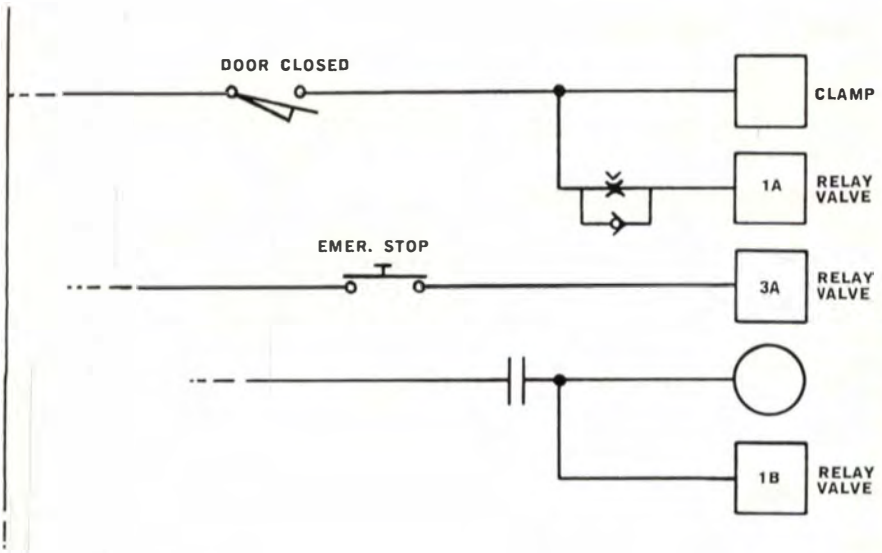
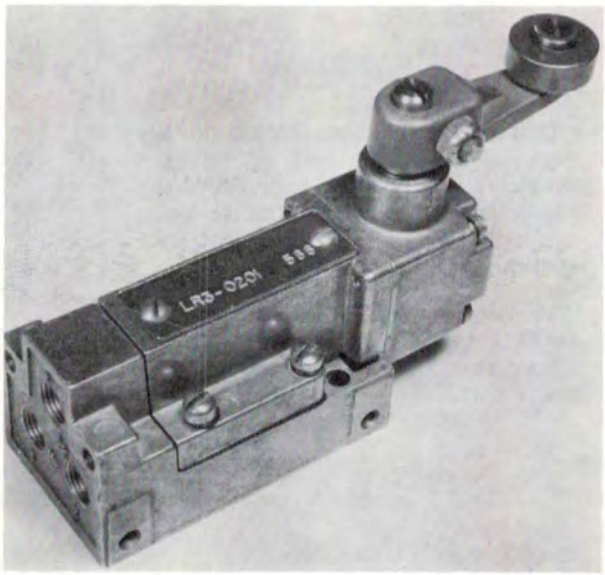
NORTH JERSEY SECTION MEETING





air vs electrical control circuits

by Norman Roden

Wednesday, October 19 — 8:00 P.M.

Robin Hood Inn — Clifton, N. J.

for details see page 4

The IEEE
Newsletter
The Magazine of the North Jersey Section

NORTH JERSEY SECTION INSPECTION TRIP

tour of yards creek pumped storage generating station

Tuesday, October 18 — 2:00 P.M.

for details see page 7

Volume 13 / Number 2 OCTOBER 1966

JOINT ASME-IEEE FALL STUDY COURSE

ENGINEERING MATERIALS AND THEIR USE

A SERIES OF 9 LECTURES

This series of coordinated lectures has been organized to train the graduate engineer in the theory underlying the properties of engineering materials and to facilitate the application and proper use of these materials in modern engineering design.

A comprehensive series of notes will be provided with this course which will be a convenient reference for the engineer in his future work.

PLACE: N. J. Telephone Company — Vail Hall, Broad St., Newark (see map).

TIME: 7:00 P.M. Thursday evenings, Oct. 13, 20, 27; Nov. 3, 10, 17; Dec. 1, 8, 15. There will be no lecture Thanksgiving Day.

FEE: ASME or IEEE Members — $25. Non Members — $35. There will be a $5 discount for paid registration postmarked no later than Oct. 10, 1966.

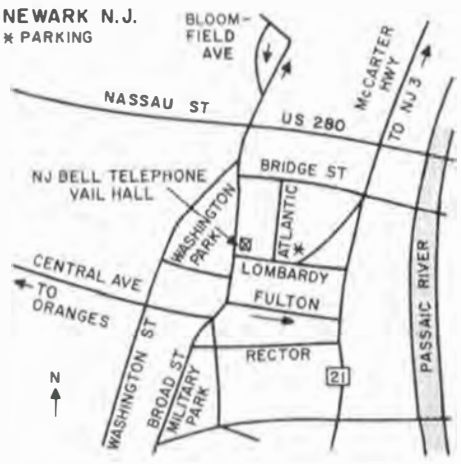
LIMITATIONS: Registration limited to the first 130 registrants.

REFUND: Non Members may receive refund of $10 premium fee if membership application for either ASME or IEEE is filed at course registration desk during duration of the series.

ATTENDANCE: Attendance rolls will be kept and satisfactory completion certificate issued if at least 7 lectures are attended.

All lectures will be held on Thursday evenings.

DATE	LECTURE	TOPIC
Oct. 13	1.	"Structure; Origin of Properties," by Dr. J. H. Wernick, Head, Physical Metallurgical Research Dept., Bell Telephone Laboratories, Inc.
Oct. 20	2.	"Alloys, Solid State Reactions, and Magnetism," by Dr. J. H. Wernick.
Oct. 27	3.	"Mechanical Properties of Metals," by Mr. P. R. White, Supervisor, Metallurgical Engineering Dept., Bell Telephone Laboratories, Inc.
Nov. 3	4.	"Ceramics and Glasses," by Dr. C. R. Kurkjian, Member, Technical Staff, Inorganic Chemical Research and Development Dept., Bell Telephone Laboratories, Inc.
Nov. 10	5.	"Electrochemistry and Protection of Surfaces," by Mr. R. G. Baker, Member, Technical Staff, Electrochemical Research and Development Dept., Bell Telephone Laboratories, Inc.
Nov. 17	6.	"Polymer Chemistry," by Dr. W. L. Hawkins, Supervisor, Plastics Development and Applied Research Dept., Bell Telephone Laboratories, Inc.
Dec. 1	7.	"Mechanical Properties of Polymers," by Dr. T. W. Huseby, Member, Technical Staff, Plastics Development and Applied Research Dept., Bell Telephone Laboratories, Inc.
Dec. 8	8.	"Adhesion, Composites, and Laminates," by Mr. D. K. Rider, Head, Organic Materials Research and Development Dept., Bell Telephone Laboratories, Inc.
Dec. 15	9.	"Dielectric Properties of Materials," by Mr. D. B. Herrmann, Member, Technical Staff, Physical Chemical Research and Development Dept., Bell Telephone Laboratories, Inc.



ADVANCE APPLICATION FORM

ASME - IEEE COURSE . . . ENGINEERING MATERIALS AND THEIR USE.

NAME .....

BUSINESS ADDRESS .....

.....

PHONE ..... **JOB TITLE** .....

ASME MEMBER ☐ **IEEE MEMBER** ☐ **NON MEMBER** ☐ **PLAN TO JOIN** ☐

CHECK ENCLOSED — (MEMBER $20) ..... **(NON MEMBER $30)** .....

HIGHEST DEGREE HELD .....

Please Check Where Applicable

PROJECT DESIGN ☐ **R & D** ☐ **PRODUCTION** ☐ **SALES** ☐ **MANAGEMENT** ☐

OTHER .....

PLEASE

1. **Make checks payable to North Jersey Section of IEEE, regardless of affiliation.**
2. **Send to — E. K. Van Tassel, Bell Telephone Labs, Whippany, N. J.**
3. **For information call — 386-2414.**
4. **Please fill out completely. It will be a great help to the lecturers.**

The IEEE **Newsletter**

Published monthly except July & August by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc. Office of Publication: 9 Little John Road, Morris Plains, N. J.

Volume 13 **October, 1966** **No. 2**

Deadline for all material is the 25th of the second month preceding the month of publication.

All communications concerning The Newsletter, including editorial matter, advertising, and mailing, should be addressed to:

THE NEWSLETTER
c/o Staff Associates
P.O. Box 275 — Morris Plains, N. J.
Telephone: 398-5524

Subscription: 75¢ per year through dues for members; $1.50 per year for non-members.
Second Class Postage Paid
at Morris Plains, N. J.

ABOUT ADDRESS CHANGES

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

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

NEWSLETTER STAFF

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IEEE Group 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 — October 5th

North Jersey Section IEEE Executive Committee 1966 - 1967

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Publicity ..... M. H. Nuechterlein
Program ..... Carl Torell
Student Affairs ..... Prof. J. W. Earle

CALENDAR

Details on page

Tuesday, October 11

N. Y. COMTEC GROUP LECTURE SERIES (FIRST OF SEVEN) 6
6:30 P.M. — "Switching Systems and Their Application"
At — N .Y. Telephone Building, Little Theatre, 140 West Street, N. Y. C.

N. Y. COMPUTER GROUP 9
7:30 P. M. — "Wall Street to Probe Computer Makers"
Speakers from Merril, Lynch, Pierce, Fenner and Smith
At — Sperry-Rand Auditorium, 1290 Avenue of the Americas, N. Y. C.

Thursday, October 13

JOINT METROPOLITAN ENGINEERING MANAGEMENT GROUP 4
7:30 P.M. — "MacAdam to Analyze Management Decisions"
Speaker — Mr. Walter K. MacAdam, Vice President of American Telephone and Telegraph
At — National Cash Register Auditorium, 50 Rockefeller Plaza, N. Y. C.

Monday, October 17

N. Y. COMTEC GROUP LECTURE SERIES (FIRST OF SIX) 6
7:00 P.M. — "Communications Transmission Media"
At — Western Union Auditorium, 160 West Broadway, N. Y. C.

Tuesday, October 18

NORTH JERSEY SECTION INSPECTION TRIP 7
2:00 P.M. — Tour of Yards Creek Pumped Storage Generating Station
Jersey Central Power & Light Co. and Public Service Electric & Gas Co.
At — Two miles off Route 94 to Yards Creek (See map)

NORTH JERSEY ENGINEERING WRITING AND SPEECH (PGEWS) 9
8:00 P.M. — "Frontiers in Human Communication"
Speaker — Dr. Jacques Habib
At — Communication Systems Inc., South 60, Route 17, Paramus, N. J.

JOINT METROPOLITAN PMP/PGR GROUPS 6
6:00 P.M. — "Advanced Multi-layer Board Applications and Design"
Includes tour of LEM mockup
At — Grumman Aircraft Co., Bethpage, L. I., N. Y.

Wednesday, October 19

NORTH JERSEY SECTION MEETING 4
6:30 P.M. — Pre-meeting Dinner — Robin Hood Inn, Clifton, N. J.
8:00 P.M. — "Air vs. Electrical Control Circuits"
Speaker — Mr. Norman Roden, The Roden Co.
At — Robin Hood Inn, Clifton, N. J.

NORTH JERSEY G-MTT 6
8:15 P.M. — "Beam Forming and Steering Techniques for Phased Arrays"
Speaker — Mr. R. S. McCarter, Bell Telephone Labs.
At — Arnold Auditorium, Bell Telephone Labs., Murray Hill, N. J.

JOINT METROPOLITAN INSTRUMENTATION & MEASUREMENT GROUP LECTURE SERIES (FIRST OF TEN) 5
Evenings — "Inertial Elements and Inertial Instrumentation"
At — General Electric Co. Auditorium, 570 Lexington Avenue, N. Y. C.

N. Y. POWER AND INDUSTRIAL GROUP 5
6:30 P.M. — "Ferroresonance When Switching Three Phase Transformer Banks"
Moderator — Mr. Ban Wormer, General Electric Co.
At — Consolidated Edison Co., Room 1101-S, 4 Irving Place, N. Y. C.

Wednesday, October 26

N. Y. POWER AND INDUSTRIAL GROUP 4
6:30 P.M. — "Prevention and Cure of System Blackouts"
At — Consolidated Edison Co., Room 1101-S, 4 Irving Place, N. Y. C.

Thursday, October 27

N. Y. INFORMATION THEORY GROUP 9
2:30 P.M. — "Modern Radar and Information Theory"
Speaker — Dr. Samuel J. Rabinowitz, Columbia University
At — Polytechnic Institute of Brooklyn, Room 303, 333 Jay Street, Brooklyn, N. Y.

JOINT METROPOLITAN ENGINEERING MANAGEMENT GROUP

MacADAM TO ANALYZE MANAGEMENT DECISIONS

On Thursday, October 13, 1966 at 7:30 P.M., this Group will hold its first chapter meeting of the season, in the National Cash Register Auditorium at 50 Rockefeller Plaza in New York.

Mr. MacAdam will present a two part discussion entitled, *"Management Decision Making — Past and Future."* His talk will concern itself with the ever increasing complexity of the factors affecting today's management decision making and the new tools and techniques being utilized to cope with the problems.

To illustrate a past management decision, Mr. MacAdam will speak on the decisions which lead to implementation of the Direct Distance Dialing System by the Bell System and its resulting tremendous success.

To illustrate present and future management decisions, Mr. MacAdam will speak on the factors which lead to the Government's decision to buy or lease equipment and facilities. These factors include taxes, time and manpower.

Mr. MacAdam was born in N. Y. C. and holds a MS degree. He is a Fellow of the IEEE, a Director and a Vice President of the Institute for Sections. He is also a National Director of the Armed Forces Communications and Electronics Association and a Fellow of the American Association for the Advancement of Science. He progressed from student engineer in 1937 through Engineering and Plant assignments, to the post of Superintendent of Engineering for the DEW line in 1953, Assistant Chief Engineer of ATT in 1959 and Vice President in 1960.

