# NORTH JERSEY INSPECTION TRIP

**General Motors Auto Assembly Plant**

***Linden, New Jersey***

***April 17, 1968***

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The IEEE
Newsletter
The Magazine of the North Jersey Section

The First Meeting of the Interim Chapter
on

## *Antennas and Propagation*

**Under the Sponsorship of the North Jersey Chapter on MTT**

**Date: May 15, 1968**

**Time: 8:00 P.M.**

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Volume 14 April, 1968 No. 8

# NOMINEES FOR SECTION OFFICERS

## Chairman
## Joseph G. O'Grady

holds the position of Assistant Laboratory Engineer at the Maplewood Testing Laboratory of the Public Service Electric and Gas Company. He joined the company in 1948 and has held various positions in the Electrical Division of the Laboratory until 1964 when he was appointed to his present position. He is a graduate of the College of Engineering of New York University where he received a B.E.E. Degree in 1954; he is also a former member of the instructing staff of the Special Courses Division of the Newark College of Engineering.

He has been a member of the Section Executive Committee for several years, having been Chairman of both the Section Program Committee and the Publicity Committee. In 1965, he was elected Section Secretary, 1966 Section Treasurer and he is presently serving as Section Vice Chairman.

Mr. O'Grady is a senior member of both the Institute of Electrical and Electronics Engineers and the Instrument Society of America, and he also represents his company as a sustaining member to the National Association of Corrosion Engineers.

He resides at 11 Bowling Drive, Livingston, New Jersey, with his wife, Muriel, and their three sons — John, Brian and Peter.

## Vice Chairman
## Merle M. Irvine

is head of the Weapon System Program Design Department of the Bell Telephone Laboratories at Whippany, New Jersey. Since 1955, when he started with Bell Labs., he has worked on Defense projects. These included Airborne Bombing and Navigational Systems; system design of a Radar Data Processing System; and the Data Processing System for Nike Zeus and Nike-X.

Mr. Irvine was active for several years on the Program Committee of the North Jersey Section, including one year as secretary and one as chairman. Currently he is Treasurer of the Section.

He received his B.S. in Engineering Physics from Montana State College in 1950; his graduate work was in Physics at Lehigh University; there he received his M.S. in 1952 and his Ph.D. in 1955.

Mr. Irvine is a member of: American Physical Society, Society of the Sigma Xi, Association for Computing Machinery, and Vice President of the Morris County Engineer's Club. He also is listed in the American Men of Science.

## Treasurer
## H. E. Blaicher, Jr.

was graduated from the Pennsylvania State University in 1949 with a degree of B.S. in Electrical Engineering. Following graduation he entered the cadet engineer training course of Jersey Central Power & Light Company. Since then he has worked in various assignments in distribution engineering, system planning and in engineering computer applications. He is presently Distribution Planning Engineer for Jersey Central Power & Light Company and its sister company, New Jersey Power and Light.

Mr. Blaicher served on active duty with the U. S. Army from 1943 to 1946.

Mr. Blaicher is a senior member in IEEE and has served as chairman of the Education Committee during the 1961-62 season, as an IEEE representative on the New Jersey Engineer's Committee for student guidance, and as chairman of the Power Group Chapter in North Jersey Section, IEEE during the 1964-65 season. He is presently Secretary of the North Jersey Section.

Mr. Blaicher lives at 45 Ferncliff Road, Morris Plains, where he and his wife are active in community affairs.

## Secretary
## Robert G. Sokalski

is at present Development Engineer on electronic test and measurement equipment for the Hewlett-Packard Co., at Rockaway, N. J.

He is presently Member at Large of the North Jersey Section. Previously he was Secretary, Vice-Chairman and Chairman of the North Jersey Automatic Control Group, in successive years.

Mr. Sokalski received his B.S. from Stevens Institute of Technology in 1962 and an M.S. from NCE in 1967.

## Member-at-Large
## Harry R. Clark

received his BSEE degree in 1951 from Newark College of Engineering. He has been with ITT since 1959 and is a Section Head in the Switching Dept. of the ITT Defense Communications Division.

