



The IEEE

Newsletter

The Magazine of the North Jersey Section

Student Activities Day

Newark College of Engineering, Newark, N. J.

April 19, 1969

Volume 15, Number 8
April, 1969

Parametric Amplifiers in 1969

A talk covering the current state-of-the-art in varactor parametric amplifiers, including considerations on design theory and practical circuits will be presented at the April meeting of the North Jersey Section of GMTT.

A generalized model which embraces many relevant circuit configurations will be used to emphasize the significant features of recent parametric amplifier developments. Topics such as high quality varactor diodes, broadband design, cryogenics, and integrated pump/amplifier circuits will be discussed.

About the Speaker

Mr. H. C. Okean received the B.A. and B.S. degrees in electrical engineering from Columbia University in 1955 and 1956 respectively, an M.E.E. degree from New York University in 1960, and an Eng. Sc. D. degree from Columbia University in 1965.

During the years 1956 to 1966, Dr. Okean was employed at the Bell Telephone Laboratories, Whippany and Murray Hill, New Jersey as a member of the Technical Staff.

From 1961 to 1966 he worked on microwave solid-state device applications with particular emphasis on tunnel-diode amplifiers and varactor harmonic generators. In addition, he developed a theory for broad-banding negative resistance amplifiers, and did exploratory work on varactor multipliers, using unencapsulated varactors.

In 1966 Dr. Okean joined Airborne Instruments Laboratory as a departmental consultant in the Electrophysics Department of the Applied Electronics Division. In this capacity he is concerned with various applications of microwave integrated circuits and negative resistance amplifiers. He currently is directing programs involving the development of microminiature all solid-state parametric amplifier systems and swept tunnel diode receivers.

Dr. Okean is a senior member of the IEEE, and the societies Phi Beta Kappa, Tau Beta Pi, and Eta Kappa Nu.

Place: Arnold Auditorium, BTL, Murray Hill, N. J.

Time: Thursday, April 24, 1969; 8:15 P.M.

Dinner: 6:15 P.M., Wally's, Watchung, New Jersey.

CALENDAR

Wednesday, April 9

IEEE New Technical and Scientific Activities/N. Y. Section/IEEE Subcommittee on Materials/Stevens Institute of Technology—**Sixth Annual Integrated Circuits Seminar**, Stevens Institute of Technology, Hoboken, N.J. 8:30 A.M.

Tuesday, April 15

North Jersey Power — **Student Dinner Meeting**, The Center, Newark College of Engineering, Newark, N. J. 6:30 P.M.

Wednesday, April 16

North Jersey Automatic Control — **A Predictive Entry Guidance Program for Apollo**, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J. 8:00 P.M.

Metropolitan Engineering Management — **Tunnel Vision Inc.**, Graduate Center Polytechnic Institute of Brooklyn, Farmingdale, New York. 7:30 P.M.

Saturday, April 19

Student Activities Day, Newark College of Engineering, Newark, N. J. 10:00 A.M.

Tuesday, April 22

Long Island Section and Metropolitan Instrumentation and Measurement — **Fluidics — A Complement to Electronics**, Brooklyn Polytech Graduate Center, Farmingdale, N. Y. 8:00 P.M.

Wednesday, April 23

New York Power and Industrial — **Building a City on the Moon**, Con Edison, 4 Irving Place, New York City. 7:00 P.M.

Thursday, April 24

North Jersey GMTT — **Parametric Amplifiers in 1969**, Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J. 8:15 P.M.

Tuesday, May 6

Metropolitan Instrumentation and Measurement — **Magnetic Measurements**, Hearthstone Motor Inn, Route 46, Parsippany, N. J. 10:00 A.M.

Monday, May 26

New York Technical and Scientific Activities' Committee and Stevens Institute of Technology — **Computer-Aided Device Analysis and Design Seminar**, Stevens Institute of Technology, Hoboken, N. J. 9:00 A.M.

Apollo Guidance Talk Set

At the April meeting of the North Jersey Automatic Control Group, Dr. J. A. Stiles of Bell Telephone Laboratories will present a talk entitled, "A Predictive Entry Guidance Program for Apollo".