N. Y. POWER & INDUSTRIAL

Discussion on Prevention and Cure of System Blackouts

The Power Generation Group will discuss timely information concerning procedures for prevention and cure of system blackouts at its first meeting. The meeting will be in Room 1101-S, Consolidated Edison Company, 4 Irving Place, New York City, on Wednesday, October 26, 1966, from 6:30 to 8:30 P.M.

NORTH JERSEY SECTION MEETING

AIR vs. ELECTRICAL CONTROL CIRCUITS

Speaker: NORMAN RODEN
Date: Wednesday, October 19, 1966
Time: 8:00 P.M.
Place: Robin Hood Inn
Clifton, New Jersey
Pre-meeting Dinner: 6:30 P.M.

"MORE RELIABLE MACHINE CONTROL WITH AN ALL-AIR CONTROL SYSTEM"

All-air logic systems may soon replace electrical controls on heavy-duty, production machinery. The solenoid valve may be on the threshold of extinction. Demand for increased reliability may soon obsolete electrical machine controls as we now know them.

Our October meeting will be devoted to Numatrol — a new system for all-air control of machinery. After 9 years of development and 600 successful installations, this system is now available to any management concerned with:

reliable control (no burn out; no wear-out), difficult environment (explosives, dirt, moisture), one trade maintenance (no electrician), safety (no shock, fail-safe), multi plant interchangeability (no voltage or frequency changes), and flexibility (modular concept permits change or addition) simplicity (the hardware matches the diagram and can be installed by matching pictures).

We shall examine the prospects and the limitations of this new challenger to electric controls. We shall review the technique for designing all-air control circuits, with emphasis on the role of today's electrical engineer as the potential leader in air circuit design.

To the electrical controls engineer who is frustrated by the limitation of today's equipment, this meeting may be the open door to a new future. To any engineer whose future is limited by the competitive ability of his company to produce, this session may open the door to a better tomorrow.

The particular air control system we shall examine has a direct analogy in electrical equipment. It includes air-relays, air timers, air-limit-valves, air-push buttons and air-terminal-strips. The circuits are developed using an air counterpart of the electrical ladder diagram. Panels, enclosures, junction boxes, and conduit are the same as used for electrical systems. The method of organizing the design of a control system is perhaps more painstaking with the all-air hardware, but the same methodical approach to design could be used for electrical systems to good advantage.

Some unique features of air-control do not have simple electrical counterparts. For example, the use of jets, for position sensing, opens some interesting possibilities. The jet can perform the same function as a limit switch, without moving parts, and it can sense full-end of travel.

The all-air system can sense force (pressure) as a signal for sequencing, and do it accurately with very simple hardware.

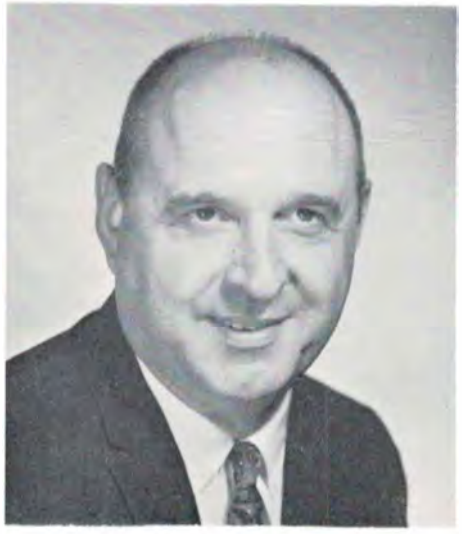
Some of us will be called upon soon to evaluate these new control systems for use in our own plants and on our own products. Here is an opportunity to learn something about a fast growing field that can have a marked effect on our future.

About the Speaker

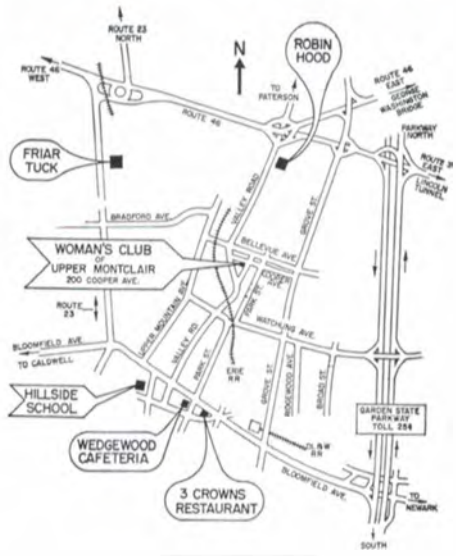
Norman Roden is president of The Roden Company, Cranford, New Jersey. He received his B.S. degree in mechanical engineering from Drexel Tech and is a licensed Professional Engineer in this state.

Mr. Roden's engineering career began at Wright Aeronautical Corporation prior to World War II and included experimental test and development of aircraft engines. In 1941 he originated and taught a class in aircraft engine design for Rutgers University.

For the past 20 years our speaker has been engaged in the application of pneumatic and hydraulic components to transmit power in industrial machines. Recently, he was guest lecturer at Trenton State Teachers College in fundamental hydraulic theory.



NORMAN RODEN



CALL FOR PAPERS

Joint Automatic Control Conference—Papers to be submitted on or before Dec. 1, 1966. For details contact Lewis Winner, 152 W. 42nd St., N. Y., N. Y. 10036. Tel.: 212 BR 9-3125.

Joint Metropolitan Engineering Management Group—Papers to be submitted on or before Dec. 9, 1966. For details contact Dr. Matthew Katz, Genset Corp., 333 Oraton St., Newark, N. J. 07104.

JOINT METROPOLITAN INSTRUMENTATION AND MEASUREMENT GROUP

Lecture Series on Inertial Elements and Inertial Instrumentation

Ten lectures will be presented on Wednesday evenings, starting October 19, to be held at the General Electric Co. Auditorium at 570 Lexington Avenue, N. Y. C. Fee: $25. Checks payable to N. Y. Joint Chapter, I & M IEEE. For information and tickets, please contact H. E. LUSTIG, General Instrument Corp., 100 Andrews Road, Hicksville, N. Y. 11802. Tel. (516) 681-4300 or I. LEVINE, Tel. (201) 535-2040.

LECTURE 1 —
INTRODUCTION — Oct. 19

LECTURE 2 —
GYROSCOPE PRINCIPLES — Oct. 26

LECTURE 3 —
GYROSCOPE CONFIGURATIONS — Nov. 2

LECTURE 4 —
GYROSCOPE DRIFT — Nov. 9

LECTURE 5 —
GYRO TESTING EQUIPMENT—Nov. 16

LECTURE 6 —
INERTIAL INSTRUMENTS — Nov. 23

LECTURE 7 —
INERTIAL SYSTEM CONFIGURATION — Nov. 30

LECTURE 8 —
ERROR CONSIDERATIONS IN INERTIAL SYSTEMS — Dec. 7

LECTURES 9 AND 10 —
Special Applications — Subjects, Lecturers and dates to be announced.

The first eight lectures will be given by Mr. Jack Weinshanker.

Mr. Weinshanker is employed in the Inertial Navigation Department of the Bendix Corporation, Eclipse-Pioneer Division, Teterboro, N. J.

He received the BEE at CCNY in 1956 and has worked in the field of inertial instrumentation and measurement since that time.

During the past years, Mr. Weinshanker has lectured in Inertial Navigation at the Graduate School of Technology, CCNY and in an industrial training program at the Kearfott Division of the GPE Corporation.

N. Y. POWER & INDUSTRIAL

Discussion on Ferroresonance When Switching Three Phase Transformer Banks

The Transmission and Distribution Technical Discussion Group will discuss the associated over-voltages resulting from switching three phase transformer banks and other related problems at its first meeting. The meeting will be held in Room 1101-S, Consolidated Edison Co., 4 Irving Place, New York City on Wednesday, October 19 from 6:30 to 8:30 P.M.

Mr. Van Wormer, of the General Electric Company will be guest moderator. He will lead the discussion on the evening's topic "Ferroresonance When Switching Three Phase Transformer Banks and Related Problems."

N. Y. COMTEC GROUP

Lecture Series on Switching Systems and Their Application

Part one of the Fall series begins October 11, 1966 and will consist of seven lectures on succeeding Tuesdays excepting November 8, 1966.

First lecture: "History of Switching" on October 11, will be given by Mr. A. N. Daudelin, Jr.

Second lecture: "Traffic Theory" on October 18, will be given by Mr. C. A. Martin, Jr.

Third lecture: Relay and Step by Step systems will be discussed on October 25 by Mr. J. J. Grumblatt.

Fourth lecture: November 1, covering the Panel and Crossbar systems will be presented by Mr. H. P. Smith.

The last three lectures in Part 1 on November 15, 22 and 25 will introduce the Electronic Switching System. They will be presented by Professor R. E. Anderson.

All lectures will be held in the "Little Theater" on the street floor of the New York Telephone Company at 140 West Street, New York City on Tuesday evenings from 6:30 to 8:30 P.M.

REGISTRATION INFORMATION

More detailed information on the Lecture Series may be obtained by contacting Mr. J. C. Sieglinger, whose address is given below.

Registration must be made in advance on a first come first served basis. Fees are as follows:

Three Part Series:

IEEE members	$30.00
Non-members	$40.00
Full Time students	$10.00

Individual Parts:

IEEE members	$15.00
Non-members	$20.00
Full Time students	$ 7.00

The above listed fees include copies of "Switching Systems" and "Fundamental Principles of Switching Circuits and Systems."

Those having copies of the above publications may deduct $5.00 from the enrollment fees listed above.

Send check payable to "Communications Technology Group New York Section IEEE" and a stamped self-addressed envelope to Mr. J. C. Sieglinger, Treasurer, Education Committee, New York Telephone Company, Room 1369, 140 West Street, New York, N. Y. 10007

NORTH JERSEY G-MTT

Beam Forming and Steering Techniques for Phased Arrays

by
R. S. McCarter
Bell Telephone Laboratories, Incorporated
Whippany, New Jersey

Date: Wednesday, October 19, 1966
Time: 6:30 P.M. Dinner, Wally's, Watchung, New Jersey
8:15 P.M. Meeting
Place: Arnold Auditorium
Bell Telephone Laboratories, Inc.
Murray Hill, New Jersey

Recent developments in microwave component performance and cost have increased the interest in phased arrays of antenna elements for a wide variety of applications. To perform these tasks, a large number of beam forming and steering techniques have been proposed. The selection of a technique for any specific application is aided by grouping the many beam forming and steering methods according to some of their major characteristics. An explanation of several of the promising techniques will be presented as well as a classification of all techniques known to the author.

BIOGRAPHICAL NOTE

R. S. McCarter received a BSEE degree from Texas A and M College in 1957 and an MEE degree from NYU in 1959. He joined Bell Telephone Laboratories in 1957 and worked on microwave ferrite devices for phased arrays until early 1961. Since that time he has been working on radar systems that utilized phased arrays. He contributed to the selection of the beam forming and steering technique of those systems. He is presently Head of the Radar Research Department at Whippany, New Jersey.

JOINT METROPOLITAN PMP/PGR GROUPS

PANEL: ADVANCED MULTILAYER BOARD APPLICATIONS AND DESIGN
TUESDAY, OCTOBER 18, 1966
6:00 P.M. Dinner Meeting
at
Grumman Aircraft Co.
Bethpage, L. I.
Including a Cocktail hour and tour of the LEM mockup
For information and reservations contact:
MR. ALFRED E. MARTIN
Grumman Aircraft Co.
516 LR 5-3651

Affect of Plague (Purple, Black, Tan, etc.) on the Reliability of Silicon Integrated Circuits
TUESDAY, NOVEMBER 15, 1966
8:00 P.M. Meeting
in
New York City
Pre-Dinner Meeting
at nearby restaurant —
details to be announced in next issue
For information call:
MORRIS RUDIS
516 - 595-3283

STUDENT AFFAIRS

NCE Day Branch Reorganizes

A new slate of officers and a different faculty advisor will help the branch organize its activities for this new school year.

Mr. James Earle has replaced Professor Wayne Clements as the advisor for the Day Student Branch at NCE. Jim will continue in his capacity as advisor for the college's evening branch — a position which he has held since its inception last year. He serves also as chairman of the Student Activities Committee in our section, and for the past two years Jim has organized the annual students' night. Wayne has worked with the day branch for several years. He has been a strong advocate of the IEEE and has worked continuously in the behalf of the both groups to bring together the society and the EE Department students at NCE.

Those elected last spring to serve as the branch's officers are Roger Sabanosh, Chairman; Patrick Parkinson, Vice Chairman; Charles Brady, Secretary; and Clark Gellings, Treasurer. *Our best wishes go to these students in their administrative as well as scholastic endeavors.*

N. Y. COMTEC GROUP

Lecture Series on Communications Transmission Media

Six lectures will be presented on Monday nights beginning October 17, 1966.

The lectures will be given on Mondays from 7:00 to 9:00 P.M., at the Western Union Auditorium, 160 West Broadway, Manhattan.

Registration fees for the lecture series are $5.00 for members of IEEE (or other professional societies), $8.00 for non-members, and $1.00 for full-time students.

Registration must be made in advance. To register or for more details contact or send applications, with appropriate check made payable to "Communications Technology Group N. Y. Section IEEE," to F. Hill, ADT Company, Inc., 155 Sixth Avenue, New York, N. Y. 10013. A stamped, self-addressed envelope must be included.

