

The IEEE

Newsletter

The Magazine of the North Jersey Section

Annual Students' Night

December 2, 1969

Fairleigh Dickinson University, Teaneck

December, 1969

North Jersey Section Students Night—1969

Students Night—1969, sponsored jointly by the four North Jersey Student Branches and the North Jersey Section, will be held in the faculty dining room, Fairleigh Dickinson University, Teaneck.

The program will feature a discussion by recent alumni of the engineering schools on their professional experiences. Topics to be considered include graduate studies, extracurricular activities and summer employment opportunities. Particular attention will also be given to the areas of engineering employment that appear to be evolving most rapidly.

There will be a buffet dinner at 6:00 P.M. Refreshments courtesy of the North Jersey Section will be served during the informal and answer period following talks.

The Fairleigh Dickinson University campus in Teaneck, N.J. is located at 1000 River Road at the junction of River Road and the Route 4 overpass, about five minutes East of the Route 4 exit of the Garden State Parkway.

Time: Tuesday, December 2, 1969, 6:00 P.M.

Place: Fairleigh Dickinson University, Teaneck, N.J.

MEETINGS CALENDAR

Tuesday, December 2

Student Activities Night — Fairleigh Dickinson University Gymnasium, 1000 River Road, Teaneck, N.J., 6:00 P.M.

Wednesday, December 10

North Jersey Reliability Group — Maintainability, Singer-General Precision, Kearfott Division, Plant No. 3, 1150 McBride Avenue, Little Falls, N.J., 8:00 P.M.

Thursday, December 11

New York Computer Group and New York Automatic Controls Group — **Computer Traffic Control: The New York City System,** National Cash Register Company, 2nd Floor Auditorium, 50 Rockefeller Plaza (at 51 Street between 5th and 6th Avenues), N.Y.C., 7:45 P.M.

Monday, December 15

North Jersey Automatic Control — **A Guided Subterranean Penetrator for Burying Utilities,** Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N.J., 8:00 P.M.

Wednesday, December 17

New York Power and Industrial Group — **SCR's for Elevator Applications,** Consolidated Edison Auditorium, 4 Irving Place, N.Y., 6:30 P.M.

ON THE COVER: *The Gymnasium, Teaneck Campus, Fairleigh Dickinson University, where the Students Night will be held.*



IEEE members at the conclusion of a race run in honor of the North Jersey Section of the IEEE during a field trip in September. James Earle, Dr. Hal Perlis and two students are on the jockey's left.

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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 1969-1970



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The Newsletter, December 1969

A Guided Subterranean Penetrator Buries Utilities

At the December meeting of the North Jersey Automatic Control Group, J. D. Bishop and Dr. L. B. Horwitz of Bell Telephone Laboratories will present a talk entitled, "A Guided Subterranean Penetrator for Burying Utilities." The meeting will be held on December 15, at 8:00 P.M., at Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N.J.

About the Talk

Development of a subterranean penetrator capable of producing tunnels of about three inches in diameter between two designated points is underway. A description of the important design factors will be given along with the results of a controllability study for a particular penetrator configuration. A movie of experimental equipment in operation will be shown.

About the Speakers

Mr. J. D. Bishop is supervisor of the MOLE Project Group in the Exploratory Installation Systems Department at Bell Telephone Laboratories in Murray Hill, N.J. He has a BSEE degree from Ohio University and completed the BTL Communications Development training program.



J. D. Bishop

Prior to June, 1968, he supervised a circuit design group responsible for the design of power conversion equipment for Bell System and military applications. He holds ten patents relating to power conversion circuits.

Lawrence B. Horwitz was born in New York, N.Y. on July 2, 1943. He received the BE(E) degree from the City College of New York in 1965, the MS(EE) and PhD degrees from New York University in 1966 and 1968 respectively.

At present he is with Bell Telephone Laboratories, Whippany, N.J. His main in-



L. B. Horwitz

terests lie in the area of guidance and control theory.

