical Research Department, where he worked on carrier current transmission. Later he worked on acoustical, mechanical and quartz crystal filters.

Since 1935 he has been chiefly concerned with investigations of piezo- and ferro-electric material, in the transmission of sound waves in liquids, solids and filter structures. He has also studied the static and dynamic properties of solids, wear and fatigue in metals, and the joining of materials in solderless wrapped connections.

Dr. Mason, the most prolific inventor in Bell Laboratories' history, has been granted 189 patents. He is the author of more than 125 technical articles and three books. He is also editor of a seven volume work on physical acoustics for the Academic Press.

He received the B.S. degree in electrical engineering from the University of Kansas in 1921 and the M.S. and Ph.D. degrees in physics from Columbia University in 1924 and 1928 respectively.

He is a Fellow and past president of Acoustical Society of America, a Fellow of the American Physical Society and the Institute of Electrical and Electronics Engineers, and a member of the Rheological Society, Sigma Xi and Tau Beta Pi. He is also an honorary member of the Audio Engineering Society. He holds membership in the Telephone Pioneers.

He was the recipient of the 1964 Instrument Society of America's Arnold O. Beckmen Award for his research in acoustical and ultrasonic wave propogation, electrical networks and solid state physics. Since retiring he has become an adjunct professor of engineering in mechanics at Columbia University.

A. G. CHYNOWETH

Alan G. Chynoweth is Assistant Metallurgical Director at Bell Telephone Laboratories, Murray Hill, New Jersey. He is responsible for basic physical research aimed at the understanding and creation of new solid-state materials of interest to communications.

Since joining Bell Laboratories in 1953, Dr. Chynoweth has been engaged in solid state physics research particularly concerning ferroelectrics and high-electric field effects, including avalanche breakdown and tunneling in semiconductors. More recently his high field interests have extended to solid state plasmas and the Gunn effect. He was appointed Head of the Crystal Electronics Research Department in 1960, and assumed his present post in 1965.

Dr. Chynoweth is a native of Chichester, Sussex, England. He received the B.S. degree in physics from the University of London, England (King's College) in 1948, and the Ph.D. degree from the same college in 1950 for a thesis on the behavior of diamond crystal counters. From 1950 until 1952 he held a post-doctoral fellowship in the Chemistry Division of the National Research Council in Ottawa, Canada, where he carried out research work on ultrasonic propagation in gases and liquids near critical points and on organic semiconductors.

He is a fellow of the American Physical Society.

D. E. Mc CUMBER

Dean E. McCumber is Head of the Crystal Electronics Research Department at Bell Telephone Laboratories, Murray Hill, New Jersey.

Since joining Bell Laboratories in 1961, Dr. McCumber has engaged in research in theoretical physics. He has been principally concerned with the analysis of laser systems, and solid-state negative-resistance amplifiers and oscillators. He was appointed to his present post in 1965.

Dr. McCumber received B.E. and M.E. degrees in electrical engineering from Yale University in 1952 and 1955, respectively, and A.M. and Ph.D. degrees in physics from Harvard University in 1956 and 1960, respectively.

He received a postdoctoral fellowship from the U. S. National Science Foundation and from 1959 to 1961 studied at Ecole Normale Superieure in Paris, France, and at the Institute for Theoretical Physics in Copenhagen, Denmark.

He is a member of the American Physical Society.

N. Y. Power
Role of Computers in Transportation and Distribution

The Transmission and Distribution Technical Discussion Group of the New York Section, Power and Industrial Division - IEEE will discuss the Role of Computers in the field of T&D. It is planned to discuss how computers can best serve the T&D engineers in problem solving. The Moderators will indicate the types of Computer Equipment available for problem solving and also, cover some of the programs already available such as:

Transformer Load Management
Feeder Voltage Fault and Regulation
Economic Conductor Sizes
Tower Design
Sag and Tension
Equipment Rating

The meeting will be held on Wednesday, March 8, 1967 in the Union Carbide Building, 3rd Floor Meeting Room, 270 Park Avenue.

