The IEEE
Newsletter
The Magazine of the North Jersey Section

Governor Morris Inn, February 15

Annual Dinner Dance Honoring New Fellows And Award Winners

Volume 15, Number 5

January, 1969

Overhead & Underground Cable Insulations

The North Jersey Power Group will present several speakers at its January meeting who will describe the development of the polymer industry to the present day including the way in which various polymers are produced and the difference in properties of chain and cross-linked polymers.

With this information as a background the topic will be expanded to the manufacture and application of the various compounds for overhead and underground conductors.

The topic will be of great interest to those in the electrical industry who are aware of the many plastic products and of their numerous and varied properties. If you know there are low density, high density, high molecular weight and cross-linked poly's, plus neoprene butyls, and PVC's but aren't sure of what all the differences are, the meeting should be of value to you.

Refreshments will be served following the program. Attendance is open to all interested parties.

The speakers will be Mr. A. C. Bluestein, Cooke Color and Chemical Co.; Mr. W. C. Smith, Enjay Chemical Co.; and a speaker from the wire and cable industry.

Time: Wednesday, January 22, 1969; 7:30 P.M.

Place: Punchbowl Room, Jersey Central/ New Jersey Power and Light Co., Madison Ave., (Highway 24) at Punchbowl Rd., Morristown, N. J.

Solid State Conference

The 1969 International Solid State Circuits Conference will be held February 19-21, 1969 on the campus of the University of Pennsylvania and at the Sheraton Hotel, Philadelphia, Pa.

Some of the subjects covered will be: current input differential amplifiers, microwave amplifiers using IMPATT diode oscillators, MOS-IC memories, IC monolithic displays, IC signal processing for TV, pressure sensitive diodes and computer aided design practices.

The keynote address will be delivered by J. A. Morton of Bell Laboratories. It will be on strategy and tactics for integrated electronics. The traditional Wednesday-Thursday evening discussions will be held at the Sheraton Hotel.

Programs with registration forms can be obtained from Lewis Winner, 152 West 42 St., New York, N. Y. 10036.

CALENDAR

Thursday, January 9

Metropolitan Electron Devices — **Beam Lead Technology,** General Telephone and Electronic Laboratories, Willets Point Blvd., Bayside, N. Y. 8:00 P.M.

Thursday, January 16

Metropolitan Aerospace and Electronics Systems — **Flight Test of a Microwave Radiometer,** Singer-General Precision Systems Inc., 150 Totowa Road, Wayne, N. J. 8:00 P.M.

Tuesday, January 21

Metropolitan Electromagnetic Control — **Pulsed Magnetic Field Susceptibility Testing of Electronic Equipment,** Playboy Club, Manhattan. 6:30-10 P.M.

North Jersey Section — **Lecture Series — Protective Relays and their Application,"** Punchbowl Room, Jersey Central - New Jersey Power and Light Co., Morristown, N. J. 6:30 P.M.

Wednesday, January 22

North Jersey Power — **Properties of Synthetic Overhead and Underground Cable Insulation,** Punchbowl Room, Jersey Central Power and Light Co., Madison Ave. at Punchbowl Rd., Morristown. 7:30 P.M.

Thursday, January 30

North Jersey Computer — **The Evolution of Multics (Multiplex Information and Computing Service),** Arnold Auditorium, Bell Telephone Laboratories, Murray Hill, N. J. 8:00 P.M.

Saturday, February 15

North Jersey Section — **Annual Dinner Dance Honoring New Fellows and Award Winners,** Governor Morris Inn, Morristown, N. J. 6:00 P.M.

Thursday, February 20

New York Comm Tech — **Lecture Series — "FM Systems,"** New York Telephone Co., 140 West Street, N. Y. C. 6:30 P.M.

New IEEE President

Dr. F. Karl Willenbrock will be the president of The Institute of Electrical and Electronic Engineers for 1969. He will head the world's largest engineering society, with a membership totalling over 150,000 throughout the world. He succeeds Dr. Seymour W. Herwald. The IEEE also announced the election of Dr. John V. N. Granger as vice president, 1969.

Dr. Willenbrock graduated from Brown University with a BSEE degree, summa cum laude. He received his Master's degree in applied physics and the Ph.D. degree in electron physics from Harvard University.

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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

J. G. O'Grady

M. M. Irvine

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Annual Dinner Dance Honoring New Fellows and Award Winners

The North Jersey Section Annual Dinner Dance honoring the newly elected Fellows and Award Winners of the Section will be held on Saturday evening, February 15, 1969, at The Governor Morris Inn (see cover) at the corner of Whippany Road and Lindsley Drive, Morristown, New Jersey.