Mr. Clark has been active in IEEE Group activities. He helped form the North Jersey Chapter of the IEEE Computer Group. In the past, he has served as Secretary and Chapter Chairman of the North Jersey Chapter and as Publicity Chairman for the Metropolitan Chapter.

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### Election Procedure

Following are pertinent quotes from the By-Laws of the North Jersey Section:

"Additional nominations may be made by a petition signed by not fewer than 25 voting members of the Section and transmitted to the Secretary for submission to the Executive Committee not later than April 30th. The petition must certify that the persons nominated have agreed to serve, if elected." The Section Secretary is Mr. Merle M. Irvine, Bell Telephone Laboratories, Whippany, N. J. "The election of officers shall take place at the May general meeting of the Section unless the Executive Committee decides that a mail ballot is required. In case a mail ballot is used, it shall be sent out to all voting members not later than May 10 and shall be returnable not later than one month from the date of mailing. In the case of a mail ballot the Chairman shall appoint at least three tellers having the approval of the Executive Committee to count the mail ballot within one week after the closing date for returns."

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## N. Y. Section and Power & Industrial Division
# The Electric Car

A General Meeting jointly sponsored by the Power & Industrial Division of the IEEE and by the New York Section is planned for April 23, 1968. The details for this meeting are as follows:

**Topic:**
THE ELECTRIC CAR

**Speakers:**
Mr. Steven Charlip, Section Head — Research and Development, Gulton Industries, Metuchen, N. J. Mr. Charlip will speak on high energy density power supply for an electric vehicle.
Mr. Robert R. Aronson, President, Electric Fuel Propulsion, Inc., Ferndale, Michigan. Mr. Aronson will discuss his company's MARS II Electric Car.

**Moderator:**
Mr. W. E. Brown of the Program Committee will serve as moderator.

**Place:**
Con Edison Auditorium
19th Floor
4 Irving Place
New York City

**Date:**
Tuesday, April 23, 1968

**Time:**
6:30 P.M., Refreshments 6:00 P.M.

The program will include election of the Executive Committee of the P & I Div. of IEEE. Wives and children are welcome to attend.

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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.



NORTH JERSEY
SECTION OFFICERS
1967-1968

*Chairman* ..... Bernard Meyer
*Vice Chairman* ..... Joseph G. O'Grady
*Treasurer* ..... Merle M. Irvine
*Secretary* ..... Herbert E. Blaicher, Jr.
*Member-at-Large* ..... Robert G. Sokalski
*Member-at-Large* ..... Carl C. Torell
*Past Chairman* ..... Stephen A. Mallard

Executive Committee Meetings
at Verona Public Library
First Wednesday of Month
7:30 P.M.

1968

April 3 May 1 June 5

All IEEE Members Welcome

# CALENDAR

Wednesday, April 3

**NEW YORK COMTECH** ..... Page 6
6:30-8:30 P.M. — Lecture 14 "Electronic PBX" by R. G. Palla of AT&T Little Theater, 140 West Street, N. Y. C.

Wednesday, April 10

**NEW YORK COMTECH**
12:30 P.M. — Inspection trip to RCA Aerospace Center, Hightstown, N. J. ..... 5

Thursday, April 11

**JOINT METROPOLITAN ELECTRON DEVICES** ..... 8
8:00 P.M. — "The Use of Gases for Millimeter Wave Components" by Dr. B. Senitzky, GT&E Labs, 208-20 Willets Point Boulevard, Bayside L. I., N. Y.

Wednesday, April 17

**NORTH JERSEY SECTION**
7:15 P.M. — General Motors Auto Assembly Plant Tour, Linden, N. J. ..... 5

Tuesday, April 23

**N. Y. SECTION AND POWER & INDUSTRIAL DIVISION** ..... 2
6:30 P.M. — "The Electric Car" by S. Charlip, Con Edison Auditorium, 19th Floor, 4 Irving Place, N. Y. C.