Reentry guidance of the Apollo command module on its return from the moon is a difficult problem because of the unstable trajectory dynamics and small amount of control available. A predictive approach has always seemed attrac-

tive, but until recently was thought to be impractical because the predictor would make the guidance program too large and slow for the Apollo guidance computer. However, Bell Telephone Laboratories has recently developed a predictive program which is small and fast enough for the on-board computer, has very good performance, and is simple to understand. This talk describes this program, its growing pains, and how they were resolved.

About the Speaker

J. A. Stiles was educated at Sydney, Australia, and Cambridge, England, where he obtained his doctorate in control engineering in 1964. Since then, he has worked for Bell Telephone Laboratories, Whippany, N. J., on problems connected with guidance of the Apollo spacecraft.

Dr. Stiles is a member of AIAA.

Time: Wednesday, April 16, 1969; 8:00 P.M.

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

Dinner: 6:00 P.M., Wally's Tavern, Watchung, N. J.

The IEEE Newsletter

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NEWSLETTER STAFF

Editor Emil C. Neu
 Managing Editor M. M. Perugini
 Student Activities Editor Alan H. Stolpen
 Associate Editor David T. Wiener
 Associate Editor Martin Hollander
 Associate Editor Barry Janoff

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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 1968-1969



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Metropolitan Student Council Annual Student Paper Contest

Each year, the Metropolitan Student Council of the IEEE sponsors a Student Prize Paper Contest, which is supported jointly by the North Jersey, New York, and Long Island Sections of the IEEE. This year's contest will be held on Saturday, April 19, 1969, at the Student Center of the Newark College of Engineering, and will be the central feature of Student Activities Day.

The contest prizes are:

First Prize \$200.
 Second Prize \$100.
 Third Prize \$75.
 Fourth Prize \$50.

In addition, the best paper from each school belonging to the Metropolitan Student Council is eligible for a \$25 Chapter prize.

The paper receiving First Prize is automatically eligible for submission to the Region I Regional Student Paper Contest, and the First and Second place winners of that contest are eligible for the Institute-wide IEEE Student Prize Paper Award. In the past, the Student Paper receiving First Prize in the Metropolitan Student Council contest also won the Institute Student Prize Paper Award for 1963, 1964, 1965, and 1967.

Recent North Jersey Prize Winners include:

1960	Second Prize	
	Peter M. Brodie	Stevens
1961	Third Prize	
		NCE
1962	Fifth Prize	
	Jeffrey Cohen	NCE
1964	Fourth Prize	
	Paul Chuhnov	NCE
	Fifth Prize	
	Thomas Spencer	NCE
	Sixth Prize	
	Anthony Campillo	NCE
1965	Fourth Prize	
	John F. Cashen	NCE
1967	Second Prize	
	Frederick Telewski	NCE
	Third Prize	
	Ernest Ohloff	FDU
	(co-winner)	

The Co-Secretaries for the 1969 Paper Contest are: Mr. Peter T. Mauzey, Bell Telephone Laboratories, Holmdell, New Jersey 07733, and Mr. Eugene I. Weitz, American Electric Power Service Corp., New York City, New York 10004.

Program

10:00 - Registration
 11:30 A.M. Coffee and sweet rolls provided.
 11:30 - Presentation of
 2:30 P.M. Student Papers
 2:30 - Free Time
 5:00 P.M. Coffee and cake provided.
 Available Recreational Facilities:
 NCE's:
 Olympic size pool
 6-lane ABC sanctioned
 bowling alley
 Table Tennis Room
 Billiards Room
 Tours:
 Electrical Engineering
 Department and
 Laboratories
 NCE Computer Center
 NCE's prize winning
 Technical Library
 Movies:
 Laser Technology
 The Sun
 others
 5:00 P.M. Dinner and Post-Dinner
 Presentations
 Menu: Fruit Cup, Roast Beef
 Dinner, Pie-a-la-mode,
 Beverage.

Dinner tickets are available at all MSC Branches for the subsidized price of \$1.50 each. Please make reservations no later than Friday, April 11 with local Student Branches or with Mr. James Earle, Newark College of Engineering, Newark, New Jersey.