A Dutch Treat cocktail hour will begin at 6:00 P.M., followed by dinner (London Broil) at 7:00 P.M. The guest speaker this year will be Mr. W. H. Doherty, Assistant to President, Bell Telephone Laboratories. Following the presentation of the awards there will be dancing until 1:00 A.M.

NORTH JERSEY DINNER — FEBRUARY 15, 1969

For reservations write, enclosing a stamped, self-addressed envelope, to:
Dr. M. M. Irvine
Bell Telephone Laboratories
Whippany, New Jersey 07981 (201) 386-4141

Please forward ..... tickets at $5.00 each to (Checks payable to N. J. Section IEEE)

NAME .....

STREET .....

TOWN .....

STATE ..... ZIP .....

I would like to share a table with the following:

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Beam Lead ICs

The Metropolitan area chapter of the Electron Devices Group will present a talk by Martin P. Lepselter, of Bell Telephone Laboratories on beam lead ICs. The beam lead technology has been extended to encompass a broad group of devices. Silicon bipolar and MOS circuits, air-insulated two level metalizing, Schottky barrier diodes and integrated circuits as well as III-V arrays are some of the devices that will be described in this talk.

Mr. Lepselter has been at BTL for eleven years, during which period he has worked on the development of silicon solar cells, oxide passivated devices, and beam lead technology. He is presently head of the Exploratory Semiconductor Technology Department.

Time: Thursday, January 9, 1969; 8:00 P.M.

Place: General Telephone and Electronics Laboratories, 208-20 Willets Point Blvd., Bayside, N. Y.

Pre-Meeting Dinner: 6:00 P.M.; Kam Fong Restaurant, 19-11 Francis Lewis Blvd., Whitestone, N. Y.

EMC Testing Subject of Joint Meeting

A joint meeting of the Metropolitan Chapter of EMC and the Jersey Coast Chapter will hear Mr. J. D. Osburn of the Electro-Mechanics Company of Austin, Texas cover "Pulsed Magnetic Field Susceptibility Testing of Electronic Equipment." The January 21 meeting will be held at the Playboy Club, 5 East 59th Street, New York City. Reservations (at $5.00 each) are required.

About the Talk

The elimination or reduction of either temporary malfunction or permanent failure of electronic equipment due to the effects of a high intensity magnetic pulse is recognized as a necessary goal. Testing or measurement of natural or man-made phenomena (lighting discharges, the detonation of a nuclear device) producing such an effect requires electronic equipment capable of functioning properly continuously throughout the event to be observed.

To assure proper functioning under this type of adverse condition, a pulsed Magnetic Field Susceptibility Test Fixture capable of producing a uniformly distributed pulsed field of a minimum of 10 gauss for a duration of 50 milliseconds has been designed and constructed. Since the intensity of a magnetic field source decays as the inverse cube of the distance from the source, a 10 gauss intensity pulse is sufficient to stimulate a 10,000 gauss pulse 10 meters away from the point of interest. The 10 gauss level was felt to be of sufficient magnitude for initial testing.

The test fixture consists of a power source and a set of Helmholtz coils large enough to produce a field of uniform intensity over a 2-foot cube, a volume large enough to contain most electronic equipment of interest.

Time: Tuesday, January 21, 1969; 6:30-10:00 P.M.

Place: Playboy Club, 5 East 59th Street, N. Y. C.

For reservations contact: H. G. Bostrom, Metex Corporation, 970 New Durham Rd., Edison, N. J. 08817. Phone: (201) 287-0800.

Microwave Radiometer Flight Testing

The January meeting of the Metropolitan Chapter of the Group on Aerospace and Electronics Systems will be held on Thursday, January 16, at 8:00 P.M. at Singer-General Precision Systems Inc., 150 Totowa Road, Wayne, N. J.

"Flight Test of a Microwave Radiometer" will be the subject of a talk given by Mr. Myron M. Rosenthal, Engineering Manager, Singer-General Precision Systems Inc., Kearfott Systems Division.

Election of officers of AES for the coming year will be held at the business portion of the meeting which will precede the talk.

About the Talk

Theory, application instrumentation and results of the flight test of a 36 GHz Radiometer will be discussed and shown using film, TV tapes, and by seeing the actual equipment. Microwave Radiometry, often described as passive radar, is an all weather, day night sensor and reconnaissance tool. It will be eventually used in many cases where radar is used today.