Schedule of Lectures

1 — OCTOBER 17 —
"Communications Explosion — Domestic and Global"
Wallace O. Miller, A.T. & T. Company

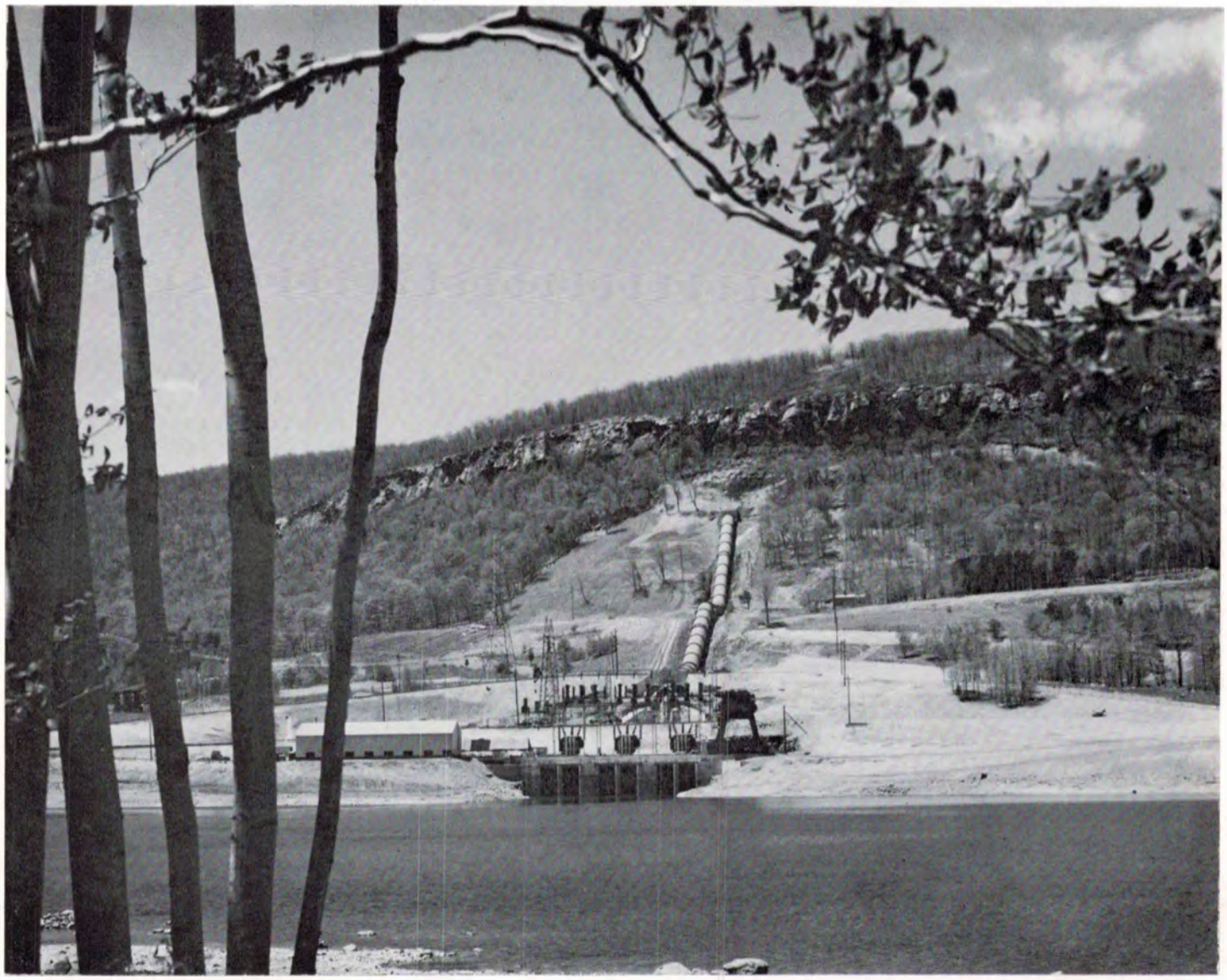
2 — OCTOBER 24 —
"Cable — Land and Sea"
To be announced

3 — OCTOBER 31 —
"Overland Microwave Communications"
Edmund A. Laport
Radio Corporation of America

4 — NOVEMBER 14 —
"Satellites"
Edwin J. Istvan
Communications Satellite Corporation

5 — NOVEMBER 21 —
"Lasers"
O. E. DeLange
Bell Telephone Laboratories

6 — NOVEMBER 28 —
"Systems Comparisons"
W. S. Litchman
ITT Federal Laboratories



NORTH JERSEY SECTION INSPECTION TRIP

TOUR OF YARDS CREEK PUMPED STORAGE GENERATING STATION

TUESDAY, OCTOBER 18, 1966 — 2:00 P.M.

The North Jersey Section will sponsor an inspection trip to the Yards Creek Pumped Storage Generating Station jointly operated by the Jersey Central Power and Light Company and Public Service Electric & Gas Company. It is a peaking-power installation. It is the second pumped-storage project of its type to be placed in service in the United States and it is the first phase of the comprehensive plan proposed by the utilities for the pumped-storage development of a portion of the Upper Delaware River basin.

In the power house are installed three reversible pump turbines, each with a capacity of 110,000 Kilowatts for a total station capacity of 330,000 Kilowatts. The upper reservoir has a capacity of 1,560,000 gallons of water at an altitude of 1,555 feet and the lower reservoir a capacity of 1,760,000 gallons at an altitude of 818.5 feet. The tunnel is 1,548 feet long and the 3 penstocks are 313 feet long. The peak period for generating occurs at 2:00 P.M. whereas the off-peak period for pumping occurs at 2:00 A.M. The station is an unmanned automatic plant controlled remotely from J.C.P. & L. Co. operation center at Morristown.

Those planning to make the trip should plan on arriving via their own transportation prior to 2:00 P.M. as the tour starts promptly at 2 o'clock from the parking area. The site is approximately a 1½ hour drive from Newark. The utility will provide a bus which will make 4 or 5 stops at each of which an attendant will explain the interesting features pertaining to that area. It is expected the tour will take 1½ to 2 hours at which time the bus will return to the parking area. No visitors under 14 years of age permitted. Please send reservation slip as early as possible and late reservations can be telephoned to Carl C. Torell — 201 - 624-7500.

See Map — page 9

Reservation Slip

CARL C. TORELL
c/o Federal Pacific Electric Co.
50 Paris Street
Newark, New Jersey 07101

I plan to attend the Yards Creek Tour Tuesday, October 18th. Besides myself I will bring ..... guests.

Name .....

Company .....

Address .....

Phone .....

Together these and many other heart and blood vessel disorders are your Number 1 health enemy.

They take 981,000 U.S. lives annually, more than 54% of all deaths.

You help fight *all* the heart and blood vessel diseases when you give to the Heart Fund.

Heart Fund dollars make possible the fight to control and prevent these diseases through programs of research, education and community service.

GIVE...so more will live
HEART FUND

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N. Y. INFORMATION THEORY GROUP

Modern Radar

Dr. Samuel J. Rabinowitz, former Director of Ballistic Missile Defense (ARPA), and presently Assistant Director, Electronics Research Laboratory, Columbia University, will discuss "Modern Radar and Information Theory" at the October 27th meeting of the Metropolitan Chapter of the Information Theory Group. The meeting is set for 2:30 P.M. in Room 303 at the Brooklyn Campus of the Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn, New York (near the Borough Hall Station of the IRT or BMT or the Jay Street-Borough Hall station of the IND).

Persons interested in attending a luncheon for the speaker should contact Prof. Donald Schilling (Area code 212 - 643-2622) prior to October 20th. No advance notice need be given to attend the talk and non-members as well as members of ITG are cordially invited to attend.

About the Speaker

Dr. Samuel J. Rabinowitz was born in Boston, Mass. on May 23, 1925. He received the B.E.E. degree from City College of New York in 1948, the M.E.E. degree from the Polytechnic Institute of Brooklyn in 1950 and the D.E. degree from Johns Hopkins University in 1956.

He was a staff member at MIT Lincoln Laboratories, Assistant Director of ERL at Columbia University, and was with the Office of the Secretary of Defense.

He is the author of many papers on electromagnetic theory, microwave techniques, phased array antennas and missile defense systems.

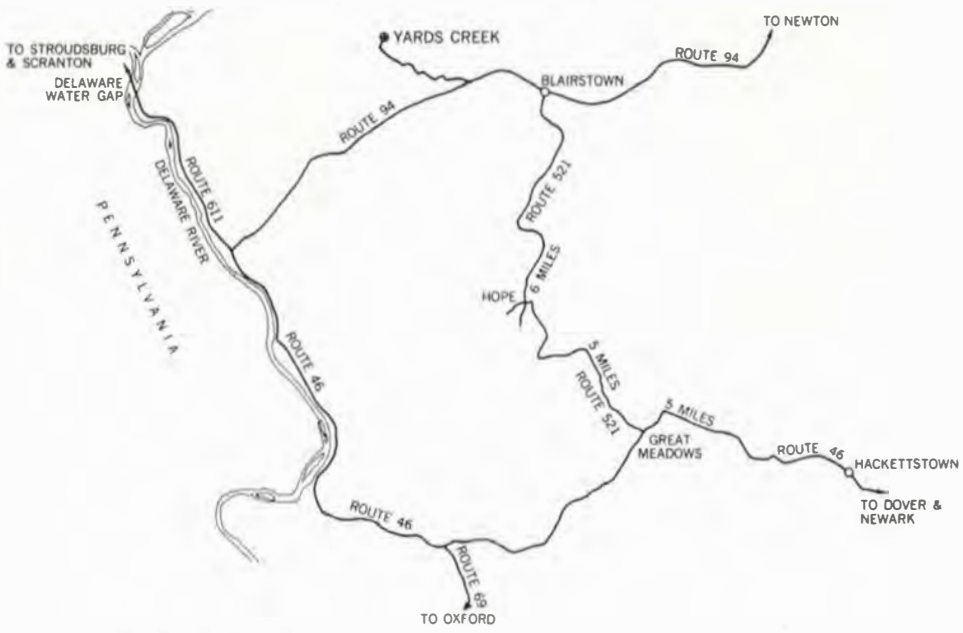
NORTH JERSEY PGEWS

FRONTIERS IN HUMAN COMMUNICATION

Date:	18 October 1966
Time:	8:00 P.M.
Place:	Communication Systems Inc. South 60, Route 17 Paramus, New Jersey
Speaker:	DR. JACQUES HABIB
Pre-meeting Dinner:	Cambridge Inn, Garden State Plaza, Paramus, N. J.

Dr. Jacques Habib will speak on "Frontiers in Human Communication." He will first talk about some old problems, offer some new ideas in the fields of communication and teaching, and then explore some provocative thoughts on the philosophical meaning of symbols and communication. Dr. Habib's thoughts should appeal to almost everyone, from parents having problems with their children to teachers and engineers.

A native of Libya, Dr. Habib came to this country in 1965 after obtaining his B.Sc. in Libya (1947) and his Ph.D. in Italy (Milan, 1952, Chemical Engineering). He worked in England and Canada until 1965 in various fields of engineering. During this time he developed an interest in human communication problems.



Directions to Yards Creek from Hackettstown:

Take U.S. Route 46 west to Route 521 at Great Meadows. Take Route 521 north, through Hope, to Blairstown, where 521 meets Route 94. Make left turn, continue west on Route 94 approximately two miles to large sign on right side of highway pointing out access road to Yards Creek. Bear right on to access road and follow signs to Yards Creek.

CHAIRMAN'S CORNER

IT'S YOUR SECTION

The North Jersey Section of IEEE belongs to you. It exists only to serve you. This Newsletter is published only for your benefit. The various programs, lectures, study courses and inspection trips sponsored by the Section and its Chapters are arranged solely for you.

Throughout this issue of the Newsletter you will find news of the various activities that have been planned for you. Please look these over and make a determination to attend at least one of them. If you attend, you will probably be pleasantly surprised to find that you have combined participation in an interesting professional topic with the enjoyment of companionship with fellow engineers.

The officers and committeemen of the Section are working hard to serve you. If they are not "doing something right," if you are not satisfied with the format or content of programs, with the way the Newsletter is being written, or with *anything* the Section is doing, for Heaven's sake, please let us know. And please let us have your thoughts and *ideas* as to how we can improve.

If you can't think of anyone else in the Section to call with your complaints, ideas, suggestions, or whatever, please call or write me.

Section Chairman: Stephen A. Mallard
Home:
68 High Street
Nutley, New Jersey 07110
Telephone: 201—NO 7-2350

Business:
Public Service Electric & Gas Co.
80 Park Place
Newark, New Jersey 07101
Telephone: 201—MA 2-7000, Ext. 2117

P.S.: For your information a list of the IEEE North Jersey Section Executive Committee and Group Committee Chairmen is included in this edition of the Newsletter, page 10. May I suggest that you retain this for future reference.

N. Y. COMPUTER GROUP

Wall Street to Probe Computer Makers

Is there a connection between a computer manufacturer's technical achievements and its value as an investment? Is electronic hardware the most attractive part of information processing from a financial analyst's point of view?

These and related questions will be discussed at the meeting scheduled for Oct. 11, at 7:30 P.M. in the Sperry-Rand auditorium, 1290 Ave. of the Americas (51st St.). The Chapter's monthly dutch-treat dinner (no reservations needed) will be held at Schraffts Restaurant, 21 West 51st St., preceeding the meeting, at 6:00 P.M.

Speaking at "Wall Street Probes the Computer Makers" will be a team of analysts from Merril, Lynch, Pierce, Fenner and Smith's securities research department, who will present investment analyses of various computer manufacturers, and will answer questions from the audience.

NORTH JERSEY SECTION IEEE

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1966 - 1967

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Nutley, New Jersey 07110
Phone: 201 - 667-2350

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Livingston, New Jersey 07039

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Madison Avenue at Punchbowl Road
Morristown, New Jersey 07960
Phone: 201 - 539-6111
45 Ferncliff Road
Parsippany, New Jersey 07054
Phone: 201 - 538-5420

Member-at-Large
BARRY MINDES
Communication Systems, Inc.
South 60, Route 17
Paramus, New Jersey
Phone: 201 - 843-2400
32 Heights Road
Wayne, New Jersey
Phone: 201 - 694-4849

Past Chairman
WALTER L. GLOMB
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390 Washington Avenue
Nutley, New Jersey 07110
Phone: 201 - 284-2930
48 Enclosure
Nutley, New Jersey 07110
Phone: 201 - 667-5643

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Newark, New Jersey
Phone: 201 - 465-0222
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46 Christie Street
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Phone: 201 - 549-1650

Group Coordinator
ROBERT G. SOKOLSKI
41 Taylor Avenue
Singac, New Jersey 07424
Phone: 201 - 256-4206

History and Procedures
FRANK POLKINGHORN
Communication Systems, Inc.
South 60, Route 17
Paramus, New Jersey
Phone: 201 - 843-2400
58 Chestnut Drive
Verona, New Jersey
Phone: 201 - 239-6074

Membership Committee
WILLIAM HEISER
Communication Systems, Inc.
South 60, Route 17
Paramus, New Jersey
Phone: 201 - 843-2400
274 Norman Drive
Ramsey, New Jersey
Phone: 201 - 327-2024

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Newark, New Jersey 07102
Phone: 201 - 624-2424

* Newly formed North Jersey Group.