New Members

The North Jersey Section welcomes the following new members:

G. T. Garmirian	R. M. Hibbett
G. P. Bart	J. J. Glosek
M. E. Poznar	L. J. Kelly
R. Haiken	K. Burgener
R. W. Bowers	C. V. Lundeen
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D. K. Buchner	M. P. Gagliostro
M. A. Marszalowicz	B. J. Schachter
R. A. Reynolds	A. H. Marsh
J. J. Weiss	F. J. Braga
J. J. Goodale	G. W. Dryden, Jr.
R. P. Shearer	L. B. Northcross, Jr.
S. C. Surdel	

Good Luck — Maitland McLarin,
 Membership Chairman.

Magnetic Measurements Seminar

The New York Joint Chapter on Instrumentation and Measurement is sponsoring a seminar on Magnetic Measurements on May 6. The program is:

10:00 A.M. to 12:00 Noon

The history of magnetics and magnetic measurements will be discussed by Mr. Jack M. Janicke, Vice President of the Instrumentation Division of RFL Industries, Inc. in Boonton, N. J.

A second speaker (to be announced) will discuss the uses of various magnetic measuring equipment.

A question and answer session will follow these talks.

12:00 Noon to 1:30 P.M.

LUNCH — COURTESY OF RFL INDUSTRIES, INC.

1:30 P.M.

For those who are interested, there will be a field trip to the RFL plant.

Time: Tuesday, May 6, 1969; 10 A.M.

Place: Hearthstone Motor Inn, Route 46, Parsippany, N. J.

Reservations: Attendance will be on a no-charge basis, but will be limited to fifty persons. Reservations should be made with: Mr. Daniel Cotte, Jr., RFL Industries Inc., Powerville Road, Boonton, N. J. 07003.

North Jersey Power Group Student Dinner Meeting

The North Jersey Power Group will present several speakers at its April meeting who will describe the many different engineering challenges associated with the power field and the future of the power engineer.

A special invitation will be extended to engineering students from Newark College of Engineering, Fairleigh Dickinson University and Stevens Institute of Technology for this meeting. Engineers and students will be informed of the most recent developments in the power industry, the advanced education avail-

able to engineers within the industry and of the various means of communication among engineers in the power industry all over the world.

This meeting will provide a forum for engineers and students to exchange views and discuss problems of mutual interest with representatives of the power industry.

Attendance is not restricted to students but is open to all interested parties. A buffet supper will be served preceding the meeting.

The speakers will be Mr. D. E. Benner, Public Service Electric and Gas Company, Mr. W. R. Knoble, General Electric Company and a speaker from Jersey Central Power and Light Company.

Time: Tuesday, April 15, 1969; Buffet Supper, 6:30 P.M., Meeting, 7:30 P.M.

Place: Cafeteria, The Center, Newark College of Engineering, 150 Bleeker Street, Newark, New Jersey.

Tunnel Vision Inc.

The IEEE Group on Engineering Management Metropolitan Chapter will present a case study demonstrating management practices responsible for high cost, high risk, Tunnel Vision and apathy.

The cast will be played by:

Alan Kingsbury as Marketing Department Head, Richard Petrozzelli as Engineering Department Head, Vincent Bava as Manufacturing Department Head, and Peter Fetterole as Finance Department Head.

The case study will be outlined in a pre-meeting handout, demonstrated in real time and revised to demonstrate the remedies.

Mr. Kingsbury is Vice President of Photocircuits Corporation, a director of two electronics firms and an adjunct Professor of Management. Mr. Petrozzelli is Program Manager with Fairchild Camera Space and Defense Systems Division. Mr. Bava is Program Manager with Fairchild Camera Fuze Division with over 25 years in Manufacturing Quality Control, Engineering and Management. Mr. Fetterole is Vice President at Potter Instrument Corporation with previous positions in Finance and Engineering. He has a B.A. in Physics and a M.B.A. from Harvard.

Time: Wednesday, April 16, 1969; 7:30 P.M.

Place: Graduate Center Polytechnic Institute of Brooklyn, Route 110, Farmingdale, New York.

Sixth Annual Integrated Circuits Seminar

The IEEE New Technical and Scientific Activities/New York Section, IEEE Subcommittee on Materials and Stevens Institute of Technology will co-sponsor a one-day seminar on integrated circuits on April 9, 1969 at Stevens Institute of Technology, Hoboken, N. J. at 8:30 A.M.