Wednesday, April 24

**NORTH JERSEY AUTOMATIC CONTROL** ..... 7
8:00 P.M. — "Optimal Control, Theory and Applications" by Dr. J. C. Hsu, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J.

Thursday, April 25

**NORTH JERSEY RELIABILITY** ..... 6
6:30 P.M. — Tour of J. C. Penney Facility, J. C. Penney Building, 1301 6th Avenue, N. Y. C.

**NORTH JERSEY COMTECH AND COMPUTER** ..... 7
8:00 P.M. — "Data Transmission Over Voiceband Telephone Facilities" by W. J. Lawless, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J.

Wednesday, May 15

**NORTH JERSEY ANTENNAS AND PROPAGATION** ..... 7
8:00 P.M. — "Quasi-Monochromatic Properties of Receiving Antennas" by R. E. Collin, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J.

**STUDENT CALENDAR** ..... 4 & 5

**Glass Installation**

See page 5

## AGS Experiments Verify Einstein Causality Principle

The principle of microscopic causality, which is a cornerstone of Einstein's theory of relativity, has been experimentally verified by scientists using the Alternating Gradient Synchrotron (AGS) at the Brookhaven National Laboratory.

Microscopic causality assumes that signals do not travel faster than the speed of light, even in the subatomic distances inside of a proton. In the experiments, this was verified to distances less than $10^{-15}$ cm and indirectly verified down to $10^{-16}$ cm. This is equal to a distance that is between 1/100 and 1/1000 the radius of a single proton. The technique employed required very high energies and observation of the strong pion-proton interactions at the AGS, which in these experiments operated up to 29 GeV. A pion, or pi meson, is a short-lived elementary particle with a mass greater than an electron but less than a neutron.

The measurements obtained allow an experimental test of the forward dispersion relations, which correlate the effective interaction size (cross section) of the colliding particles and the non-absorptive portion of their collision strength, or elastic scattering amplitude, along the path in which the collision (interaction) occurs. To overcome problems in the areas of recording and analyzing the massive amounts of data, on-line computers were applied, using the counter-hodoscope technique. This technique allows $10^{12}$ electronic counter combinations to gather several million events (interactions) per hour.

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## Time-Sharing Computer Translates Captured Documents

A system for immediately translating captured Viet Cong documents for front-line commanders using a time-sharing computer was demonstrated at the recent 20th Annual Conference of the Association for Computing Machinery in Washington, D. C.

Information contained in documents captured from Viet Cong casualties or prisoners of war frequently loses its tactical value before it reaches the desk of an interpreter. This system, which consists of a model Vietnamese-English dictionary designed and programmed by Computing Technology Inc. and a Radio Corporation of American Spectra 70/45 time-sharing computer, performs a word-for-word, and in some cases phrase-for-phrase, look-up and supplies the English equivalent of the input sentences. The computer thus enables the linguist to translate foreign documents very quickly, because as much as 80 percent of his time is usually spent in looking up words in a dictionary.

The automated dictionary makes use of a longest match technique so that in some cases entire phrases may be translated. Since the Vietnamese language is reasonably responsive to word-for-word translation, the new technique should provide useful raw intelligence to military units.

### Student Affairs

# Student Chapter of the Month
# Newark College of Engineering Evening Branch

The Executive Committee of the Newark College of Engineering Student Branch of the IEEE consist of four students and a Faculty Advisor.

Standing from left to right: Mr. James Earle, the Faculty Advisor to the evening student branch. Mr. Earle is also the advisor for the day student branch and has been active in many of the IEEE programs. Next is Daniel Russell, the Branch Secretary. Mr. Russell anticipates graduation in 1972 and is employed at Public Service in the capacity of Draftsman. Sitting down from left to right: Michael Prendergast, the Treasurer of the branch. Mr. Prendergast is associated with Electrical Systems Planning & Development at Public Service. He will graduate in 1970. Next is Willem F. Bakker, the Branch's Vice Chairman. Mr. Bakker graduates next year and is employed at Metex Corporation as a Development Engineer. On the right is Jack Adams, the Chairman of the Branch. Mr. Adams will graduate in 1969 and is employed at Western Electric as a Shop Method Analyst.