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Newark College of Engineering
Dept. of Electric Engineering
Newark, New Jersey 07102
Phone: 201 - 624-2424, Ext. 304

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American Electric Power Co.
2 Broadway
New York, New York
Phone: 212 - 422-4800

* Not a formal, voting member of the Executive Committee.

program your Tektronix Type 561A or 564 oscilloscope for DC-to-15 MHz applications

Here's new convenience for many Type 561A or 564 applications.

You can program the Tektronix oscilloscope for 6 measurement setups—using the new Type 263 Programmer and the Types 3A5 and 3B5 Automatic/Programmable Plug-In Units.

PUSHBUTTON PROGRAMMING

In this mode, both plug-ins can be programmed using the Type 263 Programmer, which accepts up to 6 plug-in type program cards. Each program card, after initial set-up, establishes the plug-in control functions required for a particular test or measurement . . . with actual measurements made conveniently from the CRT display, as usual. Any number of programmers can be cascaded for applications requiring pushbutton control of more than six measurement set-ups. In REMOTE PROGRAMMING mode, the deflection factor is 10 mV/div to 50 V/div and sweep range is 5 s/div to 10 ns/div.

Programmable Functions: **from Type 3A5**—V/div, 10X probe indication, and AC, AC Trace Stabilized, or DC coupling, by program card jumper connection . . . vertical positioning by program card potentiometer setting; **from Type 3B5**—Time/div, X10 or X100 magnifier, trigger mode with coupling, and trigger slope, by program card jumper connection . . . horizontal positioning, trigger level, and magnifier delay, by program card potentiometer setting.

AUTOMATIC SEEKING

In this mode upon SEEK command from the probe or the plug-ins, the oscilloscope automatically presents an optimum display. The SEEK command to the plug-in units automatically adjusts the time and amplitude settings and automatically checks the trigger logic — switching to auto trigger mode, if not correctly triggered, to present a stable display whenever possible. Indicators on the plug-ins light automatically to show the time and amplitude settings. Measurements can then be made quickly and accurately from the CRT display. In AUTOMATIC SEEKING mode, the deflection factor is 10 mV/div to 50 V/div and sweep range is 5 s/div to 0.1 μs/div.

MANUAL OPERATION

In this mode, both plug-ins are controlled conventionally. Indicators on the plug-ins show the time and amplitude settings. In MANUAL OPERATION mode, deflection factor is 1 mV/div to 50 V/div (5 MHz bandwidth at 1, 2 or 5 mV/div and 15 MHz at 10 mV/div to 50V div) and sweep range is 5 s/div to 10 ns/div.

Type 263 Programmer (complete with 6 program cards)	$325
Type 3A5 Automatic/Programmable Amplifier Unit	$760
Type 3B5 Automatic/Programmable Time-Base Unit	$890
Oscilloscopes which accept both Automatic/Programmable Plug-Ins:	
Type 561A Oscilloscope	$500
Type RM561A Oscilloscope	$550
Type 564 Storage Oscilloscope	$875
Type RM564 Storage Oscilloscope	$960

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

Tektronix, Inc. *UNION FIELD OFFICE*

400 CHESTNUT STREET • UNION, N.J. • Phone 688-2222

NEW INSTRUMENTS

HP FEATURES ELECTRONIC COUNTER WITH PLUG-IN VERSATILITY AND 2 MHz COUNTING

New reversible electronic counter counts at rates up to 2 MHz, reverses in 250 nanoseconds, and has a reverse counting rate of 1 MHz. The instrument will operate in a temperature range from 0° to 50° C.

Model 5280A with its accompanying Model 5285A Universal Plug-In will count either of two input channels A or B, or count A upwards or downwards, depending on the polarity chosen for B, at a 2 MHz rate. It will count A + B, A-B, or count up or down, depending on the relative phase of A and B, at rates up to 1 MHz.

hp Model 5280A keeps an accurate count even if simultaneous signals should arrive at A and B channels in the A + B or A-B modes; an anti-coincidence circuit is built in. The instrument's controls include a polarity switch to reverse input signal direction-sensing, and trigger level settings with ± 100 volt range. Readout is 6 digits in-line with ± sign; 7th and 8th digits are optional, with no decrease in maximum counting or reversing rate.

The new Hewlett-Packard Model 5280A Reversible Electronic Counter is priced at $1450 The Model 5285A Universal Input Plug-In is $450.

NEW SANBORN OSCILLOGRAPH OFFERS WIDE DYNAMIC RANGE AND EXTREME RECORDING PRECISION

Model 7702A 2-Channel Thermal Writing Oscillograph features three different signal conditioners for DC inputs, a phase sensitive demodulator for 60 Hz to 5 kHz signals, a carrier type for AC transducer output recording, an AC/DC converter, and a special-purpose DC input coupler.

Using Sanborn's all-solid-state "8800" series plug-in signal conditioners, the new oscillographic recording system performs with a high degree of accuracy: the high-gain model DC preamp provides a gain of 100,000 — the phase-sensitive demodulator has a calibrated reference phase shift — the carrier preamp provides 2400 Hz transducer excitation — and the AC/DC converter has better than 0.1% resolution and a 10 ms response time.

The Model 7702A system simultaneously records two variables on 50-mm channels of Sanborn Permapaper® chart. Resolution is 4 cycles/mm and the system has four pushbutton selected chart speeds (1, 5, 20 and 100 mm/sec.) 4 additional speeds optional.

Representative rack-mount system price is $2475 and includes two 8805A Carrier Preamplifiers and all necessary power supplies. Call your local hp Field Engineer for complete details on all equipment.

HEWLETT hp PACKARD

An extra measure of quality

ELECTRONIC TEST INSTRUMENTS

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NORTH JERSEY SECTION

INSPECTION TRIP

At General Motors Assembly Plant

Linden, New Jersey

Tuesday, November 15 — 7:15 P.M.

for details see page 4

The IEEE
Newsletter
The Magazine of the North Jersey Section

NORTH JERSEY G-MTT MEETING

Microwave Power Generation

with IMPATT Avalanche Transit Time Diode

Speaker — Dr. R. M. Ryder

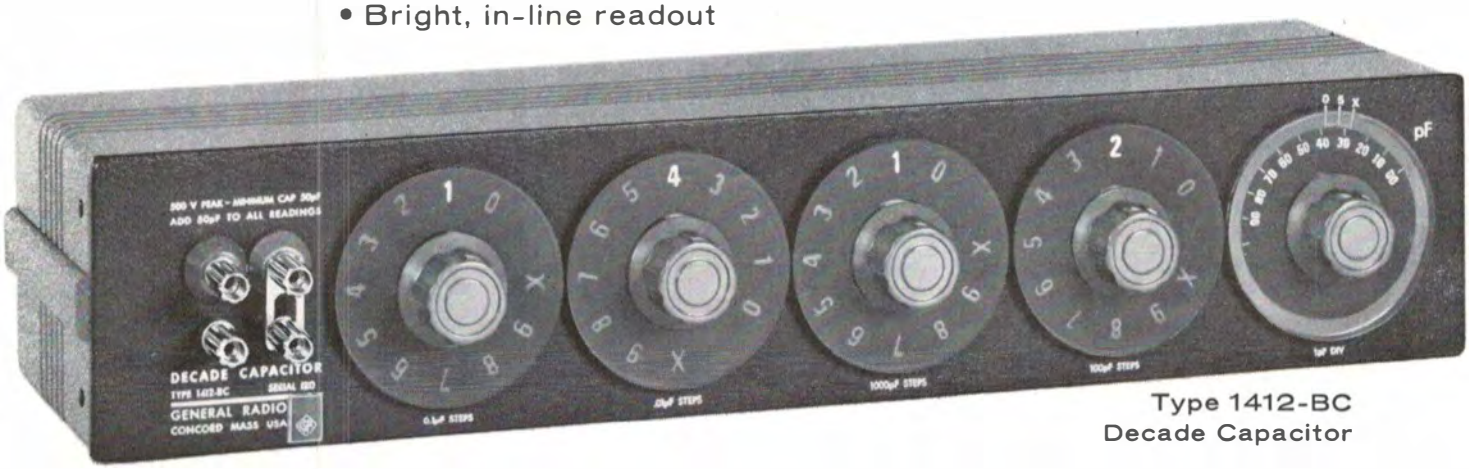
Wednesday, November 16, — 8:15 P.M.

for details see page 10

Volume 13 / Number 3 NOVEMBER 1966

WIDE RANGE and FINE RESOLUTION In a $190 Decade Capacitor

- 50 pF to 1.11115 μF
- Double shielding . . . capacitance for 2- and 3-terminal connections differs by only 1 pF
- Low-loss polystyrene dielectric in all decades
- ±1% Accuracy
- Bright, in-line readout



Type 1412-BC
Decade Capacitor

This decade capacitor combines precision decade steps and a high-resolution variable capacitor for continuous adjustment to better than 1 pF between steps. The four decades make possible settings from 100 pF to 1.1111 μF in 100-pF steps; nearly the entire range of commonly used capacitance is covered. The built-in 0-100 pF vernier extends the resolution still further for fine comparisons and allows precise calibration for demanding laboratory work. Small size (a mere 3½" high) and clean styling make this capacitor equally useful on a bench or in a rack. With all of its features, the Type 1412-BC is priced reasonably.

Other Decade Capacitors available from General Radio

For 0.5% Accuracy . . . Type 1419-K Decade Capacitor . . . $385 in U.S.A.

This three-decade unit covers the zero to 1.110-μF range in 1000-pF steps; capacitance at zero setting is 41 pF when used as a two-terminal device, and 13 pF in three-terminal connections. Silvered-mica dielectric ensures extremely low dissipation factor (less than 0.0003) and temperature coefficient (≈35 ± 10 ppm/°C). The 1419-K is ideal for the demanding 2- and 3-terminal capacitance requirements.

For the Highest Accuracy and Stability in a Decade Capacitor . . . Type 1423-A Precision Decade Capacitor . . . $750 in U.S.A.

0.05% accuracy, 0.01%-per-year stability, and a 100-pF to 1.111-μF range (in 100-pF steps). The Type 1423-A is especially valuable for precise comparison and substitution work, since its high accuracy and stability eliminate the need for repeated recalibration.

For High Values of Capacitance:

Type 1424-A Standard Decade Capacitor, Polystyrene Dielectric
10 μF in 1-μF steps, 0.25% accuracy . . . . . $345 in U.S.A.

Type 1424-M Decade Capacitor, Paper Dielectric
10 μF in 1-μF steps . . . 1.0% accuracy . . . . . $210 in U.S.A.

Type 1425-A Standard Decade Capacitor, Polystyrene Dielectric
100 μF in 10-μF steps, 0.25% accuracy . . . . . $1400 in U.S.A.

Write for Complete Information

NEW YORK OFFICE
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The IEEE **Newsletter**

Published monthly except July & August by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc. Office of Publication: 9 Little John Road, Morris Plains, N. J.

Volume 13 **November, 1966** **No. 3**

Deadline for all material is the 25th of the second month preceding the month of publication.

All communications concerning The Newsletter, including editorial matter, advertising, and mailing, should be addressed to:

THE NEWSLETTER
c/o Staff Associates
P.O. Box 275 — Morris Plains, N. J.
Telephone: 398-5524

Subscription: 75¢ per year through dues for members; $1.50 per year for non-members.
Second Class Postage Paid
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ABOUT ADDRESS CHANGES

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

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

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Executive Committee Meeting
at Verona Public Library — Nov. 2

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1966 - 1967

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Program ..... Carl Torell
Student Affairs ..... Prof. J. W. Earle

CALENDAR

Details on page

Thursday, November 10

JOINT METROPOLITAN CHAPTER — ENGINEERING MANAGEMENT GROUP 7
7:30 P.M.—Debate on "The Climate in which Initiative and Motivation Flourish"
Moderator—Mr. E. J. Tangerman, McGraw Hill Publishing Co.
At—United Engineering Center, 345 E. 47th St., N. Y. C.

N. Y. CHAPTER — G-AES 10
8:00 P.M.—"High Performance — Low-Cost Auto Pilots"
Speaker—Mr. F. W. Piper, Manager of Systems Engineering, Aircraft Radio Corp.
At—Engineering Auditorium, ITT Federal Labs., 500 Washington Ave., Nutley, N. J.

Tuesday, November 15

NORTH JERSEY INSPECTION TRIP 4
7:15 P.M.—Tour of General Motors Auto Assembly Plant
At—Linden, N. J. off Rte. 1 (See map)

JOINT METROPOLITAN CHAPTER — ELECTRON DEVICES GROUP 9
8:00 P.M.—"Electron Beam Techniques of Electronic Materials and Devices"
Speaker—Mr. Donato J. Bracco, General Telephone & Electronic Labs.
At—ITT Federal Labs., Nutley, N. J.

Wednesday, November 16

NORTH JERSEY CHAPTER — G-MTT 10
8:15 P.M.—"Microwave Power Generation with IMPATT Avalanche Transit Time Diode"
Speaker—Dr. R. M. Ryder
At—Arnold Auditorium, Bell Telephone Labs. Inc., Murray Hill, N. J.

N. Y. CHAPTER — COMPUTER GROUP 7
7:30 P.M.—"Systematic Design of Computers — Theory in Practice"
Moderator—Dr. J. Paul Roth, IBM Watson Research Center
At—The Brass Rail, 521 Fifth Ave., N. Y. C.