The introduction will be made by R. L. Geldmacher, Stevens Institute of Technology.

Morning session, with J. J. Golembeski, Bell Telephone Laboratories, Murray Hill, N. J., as moderator, will cover the following topics: "Relating Material Properties to Semiconductor Device Performance for Computer Simulation," G. Hachtel, IBM, Yorktown Heights, N. Y.; "Semiconductor Integrated Circuits Techniques and Capabilities," M. J. Calahan, Motorola, Mesa, Arizona; and "Piezoelectric Materials for Monolithic Crystal Filters," J. L. Hokanson, Bell Telephone Laboratories, Allentown, Pa.

The afternoon session will have as moderator W. H. Orr, Bell Telephone Laboratories, Allentown, Pa. Topics include: "Thin Film Integrated Circuit Technology," D. Gerstenberg, Bell Telephone Laboratories, Allentown, Pa.; "Materials Considerations in Microwave Integrated Circuits," R. B. Schilling, RCA, Somerville, N. J.; and "State of the Art Materials Capability for Thick Film Technology," J. J. Cox, Jr., E. I. Du Pont de Nemours, Wilmington, Del.

Mail to:

Prof. R. C. Levine
Electrical Engineering Dept.
Stevens Institute of Technology
Castle Point Station
Hoboken, New Jersey 07030

Pre-Registration

IEEE Members\$20

Non-IEEE Members\$25

Registration at door

IEEE Members\$25

Non-IEEE Members\$30

Proceedings only,


no attendance\$10

Registration fee includes Proceedings and Luncheon. Pre-register for maps and directions.

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Computer-Aided Device Analysis and Design

On May 26, 1969, the New Technical and Scientific Activities' Committee (N. Y. Section, IEEE) and Stevens Institute of Technology will sponsor a seminar on "Computer-Aided Device Analysis and Design."

About the Program

The electronics industry pacesetter today is the device designer. As the demand for more optimum devices increases, he is forced to seek more specific solutions to the problems encountered in device design and analysis.

Only with the computer is this more detailed knowledge available to the device designer, and the importance of computing and numerical techniques takes on new dimensions in this field.

To keep you abreast of these developments, five experts will discuss the computer-aided design of bipolar, unipolar and avalanche devices. In addition, the afternoon panel discussion provides a free exchange of thought in this exciting technology. Audience participation is welcomed and encouraged.

Speakers and Topics

"A Self-Consistent Regional Approach for Computer-Aided Transistor Design," Dr. R. B. Schilling, RCA Electronic Components Division, Somerville, N. J.

Building a City on the Moon

A joint "General Meeting" is planned by the Power and Industrial Division and the New York Section of the IEEE. The following speakers will discuss various topics related to the sustenance of moon settlements.

Dr. Hugo Freudenthal, Chief of Life Science at the Manned Space Department of Republic Aviation, Division of Fairchild Hiller Corporation will discuss "Supporting Life on the Moon".

Mr. Cy Katz, Senior Marketing Representative of Republic Aviation will speak on "Availability of Technology."

Mr. A. E. Kunen, Manager of Power Conversion and Instrumentation of Republic Aviation will discuss "Providing Power for a City on the Moon".

The program will also include election of the Executive Committee of the Power and Industrial Division of the IEEE. Members, their wives, children and friends are welcome to attend.

"Device Modeling for Computer Analysis," Dr. H. K. Gunimel, Bell Telephone Laboratories, Murray Hills, N. J.

"Unified Theory of Computer-Aided Device and Process Design," Dr. H. N. Ghosh, IBM Components Division, Hopewell Junction, N. Y.

"A Two-Dimensional Analysis of Junction Field Effect Devices," Dr. D. P. Kennedy, IBM Components Division, Hopewell Junction, N. Y.

"Avalanche Diode Oscillators; Computer and Laboratory Experiments," Dr. D. L. Scharfetter, Bell Telephone Laboratories, Murray Hill, N. J.

Panel Discussion — "Present and Future Problems in Computer-Aided Device Analysis and Design," moderated by Dr. G. J. Herskowitz, Stevens Institute of Technology, Hoboken, New Jersey.