The Newark College of Engineering Evening Student Branch of the IEE is the only evening student branch in New Jersey. The prime objective of the N.C.E. Evening Student Branch falls in the area of student participation programs, student-faculty relationship, student information and Electrical Engineering Evening Test Files. The programs are planned in such a manner that the student can participate without the need of coming to N.C.E. on his night off and with a minimum amount of class attendance interference. This is achieved through planning the meeting before or after classes.

So far, the programs have brought forth an excellent array of speakers on subjects to the general interest of the evening students. The presentations are open to both members and non-members of the IEEE with the aim of increasing the membership enrollment and not to penalize students of other disciplines with interest in the subject of the presentation.

One of the main objectives of the Executive Committee is to improve and maintain communications with the class attending evening student.

# Calendar

### Fairleigh Dickinson University

**April 1**—The student branch will be the guests of the Grumman Aircraft Engineering Corporation of Bethpage, Long Island, New York. Grumman personnel will conduct a tour of their Engineering facility as well as the Lunar Excursion Module production facilities.

**April 9** — The Election meeting to determine the Branch Officers for the 1968-1969 Academic year will be held in Room W-7.

**April 11** — A speaker from the Hazeltine Corporation of Little Neck, Long Island, New York, will address the student membership. The time and meeting room will be announced on campus.

### Newark College of Engineering — Day Branch

**April 11** — At 5:00 P.M. nominations will close for the election of Branch Officers for the 1968-1969 Academic year. Nominees must be Student Members of the IEEE in good standing. All nominations must be submitted in writing, cosigned by three additional Branch Members, and addressed to Clark Gelling, Election Committee Chairman, via the IEEE Student Mail Box.

**April 15-19** — Closed Ballot election for 1968-1969 Branch Officers. Election ballots can be obtained in the IEEE Student Branch Office, Room 303-F, from 9:00 A.M. to

Continued on page 5

## Student Affairs Continued from page 4

5:00 P.M. throughout election week. In past years NCE's Student Branch Elections have been highly competitive, and to all appearances this year's election will be no exception.

April 22 — A special meeting will be held at 4:00 P.M. in the Student Center, Room 319. Speakers from RCA's Astro-Electronics Division (AED) will discuss Instrumented Satellites for Reconnaissance Ground Targets. RCA's AED claims to have orbitted more successful observation satellites than any other aerospace company.

**Stevens Institute of Technology**

April 24 — The Bell Telephone Laboratories film, "Zone Melting" will be shown at 12:30 P.M. in Burchard — 123. Techniques to be demonstrated in the film include controlled crystallization, purification, the addition of desirable trace elements, the creation of rectifying junctions, and the growth of single crystals.

## News of Interest

**Newark College of Engineering — Day Branch**

The Day Branch is starting its drive for active interest in IEEE affairs among its lowerclassmen. Any students who wish to take an active part in IEEE Student activities during the 1968-1969 and/or subsequent academic years should contact the Branch Chairman, Pat Parkinson, via the IEEE Student Mail Box.

**Newark College of Engineering — Evening Branch**

On February 13 Mr. John I. Sheetz of the Public Relations Department of Bell Telephone Laboratories, Murray Hill, presented a lecture-demonstration on Holography in the Seminar Room of the Alumni Center.

Topics discussed included coherence, defraction and interference, the recording of holograms, the concepts of virtual and real hologram images, and the uses of holograms. Refreshments of coffee and cake were served.

**Stevens Institute of Technology**

At 12:30 P.M., on February 28, the Bell Telephone Laboratories film, "Short Term Visual Memory" was shown in the Burchard Auditorium. The membership was joined by interested members of the Stevens Tech Student ASME Chapter. The film described some of the fundamental properties of short term storage in the human visual system, its decay, readout, and erasure.

Membership cards and pins were distributed to new members present at the meeting.