Dr. Horwitz is a member of Tan Beta Pi, Eta Kappa Nu and the Institute of Electrical and Electronics Engineers.

Time: Monday, December 15, 1969, 8:00 P.M.

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

Maintainability Tutorial Session

The North Jersey Reliability Group will feature a tutorial session on "Maintainability" at its meeting to be held on December 10, 1969 at 8:00 P.M. It will be held at Singer - General Precision, Kearfott Division, Plant No. 3, 1150 McBride Avenue, Little Falls, New Jersey.

The speaker will be Mr. Eugene Fiorentino, Rome Air Development Center, Rome, New York. Mr. Diorentino is well versed on the latest developments in the field of maintainability and will be prepared to discuss in particular the philosophy and requirements of MIL-STD-470 Maintainability Program Requirements, MIL-STD-471 covering Maintainability Demonstrations and MIL-HDBK-472 which treats Maintainability Predictions. All members as well as non-members interested in this timely subject are encouraged to attend.

Time: Wednesday, December 10, 1969, 8:00 P.M.

Place: Singer-General Precision, Kearfott Division, Plant No. 3, 1150 McBride Avenue, Little Falls, New Jersey.

Additional Information: Call G. H. Ebel, 201-226-7777.

Computer Controls Traffic In NYC

Did you know that New York City already has a computerized traffic control system, with several hundred traffic lights already under computer control? That many more traffic lights will be controlled by the end of the year? Would you like to know where they are, so that you may take advantage of the time saving they afford to motorists?

The time to find out is December 11 at the joint monthly meeting of the Computer Group and Automatic Controls Group. Mr. E. Vinson Hoddinott of the New York City Department of Traffic will be the guest speaker on "Computer Traffic Control: The New York City System." Mr. Hoddinott has been active in the development of the system, and is intimately familiar with the technical details.

A no-reservation pre-meeting dinner at Schraffts Restaurant, 21 West 51 Street, will be an excellent chance to meet the speaker as well as others in the audience.

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Time: Thursday, December 11, 1969;
7:45 P.M.

Place: National Cash Register Company,
2nd Floor Auditorium, 50 Rockefeller
Plaza (at 51 Street between 5th and
6th Avenues), N.Y.C.

Will Discuss SCR's For Elevator Applications

SCR's have become increasingly important in the control of high power systems. At their general meeting, the New York Chapter of the Power & Industrial Division will present two speakers who will discuss SCR's and their application.

Mr. Krauer will discuss the application of SCR circuits to elevator motion control systems with particular emphasis on the following:

1. SCR Generator-Field Control
2. Direct SCR control of DC Motor Armature
3. System response and performance
4. SCR control for AC Induction Motors by (low slip) frequency control and (high slip) voltage control

Mr. Wu will discuss SCR characteristics, development and application to AC and DC motor drives.

About the Speakers:

Mr. Krauer is a Consultant Engineer specializing in the design of control systems. He received his Diploma of Graduate Engineer from the Swiss Federal Institute of Technology, Zurich, Switzerland.

Mr. Krauer's extensive experience in the field of motor control dates from 1928 when he joined Otis Elevator.

In recent years, as Manager of Research and Development at Otis Elevator Company, he guided programs dealing with

REPORT FROM THE: Student Affairs Committee

Student branches of the IEEE are organized and operated by undergraduate and graduate electrical engineering students. An active branch provides movies and speakers, field trips and exhibits related to the present state of the art. Lasers, Bio-medical Engineering, Micro-electronics and other subjects have recently been shown to be interesting subjects for the students.

Participation in committee work covering professional subjects provides a challenge in demonstrating one's ability to get along with his fellow workers while a chairmanship offers opportunity for developing his leadership skill. Both of these qualities receive important consideration by recruiters.

The North Jersey IEEE Annual Students' Night is planned to correlate present studies with challenges after graduation. This year's Student Night will be held at Fairleigh Dickinson University on Tuesday, December 2nd, starting at 6 P.M.