Registration

Advance registration fee for members of IEEE is \$20. The fee for non-members is \$25. At-the-door registration involves an additional \$5 fee.

The registration fee includes luncheon and a copy of the Proceedings, to be published shortly after the seminar.

Make checks payable to "NTSAC" and remit to: Samuel Ponczak, Zone 3A, RCA Electronic Components, Somerville, New Jersey 08876. Acknowledgements, including routes by public transportation or car will be mailed to all registrants.

Time: Monday, May 26, 1969; 9:00 A.M. to 4:30 P.M.

Place: Stevens Institute of Technology, Hoboken, N. J.

Time: Wednesday, April 23, 1969; 7:00 P.M.

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

Dinner: 6:00 P.M. The dinner will include Soup, Roast Sirloin of Beef, Vegetables, Tossed Salad, Rolls, Butter, Dessert and Beverage. It will be served in the 19th floor cafeteria. Reservations required.

Mr. Joseph Adler
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Please forward tickets at \$2.00 each (Checks payable to P&I Division New York IEEE).

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Fluidics

The Long Island Section and the New York Joint Chapter on Instrumentation and Measurements of the IEEE are presenting a paper on "Fluidics — A complement to Electronics". The speaker will be Mr. Hyman Haas, president of Applied Fluidics Inc.

The fast growing art of fluidics has advanced to the point where it is beginning to challenge the supremacy of electronics in instrumentation and control applications. There are fluidic equivalents for many of the electronic circuit elements and components, and the number of applications in which fluidics is compatible with electronics is rather impressive.

Every engineer should have a basic knowledge of this new field, and this paper is designed to introduce the subject of fluidics in a general way and to apprise the electrical engineer of its potentialities.

Time: Tuesday, April 22; 8:00 P.M.

Place: Polytechnic Institute of Brooklyn Graduate Center, Farmingdale, N. Y.

Pre-meeting Dinner: Dutch Treat Marcipierre Restaurant, Broad Hollow Road and Route 110, South Melville, N. Y. at 6:00 P.M.

Mathematics Review for Engineers

The Communications Technology Group Chapter of the New York Section of IEEE presents the third part of a three-part course reviewing the fundamentals of applied mathematics for engineers. Mr. D. Gillespie of the New York Telephone Co. will give this lecture.

In addition to this mathematics review, topics in the series will include statistics, linear programming, and Boolean Algebra. Further information may be obtained from Mr. H. J. Haarmann of the New York Telephone Company at (212)-394-1399.

Time: Thursday, April 3, 10, 17, and 24, May 1 and 8; 6:30 to 8:30 P.M.

Place: New York Telephone Company, 140 West Street, New York City.

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Student Affairs

CHAPTER OF THE MONTH

Newark College of Engineering Day Branch

The involvement of the Branch officers in their school and community affairs as well as in industry typifies the goal of the Newark College of Engineering in the development of well rounded engineers whose life is not solely based on their profession.

Steve Hoffman, a Senior from Belleville, New Jersey, is Branch Chairman. Steve, last year's Vice-Chairman, is avidly interested in the field of computers. Having spent the past two summers as a scientific computer programmer, he is certain that he has chosen the right industry for his life's work, and is presently taking elective courses in Computer Science and Digital Circuit Design.

Bob Wavra, a Junior from Irvington, New Jersey, is Branch Vice-Chairman. In the past year, Bob's school activities have expanded from 1967-8 Metropolitan Student Council Representative to Pledgemaster of the Alpha Phi Omega Service Fraternity, Secretary-Treasurer of the NCE Inter-Club Council, and Section Representative to the Junior Class Council. Bob's chief interests include photography, electronics, and hi-fi. Upon graduation, Bob plans to seek employment in the Computer field, and accordingly is presently taking Elective courses in the area of Digital Circuit Design, and has become a Student Member of the IEEE Circuit Theory Group.

James Hess, a Senior from Newark, New Jersey, is Branch Secretary. The only married Officer in the Branch, Jim is also Vice-President of the NCE branch of the ACM, and (much to his wife's chagrin) has been spending his spare time for the past three years at the NCE Computer Center. In line with his interest in computer technology, his Senior Electrical Engineering Project was the Development of a Boolean Minimization Program for the Use of Digital Integrated Circuits.