Thursday, November 17

NORTH JERSEY CHAPTER — JOINTLY SPONSORED — COMPUTER GROUP AND ASSOC. FOR COMPUTING MACH. 4
8:00 P.M.—"What Next in PL/1?"
Speaker—Dr. M. Douglas McIlroy, Bell Telephone Labs.
At—IBM, Exit 136, Garden State Parkway — East Side, Cranford, N. J.

NORTH JERSEY CHAPTER — RELIABILITY GROUP 5
5:00 P.M.—"Microelectronics—State-of-the-Art and Application Problems"
Speaker—Mr. Edward Keonjian, Grumman Aircraft
At—Alumni Center Seminar Room, Newark College of Engineering, Newark, N. J.

Tuesday, November 22

JOINT METROPOLITAN CHAPTER — PMP/PGR GROUPS 5
8:00 P.M.—"Role of Thin/Thick Films with Advance of Si Monolithic Circuits"
For Information Call—Morris Rudis—516 - 595-3283

Tuesday, November 29

N. Y. CHAPTER INSPECTION TRIP — COMTEC GROUP 10
9:00 A.M.—Tour of N. J. Bell Telephone Co. Switching Exchange
At—Succasunna, N. J.

Wednesday, November 30

N. Y. CHAPTER — POWER AND INDUSTRIAL GROUP 7
6:30 P.M.—"Insulated Conductors, Transmission and Distribution"
At—Union Carbide Building, 3rd floor, 270 Park Ave., N. Y. C.

Friday, December 2

STUDENT'S NIGHT 9

North Jersey Computer Group

Jointly Sponsored IEEE-ACM Meeting

"What Next in PL/1?"

Date:
Thursday, November 17, 1966
Time:
8:00 P.M.
Place:
IBM
Exit 136, Garden State Parkway — East Side, Cranford, N. J.
Subject:
What Next in PL/1?
Speaker:
DR. M. DOUGLAS McILROY
Pre-Meeting Dinner:
6:00 P.M.
Holiday Inn
Exit 138, Garden State Parkway — West Side, Kenilworth, N. J.

The North Jersey IEEE Computer Group and the Northern New Jersey Chapter of the Association for Computing Machinery is sponsoring a talk by Dr. M. Douglas McIlroy, November 17, 1966 in Cranford, N. J. on "What Next in PL/1?"

The numerous programming languages in existence today are based not only on the design of a computer but reflect the unique needs of the user. The scientific community, the business community, the financial community, the manufacturing community, etc. all require different operations and performances from a digital computer.

This proliferation of programming languages has led to a cry for a standard programming language that would incorporate as many good programming ideas as possible, yet be flexible enough to permit the introduction of new ideas as they develop.

PL/1 has been designed to fill this need.

Dr. McIlroy, who contributed to the original design of PL/1, received his Ph.D. in Mathematics from MIT. Prior to his work at Bell Telephone Laboratories he was an instructor at MIT. He is currently head of the Computing Techniques Research Department at Bell Telephone Labs, Murray Hill, N. J. He is active in the SHARE organization and works in compilers, assemblers, operating systems, language design and theorem proving.

North Jersey Section Inspection Trip

A tour of the General Motors Auto Assembly Plant at Linden, New Jersey has been scheduled for Tuesday evening, November 15, 1966 at 7:15 P.M.

At this plant, General Motors assembles Buick, Oldsmobile and Pontiac automobiles. The plant turns out approximately 150,000 cars per year, and employs an average of 4,000 men and women.

The five main structures of this plant — manufacturing, administration, personnel, paint mix building, and the power house enclose some 1,711,155 square feet of floor space. This plant occupies a site of 85 acres.

This is an assembly plant, not a fabricating plant. Here, thousands of parts are brought together, each at exactly the right time and place on the assembly line, to produce 29 different automobile models. These parts converge on the Linden Plant, not to be stockpiled, but usually to be moved directly from freight cars to the assembly line.

It is this split-second timing, this precisely scheduled flow of materials — from plant to plant as well as within the plant — that is the bloodstream of the American mass production system. Whether this plant produces 35 cars an hour or 60 cars an hour, it must be fed material accordingly, at exactly the right place. It cannot function with too little or too much, too soon or too late.

Those planning to take this tour to see this fascinating assembly process should plan on arriving via their own transportation at 7:15 P.M. There will be ample parking in the area of the Personnel Building, which is adjacent to U. S. Route 1. The tour will begin promptly at 7:30 P.M. and will last for approximately one hour and ten minutes. Children must be at least 8 years old.

RESERVATION SLIP

WILLIAM T. KELLY
c/o Public Service Electric and Gas Company
80 Park Place, Room 8343-M
Newark, N. J. 07101

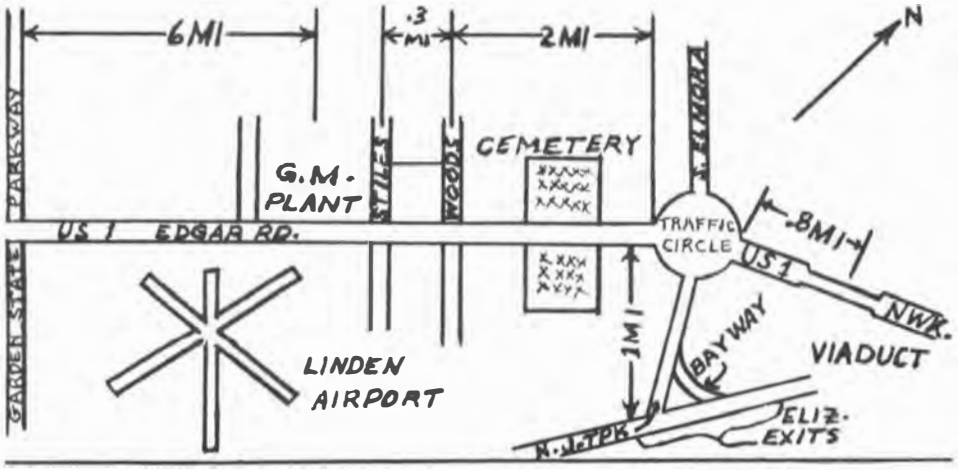
I plan to attend the General Motors Auto Assembly Plant Tour on November 15, 1966. I will bring ..... guests with me.

Name .....

Company .....

Address .....

Phone .....



13N — EXIT FOR SOUTHBOUND TRAFFIC — ENTRANCE FOR NORTHBOUND
13S — EXIT FOR NORTHBOUND TRAFFIC — ENTRANCE FOR SOUTHBOUND

North Jersey Reliability Group

Microelectronics State-of-the-Art and Application Problems

At an organization meeting of the Northern New Jersey Chapter of the Reliability Group, G7 held on September 22, 1966, the following were selected:

Organizational Officers

R. P. Misra ..... *Chairman*
Edward Mallahan ..... *Treasurer*
Lester Davidson ..... *Secretary*
John H. Gerth ..... *Program Chairman*

Members of the Executive Committee

Jack Clayton ..... Aircraft Radio
Prof. S. Fishman ..... N.C.E.
Dr. E. New ..... Stevens
George Richardson ..... I.T.T.
Donald Shaw ..... Picatinny Arsenal

We plan to hold five meetings during the coming season on the following Thursdays:

November 17
January 19
February 16
March 16
May 18

The meetings are scheduled to be held in the new facilities at Newark College of Engineering, 323 High Street, Newark 2, New Jersey.

The first meeting will be held in the Seminar Room of the Alumni Center, Newark College of Engineering on Thursday, November 17th from 5:00 to 6:30 P.M.

Mr. Edward Keonjian will speak on: Microelectronics — State-of-the-Art and Application Problems

Mr. Keonjian is a Fellow of the IEEE, who has written books on microcircuits and transistor devices and holds several patents in that field. He is Chief of the Microelectronics and Circuit Design Section of Grumman Aircraft and is Chairman of the Microelectronics Committee of the EIA and AIA. He is also on the panel of the NATO Advisory Group for Aerospace Research and Development (AGARD).

N. Y. Metropolitan PMP/PGR Groups

Role of Thin/Thick Films with Advance of Si Monolithic Circuits

Tuesday, November 22, 1966
8:00 P.M. Meeting in N. Y. C.

PANEL SPEAKERS

PAUL GRONER
Supr. New Products
Corning Glass Works
Raleigh, N. C.

JOHN LIZZIO
Eastern Regional, Sales Mgr.
Mepco Inc.
Morristown, N. J.

JOHN TEMPLETON
Group Leader
Airborne Instruments Lab.
Deer Park, N. Y.

Pre-Dinner Meeting at nearby restaurant—
For information call:
MORRIS RUDIS
516 - 595-3283

BARRED FROM LIFE?

This baby was born with severe birth defects. Until a few years ago, his parents might have been told, "Enjoy him while you can. Nothing can be done to help him."

Today, much can be done for so many of these children. Almost 80% of all birth defects can be treated — and often completely corrected — with early diagnosis and proper treatment.

The March of Dimes finances more than 75 Birth Defects Centers throughout the nation to bring the best of care to those who need it most.

The child born less than perfect can be helped across the barriers of disability to find a full, productive life.

fight birth defects / JOIN **MARCH OF DIMES**

Joint Metropolitan Chapter Engineering Management

The Climate in Which Initiative and Motivation Flourish

On Thursday, November 10, 1966 at 7:30 P.M., the Metropolitan Chapter, Engineering Management Group will conduct a panel discussion in Room 125 at the United Engineering Center, 345 E. 47th Street in New York City.

Mr. E. J. Tangerman, Office of Planning and Development of McGraw Hill Publishing Co. will moderate a panel discussion by four top executives from area firms on the subject of, *"The Climate in Which Initiative and Motivation Flourish."*

The members of the panel are:

MR. D. M. MILLER
President
Airborne Instruments Lab.

MR. S. R. COLLIS
Vice President
N. Y. Telephone Co.

MR. J. H. VOLLBRECHT
Vice President
ITT Federal Labs.

MR. K. A. ROE
President
Burns and Roe, Inc.

These distinguished gentlemen have all reached the high offices they now hold by working their way up through the ranks from the position of engineer. They are all highly qualified to speak on the environment and circumstances that nourish individual initiative and motivates engineers.

A question and answer period will follow the panelists talks.

N. Y. Chapter — Computer Group

Systematic Design of Computers Theory in Practice

The design of new computers is increasingly difficult, yet relatively few of the problems involved are being turned over to computers for systematic solution. The optimists' dream of automated design is still out of reach, although some programs and procedures have been developed that allow computers to share portions of the creative design burden.

Achievements and problems in programming computers to produce designs for logic, circuits, placement and other needs will be discussed by a panel of specialists at the *November 16* meeting. The panel will be led by Dr. J. Paul Roth, IBM Watson Research Center, Yorktown; and will include Dr. C. Y. Lee, Bell Telephone Labs.; Holmdel; and Hugh Mays, Fairchild Semiconductor, Palo Alto.

The meeting will be a dinner meeting co-sponsored by the Greater N. Y. Chapter of the Association for Computing Machinery. Reservations will be necessary. It will be held at the Brass Rail, 521 Fifth Ave., (43rd St). *A social hour will begin at 5:30 P.M.; dinner, at 6:30, and discussion, at 7:30.* To make a reservation for dinner send a check for $5 (IEEE or ACM members) or $6 (non-members) to Sherman Blumenthal, Union Carbide Corp., 270 Park Ave., N. Y., N. Y. 10017 (Phone 551-5832). Make checks payable to "GNY Chapter ACM," and print on the back: name, address, phone number and affiliation.

North Jersey Section Groups

Operation Familiarization

To better acquaint the North Jersey Section membership about our Groups and their activities, who for reasons of their own have not committed themselves, the Newsletter is initiating this column. Its purpose? To inform the uninitiate of the operations of each of these Groups. But just so you don't tear down the walls of all the Groups at one time in your headlong dash to join up, we will offer tidbits of informative data on only one Group per issue.

The IEEE Communications Technology Group, which is the favored Group this month, is one of 31 specialized professional groups within the organization. Naturally, this Group caters to those members whose field of interest lies in the communications and allied areas. Specifically, ComTec activities cover such wide fields of interest as telecommunications (both theory and application) which includes telephony, telegraphy, data transmission with associated error detection and correction, point-to-point radio and television, satellite communications, and analysis of systems and subsystems using one or more of these mediums.

To keep the troops fully informed on such an impressive array of technologies, the ComTec Groups finds it more expedient to deploy its organization into local chapters (as of course do most of the other IEEE Groups). The boundaries and geographic areas of the local chapters are essentially determined by the concentration of industry, which in turn becomes the bait and lures the engineers into these areas. Or is it vice versa? Generally the area of operation of a chapter coincides with that of the Section.

One of the major functions of this Group and all the others is the dessemination of information through its carefully programmed meetings. These bon mots are held several times during the year; featuring both individual lecturers or panel groups all having extensive backgrounds in the communication disciplines. On occasion, the chapter spices the season with an interesting field trip for the intrepid engineer. In addition, when the occasion warrants, joint sessions are held with other chapters. ComTec is also a co-sponsor of the Annual Communications Conference.

Transactions on Communications Technology are published several times a year by IEEE headquarters. This publication represents the forum for the presentation of communications-oriented technical papers, concise papers (a summary form of a technical paper), letters to the editor, and discusses previously published papers.

The Group membership is derived from engineers and other technically oriented people in the communications industry, common carriers, consulting engineers, and the communication branches of the military services. Students are eligible and encouraged to join a specific group. Association with the group, if it accomplished nothing else familiarizes the student with the essentials of communications technology. Such exposure, better enables the student to decide if this field is his cup of tea or if greener pastures beckon elsewhere at graduation time.

If the above message has stimulated you into seeking the exhilarating atmosphere of the ComTec Group then direct your inquiries to Mr. Raymond P. Hinton, the chapter's chairman. Ray's mailing address is c/o Communication Systems Inc., Route 17, Paramus, New Jersey.