Recent alumni from Stevens Institute of Technology, Newark College of Engineering, and Fairleigh Dickinson University have been asked to describe their professional experiences since graduation. Specifically, they have been asked their opinion of graduate studies, extra-curricular activities, and summertime employment in industry, etc.

The speakers have been asked to comment on the areas of engineering employment that appear to be evolving most rapidly.

Occasionally, electrical engineering students have cooperated with Dr. Pemberton Johnson of NCE to describe the various fields of engineering to high school students. Dr. Johnson has been very active in the "New Jersey Engineers Committee for Student Guidance." This committee, made up of practicing engineers, helps high school guidance counsellors, presents films, speakers, and panel discussions concerning engineering to students and other interested groups. In the past year the committee has made about one hundred presentations to approximately ten thousand individuals.

Any engineer in the North Jersey Section willing to spend a day—or even half a day—once or twice a year, working in this program should contact Dr. Pemberton Johnson at the Newark College of Engineering, 323 High Street, Newark, New Jersey 07102.

The North New Jersey Section joins with the New York Metropolitan Section and the Long Island Section in order to encourage joint IEEE student activity on

the application of solid-state switching modules to control logic, the development of special high-performance servo loops, using solid-state devices, for the control of elevator dynamics.

Mr. Wu received his BSEE from Marquette University in 1964 and has done graduate work at both Marquette and CarnegieTech. He has been a Design Engineer with the Industrial Systems Division of Cutler-Hammer and the Switch Gear Division of Westinghouse Electric Co. and is presently an Application Engineer with the Semiconductor Products Dept. of General Electric Co.

Time: Wednesday, December 17, 1969, 6:30 P.M.

Place: Consolidated Edison Auditorium (19th Floor), 4 Irving Place, New York, N.Y.

Refreshments: 6:00 P.M.

REPORT FROM: Your North Jersey Computer Group

The North Jersey Chapter of the IEEE Computer Group exists to provide you with an opportunity to hear speakers on current developments related to computers as well as to serve as a medium for social contacts among people with similar interests. All meetings are free and open to the public.

Ultimately, the success of the local chapter depends on you.

Our meetings are centered around speakers recognized in their fields. The presentations tend to be informal, and the question periods which follow provide an opportunity for discussion which would not be possible at a national con-

ference. Because of the variety in backgrounds, many of the talks are tutorial so as to fill in gaps for the non-specialist and yet trace progress up through current research for the serious student. The November meeting on Micro-programming was an example of this type of program.

What role do you play? Selecting topics and speakers which match the interests of the majority of the members, as well as topics for possible joint sponsorship with other IEEE groups, can only be done with your help. The rewards to you are apparent in this age of the technical information explosion which makes keeping up with the many journal articles related to your work increasingly difficult. The seminar atmosphere of a Computer Group meeting can be more profitable and far more pleasurable than several evenings of solitary reading.

Members of the Computer Group interested in joining the Executive Committee to assist in making these selections are invited to call me at 201-386-4715.

Richard R. Shively
Chairman, N.J. Computer Group

the part of the fifteen four-year colleges and the five two-year community colleges and technical schools located in this area. These IEEE student groups coordinate their joint ventures through the "Metropolitan Student Council." Their object is to exchange information regarding popular subjects for speakers or films as well as field trips.

The major event of the Metropolitan Student Council is the Annual Student Paper Contest. Papers for this annual contest are composed and rated in accordance with a fairly detailed set of rules drawn up and adopted by the Metropolitan Student Council. Four outside judges read and rate the written papers. The top five or six authors are asked to make an oral presentation, for which two additional judges are added to the panel.

Competition for the top prizes is often quite keen, understandably so considering that the top four contestants normally enter the National IEEE Student Paper Contest and compete for the top international top prize of \$500.00. In the past, three local winners have won this national contest. An additional \$25.00 prize will be presented to the author of each paper judged best from every local Student Branch that is a member of the MSC.