Bob Kierce, a Junior from Clifford Beach, New Jersey, is Branch Treasurer. An active student, Bob is also Vice-President of NCE's Inter-Club Council, and Vice-President of the Alpha Phi Omega Service Fraternity. His interests include hi-fi, radio telemetry, and radio broadcasting, and he expects to seek employment in the Telemetry or Information Transmission field. Bob is continuously

on the go, and his summers have been spent working in such diverse areas as an electronics repairman and a member of the Big Top Crew of the Bartok-Hunt Brothers Circus.

Eric W. Muller, Jr., a Junior from Livingston, New Jersey, is the Branch Publicity Chairman. He is a Section Representative for the NCE Feedback Committee, and is the author of the Feedback article, "Towards a Common Goal", which appears below. Eric fills his spare time with photography, electronics, and many busy hours as an active member of

the Livingston Volunteer Fire Department. Eric's future plans encompass the Electric Power and Telephone Engineering field, with definite goals towards Engineering Management. His past four summers have been well spent working as a Laboratory Technician at the New Jersey Orthopedic Hospital in Orange, New Jersey. His work included the design, test and repair of equipment used for neuro-muscular diagnostics, Cancer Research projects, and the design and building of electric analogs for human muscles.

TOWARD A COMMON GOAL

by *Eric W. Muller, Jr.*
NCE Day Branch

One of the most important elements which characterize the times in which we live is an extension of democratic processes into many of our institutions where there had previously been none. Notwithstanding, our American colleges and universities are feeling the harsh protests of a generation which has been taught that the best solution to a problem is one which has been arrived at by all those concerned.

About ten years ago, when this problem was as yet hardly in its infancy, the Electrical Engineering Dept. of Newark College of Engineering instituted a meeting whose purpose was to give students an opportunity to make constructive criticism concerning the Department's policies. At first the meeting was held annually and was run by Eta Kappa Nu, the Electrical Engineering honor society. After three years the organization and operation of the so-called "Feedback" meetings was turned over to the IEEE, whereupon the number of meetings per year was increased to permit more material to be covered.

And so, at NCE, Electrical Engineering students have been quite fortunate to be in a department responsive to student needs. The Feedback Committee of the IEEE has been so successful that recently the President of the college, Dr. Robert Van Houten, suggested that other departments adopt a similar procedure and many have already begun to follow suit.

The Feedback meetings are open to all students and faculty, however one representative and one alternate is elected from each section to insure that every section will be represented. The Associate Chairman of the E. E. Dept., Professor Anderson, sits in on the meetings as an advisor and serves as a liaison to the faculty. All topics are open for discussion except individual instructors.

As an example of what has been accomplished by the Feedback Committee, early in the fall semester in 1967 it became evident to students that a departmental computer program library containing programs of practical value to E.E.'s could be of great use to both students and faculty. Following discussion at a Feedback meeting the appropriate arrangements were made and on November 15, 1967 a memorandum was issued from the Computing Center to the Electrical Engineering Department. The memo stated that the library was being established, and designated a committee (including three senior electricals) to organize the effort and establish program formats. This is a perfect example of how a suggestion, brought up by students, was discussed and then acted upon with a favorable result for both students and faculty. Other suggestions acted upon the Feedback Committee include the clarification of department policy on specific coursework, opening of laboratories for student use between semesters, clarifying procedures for reporting lab equipment malfunctions, and revising lab manuals so as to eliminate ambiguity.

Professors Russell and Anderson, Chairman and Associate Chairman of the Electrical Engineering Dept. respectively, both point to the Feedback Committee as a valuable link between the students and the Department — a link which produces tangible improvements while developing student responsibility. And, after all, the development of responsibility is certainly a most important part of the education for any profession.

Student Paper Contests and Awards

Other than the well publicized Metropolitan Student Council, Region I, and Institute Student Paper Contests, Most Student Members of the IEEE are not aware of the many awards available to them via the IEEE and Industry. A brief summary of some of these awards follow. Subsequent issues of the Newsletter will describe other contests and awards as they are researched.