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**North Jersey Section**

## AUTO ASSEMBLY PLANT TOUR

The North Jersey Section has arranged a tour of the General Motors Auto Assembly Plant at Linden, New Jersey on Wednesday evening, April 17, 1968, at 7:15 P.M.

At this plant, General Motors assembles Oldsmobiles (36%) and Pontiac (64%) automobiles. On a two shift operation, this plant turns out approximately 150,000 cars per year, employing an average of 4,000 men and women. Oldsmobiles are made in 13 body styles and Pontiacs are made in 18 body styles.

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, the thousands of parts manufactured in other G-M and many independent plants are brought together, each at exactly the right time and place on the assembly line, to produce 31 different automobile models. These parts converge on the Linden Plant, not to be stockpiled, but usually to be moved directly from freight car to 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.

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RESERVATION SLIP

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

I plan to attend the General Motors Auto Assembly Plant Tour on April 17, 1968. I will bring _____ guests with me.

Name _____

Company _____

Address _____

Phone _____



**New York Comtech**

## INSPECTION TRIP to RCA's AEROSPACE CENTER Hightstown, New Jersey

The use of satellites for telecommunications purposes has thus far proved to be a much more important endeavor for the engineers and scientists working in the aerospace industry than any other artificial satellite application. The advances that have been made in international communications, weather forecasts and in moon explorations, as a result of applying advanced telecommunications techniques to aerospace applications, have been phenomenal. These examples are only a few of the areas in which the marriage of telecommunications and aerospace industries has proved highly successful.

In order to present engineers of the New York Section with some indication of the most recent advances that have been made in space telecommunications, the New York Chapter of the Communications Technology Group, New York Section, has arranged a field inspection trip to RCA's Aerospace Center at Hightstown, New Jersey. The following program has been set up by the Hightstown Center.

Arrive:

2:00 P.M.—Welcome and Introduction
Mr. S. Gubin, Manager
Space Communications
Systems Engineering

2:15 P.M.—Meteorological Satellites
Mr. A. Schnapf
TIROS/TOS Program Manager

2:45 P.M.—Lunar Orbiter Communications
Mr. H. Zelen, Senior Engineer

3:15 P.M.—Film of Lunar Orbiter

3:45 P.M.—Tour of Facilities
1) TIROS Ground Station
2) Integration and Assembly Area
3) Data Central
4) Space Environmental Center

5:00 P.M.—Depart

The tour will leave at 12:30 P.M., Wednesday, April 10th from the 140 West Street entrance of the New York Telephone Company building and will return to that location at approximately 6:00 P.M. The transportation costs for the trip will be $2.25 and reservations will be limited to 40 persons. For reservations call Miss J. Scanlon, (212) MU 9-7200, Ext. RJ 223. Checks should be made payable to Mr. Andrew Varanelli, Jr., RCA Frequency Bureau, 60 Broad Street, New York, N. Y. 10004.

# CHAIRMAN'S CORNER

As the title implies, the section secretary is responsible for maintaining and distributing the minutes of the Executive Committee meetings and carrying on the normal section correspondence. In addition, the office also carries the responsibilities for maintaining a card file record of active members of North Jersey Section. Headquarters periodically sends information about changes in section membership, which was slightly in excess of 5200 at the end of 1967. The following is a summary of the membership changes during the period June 21 through December 31, 1967.

| | |
|---|---|
| Resigned | 5 |
| Delinquent in Dues | 61 |
| Moved from Section | 262 |
| Deceased | 16 |
| Total Decrease | 344 |
| New Members | 181 |
| Reinstated | 66 |
| Moved into Section | 318 |
| Total Increase | 565 |
| | —344 |
| Net Increase | 221 |

**Other Changes Within the Section**

| | |
|---|---|
| Members who moved up in garde | 67 |
| Members who moved within the Section | 263 |

From this summary, it appears that the dues increase did not have the serious affect as was anticipated. Although we lost 66 members (5 resigned and 61 delinquent). The net change was zero since 66 members were reinstated.