About the Speaker

Mr. Rosenthal received his BEE from CCNY and an MS in math from Adelphi College. He is Engineering Manager responsible for R diometric Systems at Singer-General Precision Systems, Inc. He has taught courses at Polytechnic Institute of Brooklyn for the past 15 years. He is Vice Chairman of the GAES Metropolitan Chapter of the IEEE. He received the 1968 "Best Presentation Award" at the National Aerospace and Electronics Conference (NAECON).

Time: January 16, 1969, 8:00 P.M.

Place: Singer-General Precision Systems, Inc., 150 Totowa Road, Wayne, N. J. (Turn North from Route 46 at exit between Topps and Two Guys. One mile — then right at Golf Course on Totowa Road, 2/10 mile to 150 Totowa Rd.)

Pre-Meeting Dinner: 6:15 P.M., Pomptonian, Route 23, Cedar Grove, N. J.

Evolution of MULTICS

A talk on the history of the development of the MULTICS operating system up to the present, with a forecast of its implications on the future will be offered by the North Jersey Computer Group at its January meeting. MULTICS (multiplex information and computing service) is intended to provide a unified approach to computing, whether interactive or non-interactive. Outstanding features of the system include a shared but protectable file system, and a very large virtual memory for each user.

Remote computer terminals will be the discussed at the January meeting. Through their use, logistic and psychological barriers in the man-machine interface are minimized and each user operates under the illusion that the computer is solely at his disposal. Programs can be written on line, with immediate feedback for machine detected grammatical errors. The services of a centralized, inherently more efficient large scale computer which has a versatile array of peripheral devices can be distributed over a wide area.

P. G. Neumann and J. F. Ossanna Jr. of Bell Laboratories will discuss MULTICS, one of the most ambitious undertakings of this type.

Time: Thursday, January 30, 1969; 8:00 P.M.

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

Pre-Meeting Dinner: 6:00 P.M.; Wally's Tavern, Watchung, N. J. No reservations required. Meeting and dinner open to non-members.

LECTURE SERIES — SPRING, 1969

PROTECTIVE RELAYS AND THEIR APPLICATION

A twelve-session study course to assist electrical, consulting, and project engineers, contractors, maintenance, technicians, architects and others who are interested in protective relays and systems. The course will cover the basic principles of protective relays, their application, their selection and basic concepts for setting relays for system conditions. The sessions will be presented by recognized professional relay engineers associated with Westinghouse Electric Corporation. The text will be *Applied Protective Relaying* supplemented with notes and papers. Homework problems will be assigned to amplify the lectures.

January 21 — Introduction and General Philosophies.
Discussion of the general philosophy of protective relaying, application principles, review of basic units.
J. L. Blackburn

January 28 — Technical Tools of the Relay Engineer.
Brief review of phasors, symmetrical components, instrument transformers as related to relay applications.
J. L. Blackburn

February 4 — Rotating Machine Protection — Generators.
Differential, ground, loss-of-field, negative sequence, field ground, anti-motoring overcurrent.
W. L. Hinman

February 11 — Rotating Machine Protection — Motors.
Differential, ground, overload, phase rotation, single phasing - unbalanced current.
W. L. Hinman

February 18 — Transformer Protection.
Differential, sudden pressure, overcurrent, Magnetizing inrush problems. Regulating transformer protection.
J. L. Blackburn

February 25 — Bus Protection and Breaker Failure Detection.
Differential - multi-restraint, current, overcurrent, linear coupler, voltage differential and partial differential. Faulty breaker detection will be discussed.
W. L. Hinman

March 4 — System Grounding and Ground Relaying.
Discussion of various system grounding schemes, the reasons for their choice, and their effect on the selection and polarizing of ground relays. *W. A. Elmore*

March 11 — Transmission Line & Feeder Protection.
Zone distance, directional overcurrent, overcurrent. Application and setting of feeder relays. Coordination with fuses, reclosers, series trip devices. *W. A. Elmore*

March 18 — Transmission Line & Feeder Protection
Pilot wire systems. Protection and monitoring of pilot wire circuits. *W. A. Elmore*

March 25 — Transmission Line & Feeder Protection
The Utility tie. Multi-terminal and tapped transmission lines. *W. A. Elmore*

April 1 — System Stability, Reclosing, Load Shedding.
Discussion of fundamentals of system stability and out-of-step relaying. Coverage of reclosing. Discussion of reasons for and sensing devices to initiate load shedding.
W. A. Elmore

April 8 — Application and Setting by Computer Methods and Testing Philosophies.
Computer program for applying and setting protective relays on an electric power system with an example of a previously assigned problem.
Fundamentals of maintenance and testing.
J. L. Blackburn

TIME . . . . . 6:30-9:00 P.M. Tuesday nights — Starting January 21, 1969.