STUDENT PAPER CONTESTS

The W. D. George Memorial Award

Sponsor: Group on Instrumentation and Measurement, IEEE
Prize: \$100.
Basic Rules: The paper must be related to Instrumentation and Measurement, written by an Undergraduate student, and must appear in an IEEE publication within eighteen months of the receipt of the author's Bachelor's Degree.
Submission: Candidate must be nominated by a Professor in the student's Major field in a letter to the Secretary-Treasurer of the IEEE Group on Instrumentation and Measurement.
Cut-Off Date: January 15.

The L. M. Hickernell Award

Sponsor: Anaconda Wire and Cable Company and the IEEE
Prize: \$500. Plus all expenses, within the United States, to the IEEE Winter Power Meeting.
Basic Rules: The author or authors must be Undergraduate or Graduate students pursuing a BSEE or MSEE degree. The paper must be written in English and must advance the art of Power Systems Engineering, including, but not limited to: Energy Generation, Conversion, Transmission, Distribution, and Utilization, and the planning, design, construction, operation, control, protection, and maintenance of Electrical Power Systems. Undergraduate and Graduate contests will be held in alternating years, the Graduate contests to be held in even years.

Instrument Society of America Annual Student Paper Award

Sponsor: The Leeds & Northrup Company and the ISA.
Prize: District Level: Society Wide:
 First Prize: \$25. First Prize: \$100
 Second and Plus an all - ex-
 Third Prizes: pense paid trip for
 Certificates the winner and a
 of Merit Faculty Advisor to
 the Annual I S A
 Conference and
 Exhibition.
Basic Rules: The author must be a full time Undergraduate student. Separate contests are held for College or University students and for Technical Institute and Junior College students. The papers must be related to the field of Instrumentation.
Submission: Chairman, Student Paper Awards Committee, I S A.
Cut-Off Date: March 15 for submission of intent to enter the contest.
 May 1 for the completed manuscript.

OTHER AWARDS

Outstanding Student Branch Member Award

Sponsor: IEEE.
Prize: Certificate.
Basic Rules: One Branch member of each IEEE Student Branch is eligible each year. The award winner must be an active student member of the IEEE, and must be chosen by the Branch Councillor or a Faculty Committee.
Cut-Off Date: None.

The Vincent Bendix Student Branch Award

Sponsor: The Bendix Corporation and the IEEE.
Prize: Up to \$500. for each Student Branch.
Basic Rules: Each Student Branch may submit one proposal for a Student Branch Project each year. Proposals may not exceed six pages, including a realistic budget.
Submission: IEEE Headquarters, Chairman Student Activities Subcommittee.
Cut-Off Date: Proposals — November 15.

Nuclear Science Group Student Award

Sponsor: IEEE Group on Nuclear Science.
Prize: Scholarship, up to \$200.
Basic Rules: Candidates must be Student Members of the IEEE, must have completed at least one course in Nuclear Science and must be recommended by the Chairman of the Department giving that course. Student G P A, general academic interest and academic achievements must be stated.
Submission: Awards Committee Chairman, IEEE Group on Nuclear Science.
Cut-Off Date: May 1.

Charles Le Geyt Fortescue Fellowship

Sponsor: Westinghouse Electric Company and the IEEE.
Prize: \$3000.
Basic Rules: The Fellowship is awarded for one year of Graduate Electrical Engineering work at an accredited Engineering school. Applicants must take the Graduate Record Examination, and must have majored in Electrical Engineering and have graduated from an accredited Engineering college in the United States or Canada. Applicants may not be the recipient of other Fellowships with a value of over \$1000.
Submission: Secretary, Fortescue Fellowship Committee, Scholarship Awards Committee, IEEE.
Cut-Off Date: January 15.

Volta Memorial Scholarship

Sponsor: Italy-America Society of New York, and the IEEE.
Prize: One year of study in Electrical Engineering in the United States.
Basic Rules: Applicant must be an Italian citizen with a degree in Electrical Engineering from a recognized European school, and must be under thirty years of age.
Submission: Volta Memorial Scholarship Committee, Scholarship Awards Committee, IEEE.
Cut-Off Date: None

CAREER POSITIONS IN ELECTRONICS



Bob Sinusas, Research Engineer, Monsanto Electronics Center, West Caldwell, N. J., working on a Time Sharing Terminal used for Circuit Analysis.

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