The Section Membership is still a highly mobile group — 843 members changed address during the last six months of the year. North Jersey still has a strong attraction — 56 more members moved into the section than moved out.

The Membership Committee is to be commended for their efforts. During the last half of 1967 they somehow enticed 181 Engineers to become members and 67 to move up in grade.

H. E. BLAICHER, JR.
Secretary
North Jersey Section

## North Jersey Reliability
# Tour of
# J. C. Penney Facility

**Date:**
April 25th — Meeting
**Place:**
J. C. Penney Building
1301 Avenue of the Americas
(between 52nd and 53rd Streets)
**Invitation to:**
Members, Friends, and Wives
**Time:** 6:30 P.M.
**Meeting:**

The will be a tour of Penney's facilities which will instruct those present, the consumer, how reliability applies to the appliances they buy, and how Government intervention into the field of consumer reliability will affect both cost and quality.

The tour will be conducted by Y. D. Oleksiw. He has published a paper on "Approaches to Testing Consumer Products", and Mr. Oleksiw became a Project Engineer of Underwriters Laboratory and then U. S. Testing Co. of Hoboken, after graduating from CCNY. He joined J. C. Penney Co., N. Y. C., N. Y. in 1961 and is currently Manager, Engineering & Testing Department. He is responsible for specifying, developing and evaluating merchandise sold by the company. He is a member of I.E.E.E. and Audio Engineering Society.

## New York Comtech
# Switching Systems and Applications

The third part of the three part series of lectures on Switching Systems and Their Applications starts on Wednesday evening, April 3, from 6:30 P.M. to 8:30 P.M. in the New York Telephone Company, "Little Theatre", at 140 West Street, New York City.

The following subjects will be covered:

Lecture 14 — April 3
Electronic PBX
by Mr. R. G. Palla of AT&T
Lecture 15 — April 10
Electronic Central Office
by Mr. S. D. Levine of Western Electric
Lecture 16 — April 17
Satellite Switching
by John T. Martin of AT&T
Lecture 17 — April 24
Computer Switching
by Mr. J. H. Branch of RCA
Lecture 18 — May 1
Broad Band Switching
by Mr. O. Hanson of Western Union
Lecture 19 — May 8
World Wide Switching
by Mr. C. Clos of AT&T

Fees each part —
Student $7 Member $15
Non-member $15

**Registration** — Make checks or money orders payable to Communication Technology Group, New York Section IEEE and send with a self-addressed envelope to Mr. N. J. Syvertsen, Treasurer, Switching Systems, Education Committee, New York Telephone Company, 140 West Street, New York, New York 10007. Further information can be obtained from Mr. J. C. Sieglinger on tel. 212 - 394-6721.

Attach the following registration form to this "Switching Systems and Their Applications", publicity release:

MR. N. J. SYVERTSEN
Treasurer, Education Committee
New York Telephone Company
Room 2611
140 West Street
New York, New York 10007

I wish to enroll in part 3 of the lecture series, "Switching Systems and Their Applications:"

IEEE Member _____ Non-member _____
Full-time Student _____
My check for $ _____ is enclosed.
Name _____
Affiliation _____
Mailing
Address _____
_____
Phone _____

### Biographies of Lectures for Third Part of, "Switching Systems and Their Applications"

MR. R. G. PALLA who will lecture on, "Electronic PBX Systems," on April 3, 1968, graduated from Union College in Schenectedy in 1947 with a B.S.E.E. Since 1952 he has held various positions in the Bell System and is at present with the AT&T Customer Engineering and is primarily concerned with the 101 Electronic Switching System.

MR. S. D. LEVINE will speak on, "Electronic Central Offices," on April 10, 1968, graduated from C.C.N.Y. in 1952 and joined the Western Electric Company as an Equipment Engineer. He was loaned to the Bell Telephone Laboratories in 1961 to work on the No. 1 Electronic Switching System. He returned to the Western Electric Company in 1963 as an instructor in their Graduate Engineering Education Center specializing in ESS courses. In 1966 he was advanced to Department Chief.