PLACE . . . . . Punch Bowl Room, Jersey Central — New Jersey Power & Light Co. Bldg., Madison Ave. at Punch Bowl Road, Morristown, N. J.

FEE . . . . . $35.00 to members (IEEE, ASME, NJSSPE, etc.) ; $40.00 to non-members. A $5.00 discount for early registration applied to both applications. Fees include text, *Applied Protective Relaying,* by Westinghouse Electric Corporation, Relay Instrument Division, Newark, N. J., and other printed materials.

REGISTRATION FORM — PROTECTIVE RELAY COURSE

Send to: A. J. Dolan
c/o Westinghouse Electric Corporation
67 Evergreen Pl.
East Orange, New Jersey Phone: (201) 465-2364

Name..... Tech. Society.....

Firm..... Position.....

Business Address ..... Phone.....

Home Address ..... Phone.....

Check Enclosed:

Member: $30.00.....; $35.00 after January 10.....

Non-Member: $35.00.....; $40.00 after January 10.....

Please make checks payable to: North Jersey Section IEEE.

FM Systems Lectures

The Communications Technology Group of the New York Section is presenting a series of six tutorial lectures on FM applications and theory. The talks will cover the broad range of the frequency modulation field. The stress will be on advances in the art, as well as simplifications and insight gained during the past decade. The coordinator of the series is Dr. Jacob Klapper of the Newark College of Engineering. The lectures are sponsored by the Study Group Committee.

The lectures will be held once weekly between February 20 and March 27. They will be given Thursday evenings, between 6:30 P.M. and 8:30 P.M. in the Little Theater, which is located in the New York Telephone Building at 140 West Street, Manhattan. The location is convenient to all subways and PATH trains.

The schedule and the lecturers are:

February 20 — *Introduction and Capitulation, Dr. Jacob Klapper, Newark College of Engineering.*

This lecture will provide the background and the connecting links for the series.

February 27 — *FM Threshold Extension, John T. Frankle, General Telephone and Electronics*

The active field of FM threshold extension will be given and design methods explored for low threshold FM receivers.

March 6 — *Filtering of FM Waves, Dr. Sol Rosenstark, Newark College of Engineering*

Classical methods will be reviewed and will be placed in perspective with recent progress and engineering use.

March 13 — *FM Equipment, Paul Gruber, Radio Engineering Laboratories*

The progress in the development of FM equipment and its interrelationship with new techniques and components will be explored.

March 20 — *Digital FM, Dr. Jacob Klapper, Newark College of Engineering*

Recent progress of this growing field will be reviewed. A simple look at the error mechanism and the calculation of error rates will be presented.

March 27 — *Single Sideband FM, Dr. K. H. Powers, RCA Laboratories*

The inventor of SSB-FM will lecture on this interesting subject.

Further information may be obtained from Mr. A. Karman of RCA (call (212) 698-7200 Ext. RJ 224). Checks should be made payable to the Comm-Technology Group Chapter, N. Y. Section, IEEE. Enclose a stamped, self-addressed envelope with your order. Please use the form below when ordering your ticket.

FM SYSTEMS LECTURE

Mr. A. Karman
RCA Frequency Bureau, Rm. 730
60 Broad Street
New York, N. Y. 10004

Check one

.....Member IEEE (Fee $15.00/6 lecture course)

.....Non-Member IEEE (Fee $25.00/6 lecture course)

.....Full time student member IEEE (Fee $5.00/6 lecture course)

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Report On:

Section Activities

The North Jersey Section exists solely to serve your professional needs as an engineer in the electrical sciences. To this end, the Section sponsors a multitude of activities matched to the wide spectrum of interests of the Section membership.

Chapters of six Professional Groups have been established in the Section and they hold frequent technical meetings on new and important topics in their fields of specialization. These groups encompass all aspects of Computers, Reliability, Microwave Theory and Techniques, Automatic Control, Power, and Communications Technology.

In addition, the North Jersey Section has joined with the New York and Long Island Sections to sponsor Professional Group Chapters specializing in the fields of Electron Devices, Engineering Management, Parts, Materials and Packaging, Vehicular Communication, Electromagnetic Compatibility, Aerospace and Electronics, and Engineering Medicine and Biology.

To supplement these specialized programs, the Section holds monthly meetings on topics of general interest including a number of field trips to facilities of high engineering interest.