Many worthwhile papers have been presented in the metropolitan area to date, and the experience gained in demonstrating not only writing ability but oral skill has put many of the contestants far ahead of the field when it came time to look for an engineering job after graduation.

The undergraduates are already asking the college placement bureaus for summer employment opportunities. Anyone who can place a student may route offers or suggestions to the placement officers at the following locations:

Newark College of Engineering, Professor J. Lubin, 123 High Street, Newark, New Jersey

Fairleigh Dickinson University, Dr. L. Moss, 1000 River Road, Teaneck, New Jersey

Stevens Institute of Technology, Mr. S. Apolant, Castle Point Station, Hoboken, New Jersey

The faculty counsellors are Dr. Ernest Wantuch at FDU, Mr. James Earle at NCE, and Dr. Stanley Smith at SIT. These men strive to provide a liaison between the student branches and the engineering societies that will give the student an opportunity to profit from the experience of the practicing engineers.

James W. Earle, Chairman
Student Affairs Committee

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Education Committee Your Continuing Education

We, your Education Committee of the North Jersey Section, have pretty well-defined ideas of what we should be doing for you. Our primary objective is to continually provide you with opportunities to combat technical obsolescence. We work toward meeting this objective by conceiving, organizing, and presenting survey or study courses in subjects that are of current interest to IEEE members. In some cases, we present courses that have been offered successfully in other Sections or by other Societies.

In all instances, we weigh the value of the subject, recognizing that its appeal will depend entirely upon its importance and timeliness.

The subjects are invariably those which are not presented by educational institutions in their normal curriculums. In fact, we make sure that we do not encroach in this area. A specific example is in the matter of review courses for the professional engineer's examination. Since review courses are offered by several educational institutions in this Section, we do not feel that we, too, should offer such courses.

In our deliberations concerning subjects to offer, we concern ourselves with the matter of your opportunity for professional development and for raising your level of technical competence.

While the various Groups within the Section offer speakers on subjects of particular interest to the individual Group members, we undertake courses which require from six to ten sessions to cover the subject. In some cases, the subject matter is of interest to a particular Group and not to others. Often, our courses are of a general interest. We would like to take this opportunity to suggest to each of the Group Chairmen that he consider appointing one of his Group members to represent the Group on the Education Committee.

Our Committee, through the years, has offered hundreds of courses on many subjects. To name a few: micro-electronics, speed reading, economics, computer design, computer programming, relaying, power circuit breakers, industrial electrical design. We offer about seven courses

each academic year which are attended by about 500 people each year. It takes quite a bit of thought and planning to see a course through from beginning to end.

The make-up of the committee, of course, changes somewhat from year to year and we welcome any IEEE members who feel they would like to give us a hand. Our members are from diverse fields of endeavor enabling us to have a broad approach to our task as well as a fine approach when called for. All are hard-working (with the possible exception of the current Chairman) and concerned professionals.

Since I have been given the platform, I would like to take the opportunity to introduce my committee members, who are:

Charles Blizzard—*Multi-Amp Instruments*; Al Dolan—*Westinghouse*; Pete Drobach—*General Electric*; Cliff Engstrom—*Public Service Electric & Gas*; Joe Fink—*Public Service Electric & Gas*; Charlie Flynn—*ITT Avionics*; Bernie Geertsma—*Jersey Central/New Jersey P&L Co.*; Al Magyar—*Jersey Central/New Jersey P&L Co.*; Murray Menkis—*Menkis Engineering Assocs.*; Alex Richardson—*ITT Avionics*; Art Sauerborn—*Public Service Electric & Gas*; Joe Skroski—*Jersey Central/New Jersey P&L Co.*; Ed Van Tassel—*Retired*; Paul Watson—*Jersey Central/New Jersey P&L Co.*; John Zemkoski—*Public Service Electric & Gas*.

This Fall, we presented three lecture series. The eight-session series on Modern Radar began on October 15th in Nutley, an eight-session series on Extra High Voltage began on October 2nd, and a nine-session series on Profit Planning for Engineers in Management began October 15th.