MR. J. H. BRANCH, Manager of Computer Planning and Applications for R.C.A. Communications Corp., on April 24, 1968, will discuss "Computer Switching." Mr. Branch was a Project Engineer at Philco Corp. then transferred to the R.C.A. Electronics Data Processing Division as Manager of Technical Projects. He is presently responsible for the current and long range planning for Computerized Communication Systems including their development, implementation, and operation in addition to all required operations programming.

MR. D. HANSON's lecture on "Broad Band Switching", will be given on May 1, 1968. Mr. Hanson received his B.A. in 1951 from N.Y.U. He then attended Brooklyn Polytechnical Institute where he received his B.S.E.E. in 1954 followed by his Masters in 1955. He was a research fellow for the Microwave Research Institute from 1954 to 1955. He has been associated with the Ford Institute, ITT and Safelite Company as an engineer and is now with the Western Union Telegraph Company.

MR. C. CLOS will deliver the final lecture, "World Wide Switching," on May 8, 1968. Mr. Clos is the Staff Representative in the Operation's Department, Traffic Division, A.T.&T. Co. handling planning matters involving world wide dialing. In addition he is the chairman of the working party on numbering plans of the Internation Telegraph and Telephone Consultation Committee (CCITT). Mr. Clos received A.C.E. from New York University in 1927.

MR. JOHN T. MARTIN's lecture on Satellite Switching will be given April 17, 1968. He received his degree from Purdue in 1952. He is a member of IEEE, Eta Kappa Nu and Tau Beta Pi. He joined AT&T Long Lines in 1952, served in the Army, returned as Circuit Layout engineer then Traffic Department Supervisor. Then he transferred to Bell Labs and returned to AT&T as head of Wide Band Data Design Group. He is now engineering manager of Satellite Projects.

Dr. J. C. Hsu

## North Jersey Automatic Control

# Optimal Control, Theory and Applications

**Speaker:**
DR. J. C. HSU
Bell Telephone Laboratories
Whippany, N. J.

**Date:**
Wednesday, April 24, 1968

**Time:**
8:00 P.M.

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

**Pre-Meeting Dinner:**
6:00 P.M.
at Wally's Tavern on the Hill
Watchung, New Jersey

**Abstract:**

Through the use of the calculus of variations and newer related techniques such as the Maximum Principle of Pontryagin and Dynamic Programming of Bellman, the control engineer is now better prepared to answer the question, "What is the best that a system can do?"

In this lecture, the basis of the new techniques will be examined and their utility and limitations discussed. Some consideration will be given to the practical applications of these techniques.

**Biography:**

J. C. Hsu received his B.E.E., M.E.E., and Ph.D. (in E.E.) degrees at Cornell University, Ithaca, New York, in 1957, 1958, and 1961, respectively.

Dr. Hsu joined Bell Telephone Laboratories in 1961 and has since worked on problems involving satellite altitude control, guidance and control of high performance missiles, characterization of nonlinear control systems, and large-scale digitally controlled systems. Currently, he is supervising a group doing military systems analysis.

Aside from a number of papers, Dr. Hsu is currently co-authoring a book (with Professor A. U. Meyer of Newark College of Engineering) entitled, "Modern Control Principles and Applications", to be published by McGraw-Hill Book Company in May of 1968.

Dr. Hsu is a member of Sigma Xi and is the secretary of the GAC Standards Committee of IEEE.

## The First Meeting North Jersey Antennas and Propagation

# "Quasi-Monochromatic Properties of Receiving Antennas"

**Date:**
May 15, 1968

**Time:**
8:00 P.M.

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

**Speaker:**
ROBERT E. COLLIN
Professor of Electrical Sciences
Case-Western Reserve University
Cleveland, Ohio

Professor Collin is the well known author of the books *Principles and Applications of Electromagnetic Waves* (co-authored with Professor Robert Plonsey), *Field Theory of Guided Waves, Fundamentals for Microwave Engineering,* and the editor of the forthcoming book *Advanced Antenna Theory.*

The received quasi-monochromatic signal is assumed to be both temporally and spatially incoherent. Applications to noise problems will be discussed.