N. Y. Power & Industrial Group

Insulated Conductors, Transmission and Distribution

A joint meeting of the Insulated Conductors and Transmission and Distribution Technical Discussion Groups of the New York Section, Power & Industrial Division of IEEE will discuss trends in T & D. The extension of current innovations, such as overhead beautility, URD, HVDC, sodium conductors, etc. along with more radical concepts such as cryogenic cable, microwave transmission, etc. will be covered.

A panel of three industry experts will give a very short talk on pertinent fields of interest, followed by the usual discussion period. The meeting will be held in the 3rd floor meeting room of the Union Carbide Building, 270 Park Avenue, New York, on Wednesday, November 30, from 6:30 to 8:30 P.M.

Still the

SIMPLEST CHART EVER

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2. **If you are responsible** for your company's advertising program, simply dial the number at the bottom of this page to find out why it pays to reach 6,000 members of the North Jersey Section. (Of course, there's nothing to stop you from using the chart to check our rates before you call)

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Plates and copy are due the first of the month preceding publication.

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Chairman's Corner

Sum and Substance

Past columns of the Executive Committee, stress the message that the individuals that are active and attend meetings are reaping the benefits. As you well know, if you read "The Newsletter" every month, there are meetings, seminars, courses, tours, and an annual dinner. Have you noticed a change in how these meetings are arranged? In the past the Section Program Chairman would plan the bulk of the meetings. Now, the individual groups, of which there are seven active and one in the process of formation, plan the meetings. The seven active groups are:

Computer
Microwave Theory and Techniques
Communication Technology
Automatic Control
Engineering Writing and Speech
Power
Reliability

The one in the process of formation is:

Industrial Electronics and
Control Instrumentation

In addition, there are eight groups that are jointly sponsored with New York, Long Island, and Princeton. These are:

Instrumentation and Measurement
Aerospace and Electronic Systems
Information Theory
Engineering Management
Electron Devices
Engineering in Medicine and Biology
Parts, Materials, and Packaging
Electromagnetic Compatability

We no longer jointly sponsor the Group on Vehicular Communication. As you may have noted, a Reliability Group has been formed in North Jersey.

Of course, some of the joint groups meet only in New York or Long Island. In this regard we hope to effect changes, for there are Jersey members of these groups, and they should have an opportunity to attend without too much travel or travail.

You may well ask, "Why should I go to these meetings?" All that can be said is that you may have an opportunity to explore fields that may have an interest for you, and in addition, the material presented may burnish some of the information that you have amassed.

We hold forth no promise of acquiring new technical information or furnishing existing information when you attend the Annual Dinner Dance. This is solely and strictly a social affair at which we honor those members of the North Jersey Section who have been awarded National Prizes or elevated to the honorary grade of Fellow. This year, the date is Saturday, February 4, 1967 at a place to be selected.

There is one area that has not been touched on. As you know, in order for the Section to plan these meetings, and see that we live within our budget, a monthly Executive Committee Meeting is held. This meeting is open to the membership. At this meeting, all the committees report on their activities. We, the committee, extend largesse as well as penny-pinch. You will not be drafted to any assignment if you come to listen.

BERNARD MEYER
Vice Chairman
North Jersey Section

Joint Metropolitan Chapter Electron Devices

Electron Beam Techniques in Chemical Analysis of Electronic Materials Devices

Presented by:
MR. DONATO J. BRACCO
General Telephone
and Electronics
Labs., Inc.
Bayside, New York

Date and Time:
Tuesday, Nov. 15
at 8:00 P.M.

Place:
International
Telephone &
Telegraph Labs.
Nutley, New Jersey

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

The problems encountered in analysis of electronic materials and devices emphasize non-destructive and microchemical techniques. Significant advances in high velocity electron-optical instrumentation embodied in the electron microscope, the electron probe microanalyzer and the scanning electron microscope satisfy these needs in many respects. The principles of operation and illustrative applications to phosphors, semiconductors and integrated circuits will be presented.

Donato Bracco is presently Program Manager, Materials Analysis, at the Bayside, New York laboratory of General Telephone & Electronics, a position he has held since 1962. Mr. Bracco has been in the employ of G. T. and E. Labs since 1947. Serving in a number of line and staff positions including manager of the chemistry laboratory and manager of research planning. He has publications in phosphors, screen application and analytical methods.

Mr. Bracco has a B.Ch.E. from the College of the City of New York, 1941, and has attended graduate school at the Polytechnic Institute of Brooklyn.

ANNUAL STUDENTS' NIGHT

FRIDAY, DECEMBER 2nd

The Student Affairs Committee of the Section, under the leadership of Mr. James W. Earle of the staff of Newark College of Engineering, is arranging an interesting program for tho evening. Representatives from Fairleigh Dickinson, Stevens Institute, and Rutgers, as well as from Newark College are working on the Committee. Graduate members of the Section are urged to bring their wisdom to the meeting. Watch the bulletin boards and the December issue for the meeting location.

Executive Committee Action

From time to time, your Newsletter will publish items of general interest to North Jersey Members. Generally, this will concern action taken by our Executive Committee which diligently follows the changing situation and tries to anticipate our needs. The busy monthly meetings often result in action of general interest. The following letter illustrates such an action item.

MR. D. FINK
The Institute of Electrical and
Electronics Engineers
345 East 47th Street
New York, New York 10017

Dear Mr. Fink:

This is to inform you of four Resolutions which were approved by the North Jersey Section Executive Committee at its meeting of September 7, 1966.

1. Inasmuchas each Section could pursue a more vigorous program if they had increased financial aid, and inasmuchas the dues of each member have been increased by Headquarters, it is hereby requested that the present Section rebate of $1.10 per member be increased to $2.00 per member.

2. Because this Committee has received numerous complaints from members concerning inaccurate billing and mailing and the Section has encountered severe problems with Headquarters' mailing lists, it is requested that Headquarters make a strenuous effort to markedly improve its mailing and billing procedures.

3. In view of the fact that Headquarters has increased members' dues and because it is highly desirable that each member belong to those Professional groups which are of most direct interest to him, it is hereby requested that all or part of at least one Professional group's dues be included in the annual $25.00 membership dues.

4. Inasmuchas the financial responsibilities and resources of recent graduates are such as to make the $25.00 membership dues a severe hardship, it is hereby requested that the membership dues for recent graduates be reduced to a more reasonable level.

Very truly yours,
M. M. IRVINE
Secretary

North Jersey G-MTT

Generation with IMPATT Microwave Power Avalanche Transit Time Diode

Date:
Wednesday, November 16, 1966

Time:
6:30 P.M. Dinner, Wally's,
Watchung, N. J.
8:15 P.M. Meeting

Place:
Arnold Auditorium
Bell Telephone Laboratories, Inc.
Murray Hill, New Jersey

Speaker:
DR. R. M. RYDER

Subject:
Microwave Power Generation with IMPATT Avalanche Transit Time Diodes.

Microwave power generated directly from negative conductance diodes has achieved values useful for receivers and small transmitters. Continuous power on the order of 500 mW is available at X-band; pulse powers about 15 dB higher are indicated. The original proposal of W. T. Read (1958) combined an impact ionization "avalanche" breakdown with transit time effects to produce negative conductance oscillations. The talk will describe this and other combinations of avalanche and transit time, describing structures, operating principles and experimental measurements.

R. M. RYDER

Born in Yonkers, New York, March 8, 1915. BS Magna Cum Laude, Yale, 1937 and Ph.D. (Physics) Yale, 1940.

Bell Laboratories

1966 —
Department head in charge of microwave transistor development, transistor fabrication techniques and surface studies.

1954 - 1966 —
Department head in charge of high speed diode development, including varactor diodes for low-noise receivers, varactor diodes for microwave power generation, high speed switching diodes, and microwave protectors, amplifiers and power sources.

1948 - 1958 —
Transistor Development. High speed power transistors, high frequency diffused base transistors.

1944 - 1948 —
Microwave Vacuum Tube Development. Broadband microwave receiving tubes and low power transmitters.

1940 - 1944 —
Microwave Circuit Research. Low noise and wide band amplification.

Dr. Ryder is a Fellow of the IEEE and of the AAAS and a member of the Yale Engineering Association.

N. Y. GAES

High Performance Low-Cost Autopilots

Date:
Thursday, November 10, 1966

Time: 8:00 P.M.

Place:
The Engineering Auditorium at
ITT Federal Laboratories
500 Washington Avenue
Nutley, New Jersey
(The building under the ITT Tower, 3 blocks south of the Main Avenue exit from Route 3).

Speaker:
F. W. PIPER
Manager of Systems Engineering
Aircraft Radio Corporation
Boonton, New Jersey

Subject:
High Performance—Low Cost Autopilots.
Mr. Piper will discuss the design and development of high performance — low cost autopilots using new gyro techniques and gyro substitutes for auto pilot stabilization. Mr. Piper will have models of this equipment for inspection.

Pre-Meeting Dinner:
Copper Hood Restaurant
1 Park Avenue
Lyndhurst, New Jersey
(From N. Y. — Ridge Road exit from Route 3; from west — 1st exit after crossing Passaic River bridge).

Biographical Note:

Mr. Piper is a graduate of Iowa State University holding a BSEE degree. He has been associated with Aircraft Radio Corporation since 1957 and is manager of the Systems Engineering Department. Prior to joining Aircraft Radio Corporation, Mr. Piper was associated with Boeing Aircraft Company.

N. Y. COMTEC Group

Inspection Trip to N. J. Bell Telephone Co. Electronic Switching Exchange

On November 29, 1966 the Related Activities Committee of the Communication Technology Group of the New York Section, IEEE will sponsor a field trip to the New Jersey Bell Telephone Company's Electronic Switching Exchange, at Succasunna, New Jersey, to inspect the No. 1 Electronic Switching System (ESS). No. 1 ESS exploits new developments in computer technology as the means for operating this revolutionary new telephone exchange. The system has the potential to follow switching schemes of an almost limitless variety, depending upon the particular user's needs. Some of the services that No. 1 ESS can provide are: automatic dialing for a list of often-used telephone numbers, automatic setting up of conference calls, and allowing a user to communicate directly with a computer over any telephone.

Attendance is limited to 20 persons and is by advance registration only. Transportation has been made available by Chartered Bus ($2.00 round trip), leaving 43rd Street and Vanderbilt Avenue, New York at 9:00 A.M., Thursday, November 29, 1966. Use the below registration blank (or duplicate) and return before November 20, 1966.

MR. H. FRIEDMAN
New York Telephone Company
140 West Street, Room 1300
New York, N. Y. 10007

RESERVATION FORM

_____ Yes I will attend the tour of ESS Exchange, Succasunna, New Jersey, on November 29, 1966.

_____ Enclosed is my check for $2.00 for bus transportation.

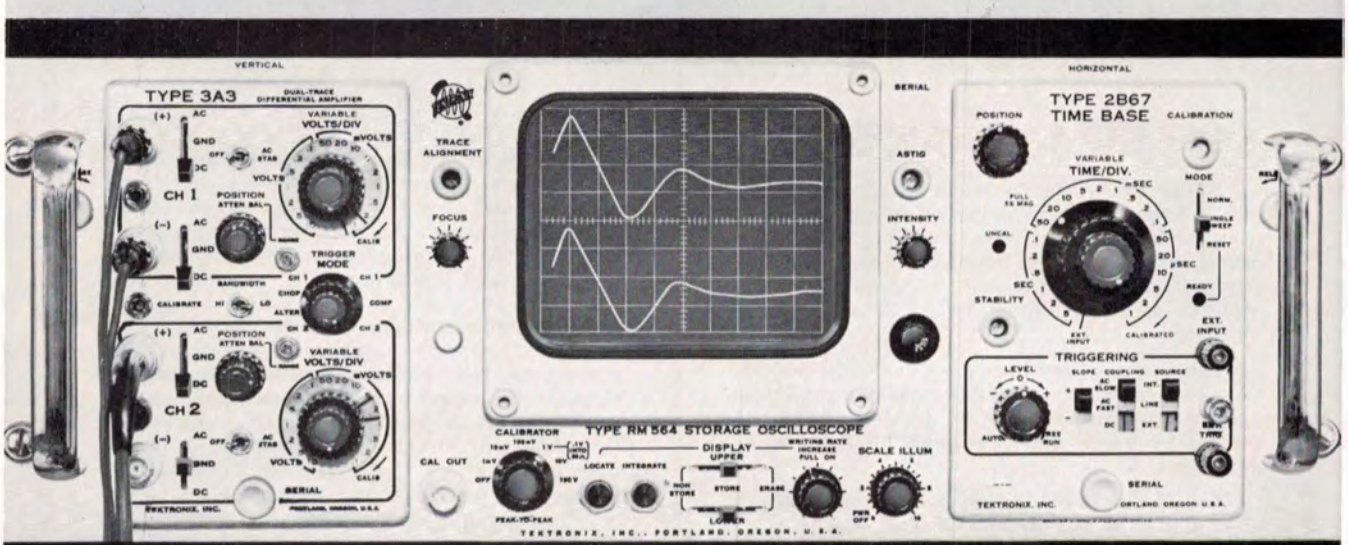
_____ I will provide my own transportation.

Type RM564 TEKTRONIX general-purpose oscilloscope

with added feature of

STORAGE

SPLIT-SCREEN / permits simultaneous operation as a storage oscilloscope and as a conventional oscilloscope



■ presents stored or conventional displays—The Type RM564 presents full-screen stored displays or full-screen conventional displays. Or—with the split-screen—stored displays can be presented on either the upper or lower half of the crt with conventional displays on the other half.

■ saves film—The Type RM564 permits detailed waveform analysis and simplified waveform comparisons, in many instances, without resorting to photography. Just store and analyze—for periods up to one hour, with quick erase in less than one-fourth second.

■ trace photography is easier and can cost less—Stored displays can be recorded at one's convenience, without the need for high-speed lens or film.

■ accepts combinations of 20 plug-in units—The Type RM564 adapts easily to such applications as multi-trace, low level differential, sampling, spectrum analysis, others—including matched X-Y displays using the same type amplifier units in both the amplifier and time-base channels.
Plug-in units offer capabilities from 100μV/cm sensitivity (3A3) and 10MHz passband (3A1, 3A6), to 0.5 μsec/cm sweep rate (3B1, 3B3) and sweep-delay applications (3B1, 3B2, 3B3).