New York Computer
Large-Scale Integration Promises and Progress

February 21, 1966 — 7:45 P.M.
I.B.M., 590 Madison Ave., N. Y. C.

Large-scale integration (LSI), in which scores of circuits are built into one large monolithic semiconductor block, will be the subject of the February 21 meeting of the N. Y. Chapter of the IEEE Computer Group.

The speaker will be Tudor R. Finch, of Bell Telephone Labs, Murray Hill, N. J., who will describe the status of LSI, why it is a glamour subject, and what are some of the considerations and limitations imposed by LSI on designers.

The meeting will be preceded by a Dutch Treat dinner at Schraffts, 625 Madison Ave. (58th St.).

Joint Metropolitan GEMB

At the meeting of the Joint Metropolitan Chapter of the Group on Engineering in Medicine and Biology on Thursday, February 9, 1967, the speaker will be:

DR. MERRILL A. BENDER, *Chief*
Department of Nuclear Medicine
Roswell Park Memorial Institute
Buffalo, New York

His topic will be: **STATIC IMAGING DEVICES IN NUCLEAR MEDICINE.**

Dr. Bender's presentation will be held at 8:00 P.M. at The Rockefeller University, 66th Street and York Avenue, South Laboratory Building, New York City.

Dr. Bender is the developer of the Autofluoroscope, a new device for both rapid scanning of internal organs containing radioactive compounds, and for radionuclide dynamic flow studies of body systems and structures.

NORTH JERSEY
Reliability Group
Power Group
Student Branch

5:00 P.M. Thursday,
February 16, 1967

Newark College of Engineering
Weston Hall, High Street,
Newark, New Jersey

SPEAKERS

Philip H. Eisenberg — Supervisor, Special Projects Unit, Research and Engineering Division, Autonetics Division of North American Aviation, Anaheim, California.

Reliability Requirements and Analysis for Components Needed in Minute Man type of Program.

Robert L. Trent — Chief, Quality and Standardization Laboratories, NASA Research Center, Cambridge, Massachusetts.

Component-Reliability and Standardization Philosophy of NASA.

Peter Van Olinda — Member, Computer Application & Operation Research Division, Public Service Electric & Gas Co., Newark, New Jersey.

Power System Security—Continuous Computer Monitoring to Enhance Reliability.

Following the speakers' presentations at approximately 6:15 P.M., a "Dutch Treat" dinner will be available in the NCE cafeteria.

At 7:30 P.M. the meeting will reconvene for a question and answer period and detailed discussions with the speakers.

MEETING IS OPEN TO ALL.

Robert L. Trent

Robert L. Trent has been Chief of the Qualifications and Standards Laboratory at NASA's Electronics Research Center, Cambridge, Mass., since July 1965.

Mr. Trent supervises research and development activities in the laboratory's three branches. The branches are the physics of failure mechanisms, design criteria and component standards.

Before joining NASA, he was vice president and resident manager of CTS Microelectronics, Inc., Ridgefield, Conn.

Mr. Trent was associated with the Bell Telephone Laboratories, Inc., from 1941 to 1957, supervising systems and circuit development as well as advanced development in semiconductor devices and circuits. For his outstanding work there he was chosen as one of the 1951 recipients of the coveted award of the honorary electrical engineering fraternity, Eta Kappa Nu.

Prior to joining CTS Microelectronics, he was vice president of Research and Development at National Semiconductor Corporation, Danbury, Conn. Earlier he was technical director of Sperry Semiconductor Division, Norwalk, Conn.

He is a senior member of the Institute of Electrical and Electronics Engineers. He has published many papers and has been granted 15 patents, with several others pending. The patents cover contributions in semiconductor device, circuit and systems design, including a reversible binary counter. He won the W. R. G. Baker Award, in company with two co-authors, for the best series of papers appearing in the Transactions of the IRE in 1956.

Mr. Trent had held various important assignments on IEEE Standards Committees and was responsible for preparing the important Industry Standards Document on large signal measurements on transistors.