We are beginning to finalize our Spring 1970 subjects which will include a course called "Basics of Electrical System Protective Devices" and, we expect, a course on economics for engineers which might be considered a "cookbook" approach.

Early in 1970, we will offer a four-session series called "An Introduction to Astronomy." This will be our first departure from our avowed purpose, but we thought it might be of interest to some of our fellow members and might be considered a form of professional development.

The Education Committee has always solicited suggestions from you on subjects that we ought to consider offering. This Committee is no exception. If you know of a subject that will help us toward

our primary objective (you'll have to overlook "Introduction to Astronomy"), let us know.

The solicitations have had results. Some of you have suggested subjects and some have presented themselves to serve on the Committee. Some have done both. We hope more of you do the same.

Now that you know we have your interest, your professional development, your technical competence, at heart, let us hear from you, let us see you attending a lecture series.

James C. Gass
Chairman, Education Committee

Phased-Array Antenna Symposium

A Phased-Array Antenna Symposium sponsored by the Advanced Ballistic Missile Defense Agency of the U.S. Army, Massachusetts Institute of Technology Lincoln Laboratory and the Polytechnic Institute of Brooklyn Electrophysics Department, will be held June 2-5, 1970 at the PIB Long Island Graduate Center, Farmingdale, N.Y. A workshop type of symposium is planned to provide the array antenna designers an opportunity to explore the state-of-the-art and future directions. Those interested in contributing either by attendance or by the submission of a paper should contact Professor A. A. Oliner, Chairman, Phased-Array Antenna Symposium, Electrophysics Department, PIB Graduate Center, Route 110, Farmingdale, New York 11735.

The scope of this symposium will include all applications and types of electronically-scanned array antennas.

There will be general surveys, panel discussions, and both invited and contributed papers.

Contributed and invited papers should be submitted by January 15, 1970, and should include a 35-word abstract and a summary containing 400 to 700 words and 3 to 6 figures. All authors will be notified of selection by February 15, 1970 and furnished detailed information on the preparation of the technical material for publication. The abstract will appear in the Advance Program and a revised summary, which is due by March 15, 1970, will appear in the Symposium Digest. A full-length manuscript of each accepted paper will be required by May 1, 1970.

Power For The Future Discussed By Panel

A panel from the Power Group sponsored a dinner meeting with the students from Fairleigh Dickinson, Stevens Tech and N.C.E. at Newark's Student Center, October 22nd. Topic "Power for the Future" was moderated by Joseph O'Grady, past chairman of N.J. Section.

The presentations included Nuclear Power, Higher Voltage for Transmission lines, The Keystone Project, Advantages of Hydroelectric Pumped Storage, and Education—Careers in Engineering.



Panel included (from left) Mr. H. E. Blaicher, Jr. from Jersey Central Power and Light, Mr. G. P. Toth from Westinghouse, and Mr. D. E. Benner from Public Service.



J. O'Grady



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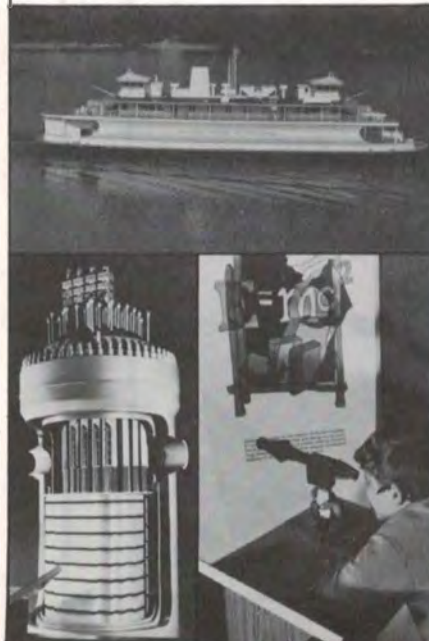
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