**Pre-Meeting Dinner:**
**Time:**
6:00 P.M.
**Place:**
Wally's Tavern
Watchung, New Jersey

For more information including directions, please call Mr. Elliott R. Nagelberg, 201 - 386-3640. We would like to keep count of dinner attendees.

A brief discussion concerning the creation of the new North Jersey Chapter on Antennas and Propagation will precede the main talk.

Refreshments will be available after the meeting.

## System is Studied to Aid Stranded Drivers

A study of driver-aid systems that would enable motorists stranded on rural sections of limited-access highways to summon help is being sponsored by the Ohio Department of Highways and the U. S. Bureau of Public Roads.

The first-year phase of the study, which is being conducted by the Columbus Laboratories of Battelle Memorial Institute, will provide the Ohio highway department officials with general specifications for test installations of types of emergency aid systems that employ roadside communication devices, such as radio or telephone. At present, stranded drivers must rely on receiving aid from passing motorists or from the Highway Patrol.

To determine how serious the stranded motorist problem is on rural sections of limited-access highways, some test sites in Ohio have been selected. With the assistance of the Ohio State Highway Patrol, these sections will be under 24-hour surveillance to obtain data on the number of stalled vehicles. Questionnaires prepared by Battelle psychologists will be used to obtain data related to the cause of the trouble, how long the motorist had to wait before assistance was offered, the time required to receive service after an emergency vehicle was summoned, and how the delay affected the motorist's plans.

## North Jersey Communications Technology and Computer Groups

# Data Transmission Over Voiceband Telephone Facilities

The Communications Technology and Computer Groups will hold a joint meeting on April 25, 1968. The details are:

**Place:**
Arnold Auditorium
Bell Telephone Labs.
Murray Hill, New Jersey

**Date:**
Thursday, April 25, 1968

**Time:**
8:00 P.M.

**Pre-Meeting Dinner:**
6:00 P.M.
Wally's, Watchung, New Jersey

**Speaker:**
W. J. LAWLESS
Bell Telephone Labs.
Holmdel, New Jersey

There will be short business meetings of the Computer group and the Communications Technology group following the joint meeting for the election of officers.

**Abstract:**

The increased use of the telephone network for the transmission of data coupled with the need for increased transmission rates has led to many theoretical and practical advances in the past few years. This presentation explores, in a largely tutorial fashion, some of these recent developments.

Attention is directed toward voiceband data transmission. The characteristics, impairments and capacity of such systems are discussed. Optimum systems are discussed together with the relative losses incurred with practical systems. One practical system using multilevel vestigial sideband transmission and automatic equalization is examined. Results of a nationwide field trial of this system are presented.

Dr. Benjamin Senitzky

**Joint Metropolitan Electron Devices**

## Use of Gases for Millimeter Wave Components

**Presented by:**
DR. BENJAMIN SENITZKY
Department of Electrophysics
Polytechnic Institute of Brooklyn

**Date and Time:**
April 11, 1968—Thursday at 8:00 P.M.

**Place:**
General Telephone and Electronics Labs
208-20 Willets Point Boulevard
Bayside, Long Island, N. Y.

**Pre-Meeting Dinner:**
Kam-Fong Restaurant (6:00 P.M.)
19-11 Francis Lewis Boulevard
(near Willets Point Boulevard)
Whitestone, Long Island, New York


**Abstract:**
The use of gases as active media in millimeter wave devices will be considered. In particular the measured gain-bandwidth characteristics of a parametric gas amplifier operating at 258 GHz will be described. The computed noise spectrum of this device reduces to the familiar expression for Johnson noise when the pump is removed.


**Biography:**
Dr. Senitzky received a Ph.D. degree from Columbia University Physics Department in 1956. He is presently an Associate Professor of Electrophysics at the Long Island Graduate Center of the Polytechnic Institute of Brooklyn where he is investigating new techniques for the millimeter wave region.