P. H. Eisenberg

Mr. Eisenberg is Supervisor, Special Projects Unit, Research and Engineering Division, Autonetics. He is responsible for failure mechanism programs such as Physics of Failure involving active and passive electronic devices. Prior to joining Autonetics, he was employed as Senior Engineer in Central Research for the Sylvania Electric Company, Bayside, New York, in the area of high temperature metals, ceramics, semiconductors, and vacuum tubes. As Group Supervisor of the Materials Section of the Martin Company, Baltimore, Maryland, he was responsible for developing destructive and non-destructive tests, and conducted mechanism studies relating to their failure modes. As Section Head at the Raytheon Company, Semiconductor Division, he supervised the failure analysis of semiconductor devices.

As Vice President and co-founder of Electronic Metals and Alloys, Watertown, Massachusetts, he was instrumental in establishing a company which supplies the semiconductor industry with ultra-pure metals and alloys in the form of precision parts.

Peter Van Olinda

Mr. Van Olinda received his BS degree in Electrical Engineering from Lehigh University in 1962. He joined the Public Service Electric and Gas Company and is a member of the Computer Application and Operation Division. He is a member of the IEEE.

Joint Metropolitan
PMP/PGR Semiconductor Reliability

Date:
Tuesday, February 21, 1967

Time:
8:00 P.M. Meeting at

Place:
Schweber Electronics, Westbury, N. Y.

Discussion and Buffet
For information call:
MORRIS RUDIS
516 - 595-3283

Seniors (*page 2*)

and George Petros, NCE '60, General Electric Co.

For those who attended the meeting it is not necessary to outline the activities. For those who did not attend, the best service of this column would be to reiterate some of the more salient comments of the five speakers as presented either in their prepared talks or through questions which were presented after the formal talks.

Throughout the evening's discussion the topic of communications was prevalent. Hirsh Marantz opined that the biggest problem in engineering cooperation is communications — the ability to express one's thoughts in some common, understandable medium. George Petros realized the value of communications just for survival. During his talk he related his experiences as a Hungarian refugee who had to learn the English language before pursuing his engineering career.

John Lacz cited some of the means by which engineers communicate: specifications, blueprints, technical reports, and presentations (both verbal and visual). Barry Soloway emphasized the medium of blueprints, viz. drafting, as a means of giving direction and furnishing information.

Advance training was a popular topic during the evening's discussion. Mr. Petros advised that such could be formal through additional college courses or could be "informal" by way of company and society courses. Engineer Soloway, who works in Research and Development, advised that a Master's Degree is almost essential for such activities. He listed three key items by which a graduate might select the institution at which he would continue his technical training:

> In which type research does the faculty excel?
> For which specialties is the school best known?
> What are the requirements of the curriculum?

Jim Boyle touched upon the recurring situation in which the technically-trained engineer selects management activities. For this avenue of career development, Jim strongly suggested academic training in the business curriculum. Such would tend to balance the technical schoolwork of the engineer.

The best way to summarize the evening's conversation would be to highlight some of the personal traits which are required by the young engineer.

The new graduate and the past graduate would both do well to remember that salary does not precede talent. Salary follows from a display of one's talents.

As a recently-graduated young engineer this author found the advice of the speakers most pertinent and interesting. On the other hand, the opportunity to impart some sort of advice to the seniors after the program during the refreshments created a feeling of fullfilment — in being able to at least partially repay my debt to those who counseled me when I was a student.

Once again this year the Section is indebted to Mr. James Earle of NCE for his untiring efforts on behalf of "his fellow." Jim's guidance is the cornerstone in formulating the Section's Annual Students' Night.