■ saves space—The Type RM564 occupies **only 7 inches** of standard **rack height**, yet has a full 8-cm by 10-cm display area.

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Display shows ability of the Type RM564 to store single-shot events. Waveforms represent displacement of leaf springs due to imparted shocks given them during test. Split-Screen Facility—with independent storage and erase of upper and lower half of the crt—permits easy comparison of test waveforms to a reference display.

Type RM564 Oscilloscope	$960
Type 3A3 Dual-Trace Differential Amplifier Unit	790
Type 2B67 Time-Base Unit	210
18 other plug-in units available.	
Type 564 Cabinet Model also available with same performance specifications	875

U.S. Sales Prices f.o.b. Beaverton, Oregon
Oscilloscope prices without plug-in units

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NEW H-P 50 MHz BIG SCREEN SCOPE WEIGHS ONLY 30 POUNDS.

Model 180A Plug-In Scope features a screen 30% larger than previous models and twice the screen size of scopes of similar dimensions. The radial-field contoured mesh CRT configuration magnifies the display and shrinks overall tube length as it produces an 8 x 10 centimeter display.

The vertical amplifier plug-in, Model 1801A, is a two-channel unit with a sensitivity of 5 mv/cm at 50 MHz. Trace drift is virtually eliminated by using new low noise all solid state circuitry.

The Model 1820A achieves a sweep speed of 5 nanoseconds per centimeter with reliable triggering to 90 MHz, and the Model 1821A Time Base and Delay Generator Plug-in allows expanding of any part of the trace for detailed examination.

Price of the 180A, less plug-ins, is $825. The Model 180AR, the 5¼-inch high rack mounting version, is $900. The 1801A is $650. The 1820A is $475. The 1821A is $800.

A SINGLE INSTRUMENT MEASURES IMPEDANCE AND PHASE, 500 KHz TO 108 MHz, WITH ONE PROBE.

Hewlett-Packard's new 4815A RF Vector Impedance Meter displays impedance in ohms and phase angle in degrees directly on two front panel meters, over the frequency range of 500 KHz to 108 MHz. A single probe excites the test element and simultaneously measures its impedance and phase angle.

A unique sampling AGC loop maintains the current of the probe a constant 4μ amps. At the same time, the voltage response of the tested element is sensed and converted by a second sampling channel located within the same probe, to a read out directly in impedance. A phase detector monitors the difference between the voltage and current channels, to give the phase angle of the impedance vector.

The impedance reading range is 10 to 100,000 ohms; phase angle is 0° to 360° in 2 ranges, 0° ± 90° and 180° ± 90°. Resolution is better than 2°.

The Model 4815A is priced at $2,650. For complete information on all instruments, call your local hp Engineer.

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NORTH JERSEY SECTION

ANNUAL STUDENTS' NIGHT PROGRAM

Newark College of Engineering Alumni Center

Newark, New Jersey

Friday, December 9 — 7:30 P.M.

for details see page 4

The IEEE
Newsletter
The Magazine of the North Jersey Section

Shown above in the background is the

NCE Alumni Center for Continuing Engineering Studies

Privately financed by alumni and others
Presented to NCE last May

Volume 13 / Number 4 DECEMBER 1966

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962; Section 4369, Title 39, United States Code)

1. DATE OF FILING: **October 1, 1966**; 2. TITLE OF PUBLICATION: **The IEEE Newsletter**; 3. FREQUENCY OF PUBLICATION: **Monthly except July and August**; 4. LOCATION OF KNOWN OFFICE OF PUBLICATION: **9 Little John Road, Morris Plains, N. J. 07950**; 5. LOCATION OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHER; **9 Little John Road, Morris Plains, N. J. 07950**; 6. NAMES AND ADDRESSES OF PUBLISHER, EDITOR, AND MANAGING EDITOR: **Publisher, None; Editor Sam Petrokofsky, 337 Gregory Avenue, West Orange, N. J.; Managing Editor, None**; 7. OWNER: **The North Jersey Section of the Institute of Electrical and Electronics Engineers, 9 Little John Road, Morris Plains, N. J. 07950**; 8. KNOWN BONDHOLDERS, MORTGAGEES, AND OTHER SECURITY HOLDERS OWNING OR HOLDING 1 PERCENT OR MORE OF TOTAL AMOUNT OF BONDS, MORTGAGES OR OTHER SECURITIES: **None.**

CIRCULATION STATEMENT

	AVERAGE PREC. 12 MONTHS	ISSUE NEAREST FILING DATE
Total Copies Printed	5688	5615
Paid Circulation		
Other Than Mail Subscriptions	None	None
Mail Subscriptions	5464	5439
Total Paid Circulation	5464	5439
Free Distribution	85	88
Total Distribution	5549	5527
Office Use, Left-Over, Unaccounted, Spoiled	139	88
TOTAL	5688	5615

I certify that the statements made by me are correct and complete.

M. M. Perugini (Signed)

North Jersey Section
Awards Deadline Nears

Outstanding performance deserves recognition, and we as individuals are responsible for getting such recognition awarded. In IEEE, the means for recognition is through the many special awards. Since most of these are handled on a national basis, they are likely to seem remote to us. Actually, we can keep in close touch through our Section Awards Committee.

Of these National Awards, the best known and most numerous are the Fellows Awards. There are, however, fifteen other more exclusive awards.

Two of these, the IEEE Medal of Honor and the Edison Medal, are for broad and important contributions in electrical engineering and related fields. The others are restricted to the following specific fields:

Administration — Founders Award
Development — Lamme Medal Award
International Communication IEEE Award in International Communication
Teaching — IEEE Education Medal
Government Service — Harry Diamond Award
Power Transmission — Wm. B. Habirshaw Award
Telecommunication — Mervin J. Kelly Award
Measurements — Morris E. Leed Award
Radio — Morris N. Liebmann Award
Electronics — David Sarnoff Award
Television — Vladimir K. Zworykin Award
Publication—W. R. G. Baker Prize Award
Author under 30 years of age — Browder J. Thompson Memorial Prize Award

The National Awards Committee is responsible for the final selection of recipients of any of these Awards. Nomination, however, must start from the suggestion of an individual. Forms may be obtained from the Staff Secretary of the Awards Board at IEEE Headquarters. The forms may be submitted directly to the National Committee or through the Section Awards Committee. In most cases, the approval of the Section Committee will strengthen the case of a nomination.

If you know of someone who is doing an outstanding job, take steps to see that he gets the recognition he deserves. If you want advice or help, contact one of the members of the Section Awards Committee. These are:

L. J. LUNAS, *Chairman*
Westinghouse Electric Corporation
95 Orange Street
Newark, New Jersey 07101
Phone: 201 - 465-2303

R. D. CHIPP
Rodney D. Chipp and Associates
15 Ward Street
Bloomfield, New Jersey
Phone: 748-0777

J. T. CIMORELLI
Radio Corporation of America
415 South Fifth Street
Harrison, New Jersey
Phone: 485-3900

A. R. D'HEEDENE
Post Office Box 253
New Vernon, New Jersey
Phone: 538-0632

C. H. HOFFMAN
Public Service Electric and Gas Co.
80 Park Place
Newark, New Jersey
Phone: 622-7000

J. T. JATLOW
ITT Federal Lab
500 Washington Avenue
Nutley, New Jersey
Phone: 284-2930

DR. J. B. JOHNSON
Thomas A. Edison Industries
McGraw Edison Company
51 Lakeside Avenue
West Orange, New Jersey
Phone: 736-1000

PROFESSOR S. FISHMAN
Newark College of Engineering
323 High Street
Newark, New Jersey
Phone: 624-2424

DR. J. D. TEBO
Bell Telephone Laboratories
Murray Hill, New Jersey
Phone: 582-5684

Processing tends to be time consuming and it is important to act promptly. The Section Committee deadline for final drafts of the forms for 1968 Fellows is March 15, 1967.

North Jersey Annual Dinner and Dance

Saturday — February 4, 1967

Cocktails — 6:30 P.M.
Dinner — 7:30 P.M.
Dancing — 9:00 P.M.

Speaker:
HENRI T. BUSIGNIES, VP - ITT

Place:
Palsfair House
438 Eagle Rock Avenue
(corner Prospect Avenue)
West Orange, N. J.

Price: $7.00 per person

MENU

Fresh Fruit Cocktail
Vegetable Soup
Salad
Prime Ribs of Beef, Au Jus
Vegetables
Dessert
Beverages

North Jersey Section
Executive Committee Change

Mr. Frank Polkinghorn, Chairman of the History and Procedures Committee of the North Jersey Section, is moving out of New Jersey and will no longer be able to continue as a Section officer. The Section is indebted to Mr. Polkinghorn for his many unselfish services to the Institute over a period of countless years.

The Section is privileged in having prevailed upon Mr. Morris D. Hooven, Past-President of AIEE, to serve on the North Jersey Section Executive Committee as Chairman of the History and Procedures Committee. Mr. Hooven, a Fellow of the Institute, has a long history of valued service to both the Institute and the New Jersey area.

Mr. Hooven's address is:
80 Park Place
Newark, New Jersey 07101
Phone: MA 2-7000

North Jersey Section
If You Missed the Meeting on Air-Control Circuits

At the Section dinner meeting of October 19, Norman Roden described the advantages of air circuits over electrical circuits for use in control systems. Of the many advantages, an important one is that of increased reliability.

He demonstrated air relays, air timers, air-limit valves, air push buttons, and air terminal strips. He showed how schematics are prepared for the air-control systems using many of the concepts of the electrical counterparts. For installation, the air circuits have the advantage that the hardware looks closely like the schematic.

Mr. Roden foresees obsolescence of the electrical controls in many applications in the near future. Six hundred air-control systems have already been installed successfully, and the rate is accelerating.

The seventy men who were fortunate to have been at the meeting have a head-start in assessing the possibilities of all-air logic systems in new applications.

The IEEE **Newsletter**

Published monthly except July & August by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc. Office of Publication: 9 Little John Road, Morris Plains, N. J.

Volume 13 **December, 1966** **No. 4**

Deadline for all material is the 25th of the second month preceding the month of publication.

All communications concerning The Newsletter, including editorial matter, advertising, and mailing, should be addressed to:

THE NEWSLETTER
c/o Staff Associates
P.O. Box 275 — Morris Plains, N. J.
Telephone: 398-5524

Subscription: 75¢ per year through dues for members; $1.50 per year for non-members.
Second Class Postage Paid
at Morris Plains, N. J.

ABOUT ADDRESS CHANGES

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

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

Executive Committee Meeting
at Verona Public Library — Dec. 7

CALENDAR

Details on page

Tuesday, December 6

N. Y. CHAPTER TOUR — POWER GROUP 5
7:00 P.M.—Tour of Kodak Processing Labs.
At—Fair Lawn, N. J.

JOINT METROPOLITAN CHAPTER — ENGINEERING MEDICINE & BIOLOGY 6
8:00 P.M.—"Ocular Effects of Laser Radiation"
Speaker—Dr. Charles J. Campbell, Ophthalmologist, Columbia University
At—Rockefeller University, 66th St. & York Ave., N. Y.C.

Thursday, December 8

JOINT METROPOLITAN CHAPTER — ENGINEERING MANAGEMENT 6
7:30 P.M.—"Engineer's Metamorphosis Into An Executive"
Speaker—H. T. Marcy, Vice Pres. General Eng., I.B.M.
At—United Engineering Center, Rm. 125, 345 E. 47th St., N. Y.C.

JOINT METROPOLITAN CHAPTER — G-AES 5
8:00 P.M.—"Navigation Systems from the Ark to Apollo"
Speaker—Seymour Zitowsky — Dir. Systems Eng. & Research
At—General Precision Inc., 150 Totowa Rd., Wayne, N. J.

Friday, December 9

THIRD ANNUAL STUDENTS' NIGHT 4
7:30 P.M.—"Advice for Seniors"
At—Alumni Center Seminar Room,
Newark College of Engineering, Newark, N. J.

Tuesday, December 13

NORTH JERSEY CHAPTER — COMTEC GROUP 4
8:00 P.M.—"Evolution of the Military Communications System in Europe"
Speaker—Edward L. Slate, Communications Systems Inc.
At—Garden State Plaza Auditorium, Paramus, N. J.

NORTH JERSEY CHAPTER — ENGINEERING WRITING & SPEECH 4
8:00 P.M.—"Status Report on Symbol Standards"
Speaker—Howard L. Cook, Secy., IEEE Symbols Committee
At—Kearfott Prod., 1150 McBride Ave., Little Falls, N. J.

Thursday, December 15

JOINT METROPOLITAN CHAPTER — INFORMATION THEORY GROUP 6
3:00 P.M.—"Threshold Extension in Analog & Digital FM Carrier Systems"
Speakers—Panel Discussion
At—Steinman Bldg. of C.C.N.Y., 141st St. & Convent Ave., N. Y. C.

NORTH JERSEY CHAPTER — POWER GROUP 4
7:30 P.M.—"Theory of Electrical Connections"
Speakers—R. J. Lapack and W. G. Osborn, The Burndy Corp.
At—Punch Bowl Rm., Jersey Central - N. J. Power & Light Co., Morristown, N. J.

N. Y. CHAPTER — COMPUTER GROUP 5
7:30 P.M.—"Advances in Computer Music"
Speaker—Dr. Laurence Rossler, Bell Telephone Labs.
At—Burroughs Corp. Auditorium, 605 Third Ave. (40th St.), N. Y.C.

Saturday, February 4, 1967 — Calendar Memo

NORTH JERSEY ANNUAL DINNER & DANCE 2
6:30 P.M.—Cocktails—7:30 P.M. Dinner
Speaker—Henri T. Busignies, VP — ITT
At—Palsfair House, 438 Eagle Rock Ave., W. Orange, N. J.

Third Annual Student's Night

Graduate + Experience = Advice for Seniors

If you have a date for Friday, December 9,* cancel it. If you have no appointment for that date, you have one now.

The Third Annual Students' Night is scheduled for that evening. The students from our engineering colleges will be addressed by some recent graduates. The theme of the program centers about the experiences of the speakers since their graduation. Refreshments will be served, and door prizes will be presented.

The NCE Alumni Center for Continuing Engineering Studies will be the meeting place. The program will begin at 7:30 P.M. in the Seminar Room of the Center. Parking will be in either of the metered lots — one off Bleeker Street and the other off Warren Street. Parking is free.

The list of guest speakers includes: Mr. James Boyle (NCE) Division Line Engineer with Public Service Electric and Gas Co.; Mr. John Lacz (Stevens) partner in Lacz & Lacz Co.; Mr. Hirsh Marantz (FDU) associated with the Boonton Radio Division of Hewlett-Packard Corp.; Mr. George Petrus (NCE) from the Systems Development Branch of General Electric's Industrial Steel Mill Division; and Mr. Barry Soloway (FDU) affiliated with Western Electric Co.

The goal of the meeting is to educate the students in practical business methods, thereby avoiding some of the pitfalls which are often encountered when embarking into industry. No matter what the academic background and achievements, the electrical engineering senior frequently lacks some of the business savoir faire which comes only from experience. With the speakers imparting some of this commodity, the student should become more selective and aware of the opportunities when such are presented to him.

No one speaker, will of course, claim to have all the answers. Here is where the other attending members can assist. Following the formal talks, questions will be presented — both to the panel and informally during refreshments to the other engineers attending the meeting.

Do you, Mr. Graduate Engineer, remember when you were a student? Didn't you receive some greatly needed help on occassions? This Student Night meeting will be your opportunity to balance the ledger. The seniors will enter our profession and probably survive. But your assistance could make their membership more meaningful. Try and meet some of them on December 9. Our bequest becomes their inheritance.

* In the November issue, the date was erroneously listed for December 2.

North Jersey Power Group

Theory of Electrical Connections

Date:
Thursday, December 15, 1966
Time:
7:30 P.M.
Place:
Punch Bowl Room
Jersey Central-New Jersey
Power & Light Co.
Madison Avenue at Punch Bowl Road
Morristown, New Jersey

Messrs. R. J. Lapack and W. G. Osborn of The Burndy Corporation will discuss the fundamentals of making a good electrical connection. Their presentation includes information on the design, application and testing of various electrical connections. Slides will be used in the presentation and a portion of the program will be devoted to new developments in the electrical connection field.

A general discussion period is planned following the formal presentation. We hope you will come prepared to discuss your experiences, ideas and problems . . . Come on out and find out how to make a good electrical connection and what you can do to improve the reliability of your system, product or equipment through improved electrical connections.

Refreshments will be served following the program.

North Jersey Comtec

Evolution of the Military Communications System in Europe

Date:
Tuesday, December 13, 1966
Time: 8:00 P.M.
Place:
Garden State Plaza Auditorium,
Paramus, N. J.
Speaker:
MR. EDWARD L. SLATE

Mr. Slate will talk about the evolution of the military communication system in Europe, and the engineering and operational problems confronting it.

Mr. E. L. Slate was born in New York City on February 7, 1929. He received the degree of B.Sc from City College of New York. Mr. Slate has recently returned from 3 years in Europe where he has worked on various communication projects for the military. Mr. Slate has been with Communication Systems, Inc. for 4½ years.

Prior to joining CSI, Mr. Slate worked for 9½ years with different companies in the Bell System.

North Jersey Engineering Writing and Speech

Status Report on Symbol Standards

Howard L. Cook of the National Electrical Manufacturers Association (NEMA) will speak at a meeting sponsored by the North Jersey Chapter of the Group on Engineering Writing and Speech. He will report on recent developments in Symbol Standardization with emphasis on what is now available for use as standards.

The meeting will take place on Tuesday, December 13, 1966 at 8:00 P.M. in the auditorium of plant 3 of the Kearfott Products Division of General Precision, Inc. at 1150 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 could be of most interest to those members of IEEE who have to write or otherwise communicate on Engineering subjects — Engineers, Technical-Report Writers, Publications Engineers, Standard Engineers, Standardization Engineers, and Technical Advertising Copywriters. The effort in standardization has borne rich fruit the past two years. Although mandatory standardization within an industry can stifle growth, the area of symbol standards should place tools in the hands of people that need a common mode of expression to communicate their ideas.

SCHEDULE
Tuesday 13 December, 1966
Dinner — 6:00 P.M.
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, Plant 3
Kearfott Products Division,
General Precision, Inc.
1150 McBride Avenue
Little Falls, New Jersey

The Speaker:

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 Electrotechnieal Commission) Affairs; and has been active in the work of the FT-8 Committee-on-Mechanical-Standardization Task Group on Electron-Tube Terminal Diagrams.

Mr. Cook (M'59) received the B.S. (Ch.E.) degree from Columbia University School of Engineering in 1950, after which he joined the Radio Corporation of America. He served first in the Electron Tube Division at Lancaster, Pa. and then in the Commercial Engineering Activity, Harrison, New Jersey, where he specialized in the preparation, editing, and production of technical data for electron tubes and semiconductor devices.

Joint Metropolitan Chapter G-AES

Navigation Systems—Ark to Apollo

Date: Thursday, December 8, 1966
Time: 8:00 P.M.
Place:
General Precision, Inc., 150 Totowa Road, Wayne, N. J. (Turn North from Route 46 at exit between Topps Store and Two Guys Store. Go one mile take right at Golf Course on Totowa Road, go 4/10 of a mile to 150 Totowa Road.)
Speaker:
MR. SEYMOUR ZITOWSKY — *Director*, Systems Engineering and Research
Subject: *Navigation Systems from the Ark to Apollo*
Mr. Zitowsky will discuss navigation systems from dead reckoning to the latest space techniques. He will include doppler, inertial, doppler-inertial, radio-inertial, stellar-inertial and stellar-inertial-doppler.
Pre-Meeting Dinner:
Holiday Inn: Route 46 & Route 23 circle, Wayne, N. J.
Biographical Note:
Mr. Zitowsky obtained his BSEE from CCNY and MSEE from Stevens Institute of Technology. Mr. Zitowsky has had a long association with inertial navigation and with General Precision. His program experience sounds like General Precision's Company History. He is responsible for system development, preliminary design and development, administrative and technical direction for Kearfott Systems Division of General Precision.

N. Y. Power Group

Tour of Kodak Processing Laboratory

Scheduled for Tuesday, December 6, 1966, at 7:00 P.M., the tour will cover the processing laboratory in Fair Lawn, New Jersey. The film developed here includes 8mm and 16mm Kodachrome amateur movies, Ektachrome commercial movie films and amateur Ektachrome products. The group will be limited to forty people.

The tour will last about one hour and a half, followed by coffee and cake and an informal discussion of photographic problems.

RESERVATION SLIP

PAUL E. SAMUELS
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I plan to attend the Kodak Tour on December 6, 1966. I will bring ..... guests. Please send map.
Name .....
Address .....

N. Y. Chapter — Computer Group

Advances in Computer Music

Time: 7:30 P.M., December 15
Place: Burroughs Corp. Auditorium
605 Third Ave. (40th St.), N. Y.C.
Dr. Lawrence Rossler,
Bell Telephone Labs.
Pre-Meeting Dinner:
6:00 P.M., Gatti's Italian Restaurant, 246 E. 40th St. (near Second Ave.)

A report — with musical examples — on progress in computer composition and generation of music, including a newly developed graphical language for writing computer scores.

Chairman's Corner

Reliability and Other Things

With only the final approval of the IEEE Executive Committee to be obtained, the North Jersey Section has added a new Group Chapter on Reliability to the six chapters of national groups that now serve our membership. The Section Executive Committee, on behalf of the entire membership, takes this opportunity to welcome the new group to our Section and to wish its first chairman, Professor R. T. Misra of Newark College of Engineering, every success.

The objectives of this group need no explanation. There is no discipline, or subdiscipline of our profession, however small, that does not have as a fundamental objective, some criteria of reliability as a basic ingredient, and the Section can look forward to new kinds of interesting and informative programs that will be developed by this group for our membership. You are urged to give this new group your support as it gets under way.

For membership and program information, please do not hesitate to contact Professor Misra at the Department of Electrical Engineering, Newark College of Engineering, 323 High Street, Newark, New Jersey. He will welcome your help and suggestions.

Other Things:

The Section is off to another fine year. Our educational, technical, and semi-technical programs at both the Section and the Group Chapter levels continued to reflect the high standards of quality that only hard work can produce. And as we continue to grow, we are laying the ground work for new types of programs to be presented later. We are studying, for example, the feasibility of adding, as an annual event, a symposium on some subject of technical interest to the North Jersey membership, which would not be competitive with similar symposiums offered by other Sections. If implemented, the symposium would provide still another opportunity for continuing professional development within the Section. The ever increasing scope of activities available here makes it less necessary for our members to travel outside the Section in search of the kind of program they seek, and it is the intention of the Executive Committee, as a continuing objective, to find and implement more such programs.

Can our meetings be further improved? We think so, and we are looking to you, the membership, for help.

Do you want to help? All you have to do is ask.

JOSEPH O'GRADY
Section Treasurer
North Jersey Section

Joint Metropolitan Chapter Engineering in Medicine and Biology

Ocular Effects of Laser Radiation

Date:
Tuesday, December 6, 1966

Time:
8:00 P.M.

Place:
The Rockefeller University, 66th Street and York Avenue, New York City

Subject:
OCULAR EFFECTS OF LASER RADIATION

Speaker:
Dr. Charles J. Campbell, Associate in Ophthalmology, College of Physicians and Surgeons, Columbia University; Assistant Attending Ophthalmologist, Presbyterian Hospital, New York City.

Thursday, December 15

N. Y. Chapter — Computer Group
7:30 P.M. — Burroughs Corp. Auditorium, 605 Third Avenue (40th St.).

Computer Music — Dr. Lawrence Rossler, Bell Telephone Laboratories.

Joint Metropolitan Chapter Engineering Management

Engineer's Metamorphosis Into an Executive

On Thursday, December 8, 1966 at 7:30 P.M., the Metropolitan Chapter, Engineering Management Group of the IEEE will hold its regular monthly chapter meeting in Room 125 at the United Engineering Center, 345 East 47th Street, New York.

Mr. H. T. Marcy, Vice President for General Engineering, System Development Division of the IBM Corporation will be the featured speaker of the evening.

In his presentation entitled, "An Engineer's Metamorphosis into an Executive," Mr. Marcy will examine the kinds of changes in viewpoint that an engineer experiences as he progresses from the position of a first line engineering manager to that of an executive.

He will discuss typical shifts in the engineer's work habits, attitudes and values. The engineer's concern for objective measurement, prediction and cause and effect relations will then be compared with the executive's concern for profit, the marketplace and the allocation of scarce resources.

Mr. Marcy will refer to actual case histories to highlight both the philosophical and operational aspects of this changeover from an engineer to an executive.

Mr. Marcy holds both BSEE and MSEE degrees from the Massachusetts Institute of Technology. He is a Vice President of the Instrument Society of America in connection with that Society's publications.

Mr. Marcy became associated with the IBM Airborne Computer Laboratory in 1951 after ten years in the control engineering field at the MIT Servomechanism Laboratory and the M. W. Kellogg Company. At IBM he participated in both military and commercial engineering assignments, progressing through the posts of Assistant Manager in 1956, Manager in 1957, Vice President for Development in 1961 and Vice President of General Engineering in the Systems Development Division in 1965.

Joint Metropolitan Chapter Information Theory Group

PANEL DISCUSSION

Threshold Extension in Analog and Digital FM Carrier Systems

Panelists: E. Baghdady, ADCOM; J. Granlund, ITT; L. Gray, COMSAT; J. Klapper, RCA; J. Salz, BTL. Moderator: D. L. Schilling, PIB.

The topics to be covered will include the meaning of Threshold, Threshold Extension Devices, such as the Phase Locked Loop and the Frequency Demodulator with Feedback, and Error Rates in Digital Systems and their possible reduction using Threshold Extension Devices.

Each speaker will give a 10-minute opening talk, followed by a general panel discussion. Questions from the audience will be invited. For additional information, contact Professor Donald L. Schilling, Polytechnic Institute of Brooklyn, 212 - 643-3742. The meeting is scheduled for 3:00 P.M. on Thursday, December 15, 1966, in the Steinman Auditorium (Room 123), Steinman Building of the City College of New York at 141st Street and Convent Avenue. Parking has been made available at the parking facilities adjoining Jasper Field, St. Nicholas Terrace and 137th Street, (see enclosed map). The college is easily reached using either the IRT (137th Street and Broadway Station), or the "A" or "D" trains, (145th Street Station).

Coffee will be served in the Faculty Lounge from 2:15 P.M. Persons interested in attending a dinner following the discussion should contact Professor Donald L. Schilling. For information concerning parking or directions to the City College, call Professor I. M. Meth, at The City College, 212 - AD 4-2000, Extension 328.

N. Y. Communications Technology

Switching Systems and Their Applications

The six part Winter Series will open January 17, 1967 with the following schedule:

January 17th —
Application of Building Blocks

January 24th —
Memory

January 31st —
Electronic System Elements

February 7th —
Programs

February 14th —
Electronic PBX Systems

February 21st —
Electronic Central Office Systems

Professor R. A. Anderson will give the first four lectures.

The lecturer on Electronic PBX Systems will be announced later.

Mr. S. Levine of the Western Electric Company will close the Winter Series with a lecture on Electronic Central Office Systems.

Anyone requiring additional information on this course, is invited to contact Mr. K. R. Iler, General Telephone & Electronics Service Corp., 730 3rd Avenue, N. Y., N. Y. Tel. No: (212) 551-1391.

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Two time bases are offered, the 1425A which provides delayed sweep, for the first time in any sampling scope, and the 1424A without delayed sweep which triggers automatically beyond 5 GHz.

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