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Type 575 Transistor Curve Tracer (including accessories) $1075

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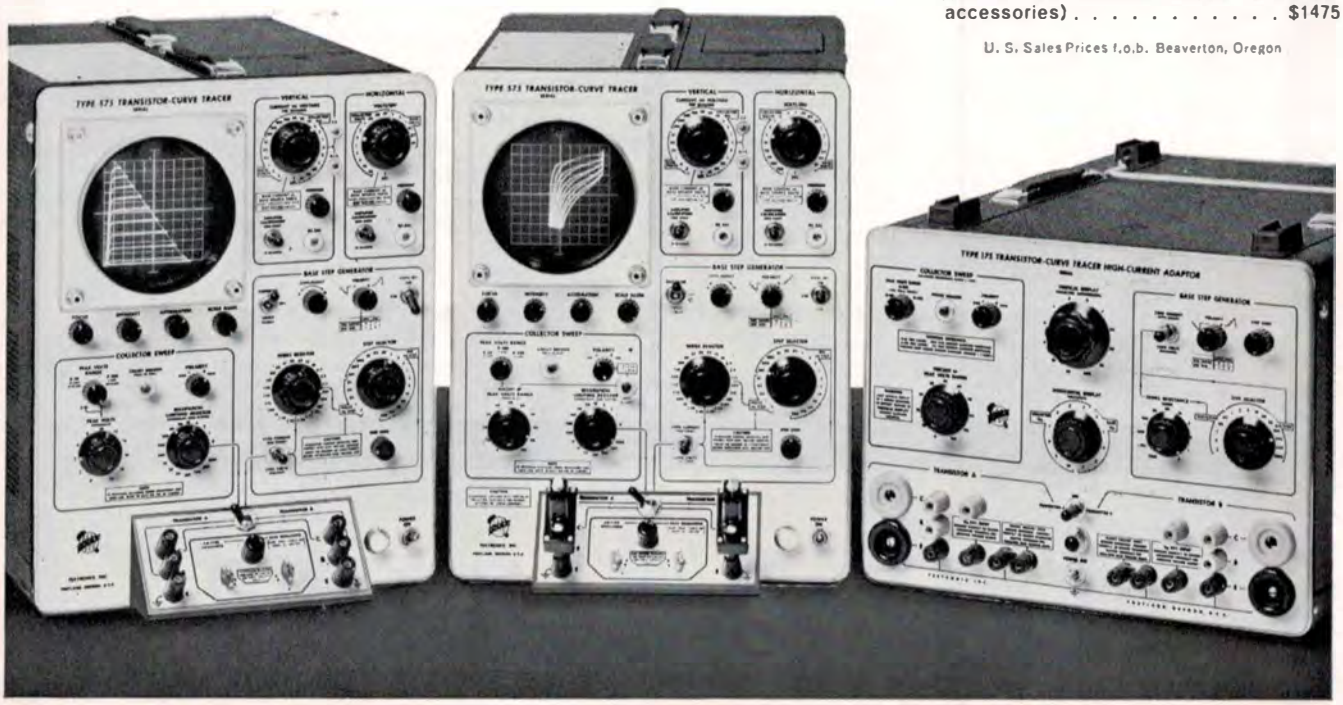

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NEW INSTRUMENTS

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An automatic frequency divider based upon new techniques in frequency division enables high-frequency electronic counters to measure microwave frequencies through X-band (to 12.4 GHz). The display is direct and complete, requiring no further calculations. The HP Model 5260A operates over all of the most-used portion of the microwave region, 0.3 to 12.4 GHz. It accurately divides input frequencies up to 1.2 GHz by a factor of 100 or, when the input is within the range of 1.0 to 12.4 GHz, by a factor of 1000. The divided-down frequency (1 to 12.4 MHz) is supplied to the counter. The divider introduces no error of its own and measurements thus are as accurate as the electronic counter.

The new Frequency Divider is, in a sense, an automated transfer oscillator but contains elements of both heterodyne converters and transfer oscillators. It has a sensitivity of 100 mV and a front panel meter indicates when the signal level is within the proper amplitude range.

Price of the HP Model 5260A Automatic Frequency Divider is $3,250. For full information call your HP Field Engineer.

MULTIPLIER DIODE YIELDS 2 W AT 2 GHz

15 watts in at 200 MHz yields 2 watts out at 2 GHz, with a new step recovery diode from HP Associates. It meets military environmental specifications, and every unit is tested to assure specified output capability. One of many important applications for the new diode is expected to be 2 GHz telemetry.

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HPA 0300 Step Recovery Diodes meet the latest revisions of MIL-STD-750, MIL-STD-202, and MIL-S-19500.

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