Special attention is paid to the needs of student members. In addition to being welcome at all regular meetings, the Section supports all Student Chapters in the North Jersey and Metropolitan New York area. In addition, the Section sponsors an Annual Students' Night every December.

For the engineer who wants to up date his knowledge in a particular field or to learn about a new one, the Section sponsors a number of in depth educational programs. Thus far this year, the lecture series has included courses on Electrical Power Distribution, Digital Techniques, and Speed Reading. The series is continuing with courses concerning Protective Relay Devices and Semiconductors from a Power Point of View.

In addition to making available a varied technical program to its members, the Section takes great pride in the technical eminence which its members achieve in the engineering profession. Thus on Saturday, February 15, 1969, the Section will honor its newly elected Fellows and Award Winners. You are urged to attend this meeting honoring your fellow members (details appear on Page 3).

The administration of the Section is handled by the Executive Committee which meets the first Wednesday of every month (excluding the summer months) at the Verona Public Library. All members are welcome and urged to participate in these meetings.

If you have any questions concerning Section activities and/or suggestions concerning how the Section can serve you better, please direct them to Mr. M. M. Irvine, Bell Telephone Laboratories, Whippany, New Jersey 07981.

Student Affairs

Students' Night

The North Jersey Section sponsored the 1968-1969 Students' Night at the Stevens Institute of Technology on December 11th as reported by Professor James W. Earle of Newark College of Engineering, Student Activities Chairman.

Paul Greenfield, Chairman of the Stevens Institute of Technology Student Branch, served as Chairman of Students' Night.

Students attending the meeting were given industry donated door prizes such as RCA Radiotron Handbooks, Hewlett-Packard Impedance Slide Rules, etc.

The principal event of the evening was a panel composed of the chief engineers of several of the leading New Jersey Engineering companies. They described the characteristics that they would look for when hiring a new engineer. In addition to grades, the characteristics mentioned were participation in IEEE activities, prize paper contests, other extra-curricular activities, summer work in industry, etc. They were particularly interested in students who had done their "homework" — had prepared for their employment interview by reading about the work of the corporation to which they were applying.

A most interesting evening included a delicious buffet supper. Many thanks to Dr. Stanley Smith, Branch Counselor of the Stevens IEEE Branch and to Stevens Institute for planning and helping make possible a most interesting, enjoyable, and informative evening.

Students Assist at Open House

Professor Earle reports that the NCE Student Branch Members were most active at the recent Open House at NCE.

The Open House commenced at 10:30. Visitors were first escorted to the theatre for a short slide presentation. Guided tours were then available for visits to each of the six engineering departments. The electrical tour included the sophomore, junior, senior, reliability, laser, and research laboratories. Refreshments were served in the cafeteria.

Guests at the Open House had ample opportunity to ask questions about the engineering profession and discuss their future education with upper classmen and faculty members.

Prize Paper Contest

Now is the time to start on that Prize Paper for the Metropolitan Student Council Prize Paper Contest. Each year the Metropolitan Student Council sponsors a Student Prize Paper Contest. The contest will be held under the auspices of Student Activities Day.

Students attending schools in the New York, North Jersey, and Long Island Sections of the IEEE with Student or Student Associate Branches of IEEE are eligible.

The prizes to be presented are:

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

A $25.00 prize will be presented to the author of the paper judged best in each local Student Branch that is a member of the MSC.

Winners of this contest become eligible for the national contest sponsored by the IEEE. In the past, three winners have won this national contest.

Papers should cover technical and engineering aspects of a subject reasonably within or related to the areas wtih which the IEEE is concerned, and with which the author is familiar, either from his courses, his hobbies, his summer work, etc. The work need not be original in engineering content but should be original in treatment and concise in coverage of the author's contribution to that subject.

The deadline for submission of the papers to the Contest Secretary is usually during the latter part of March. For further details consult your Branch Counselor of Branch Chairman.

Power Meeting for Students

The Power Group of the IEEE is again sponsoring a Luncheon Seminar, to be held from 11:30 A.M. to 2:00 P.M. on Wednesday, January 29 in the Ivy Suite of the Statler Hilton Hotel, for students interested in the power field. Attendance will be by invitation only. Students interested in attending should contact their Branch Counselor.

Dr. Haroun Mahrous, Chairman of the Department of Electric Engineering at Pratt Institute, is once again in charge of the program and has arranged a most interesting panel and discussion session which will outline career opportunities and current research efforts in the power engineering field.

Five industries will each send two representatives to the seminar. The first representative will be a senior member of the company such as a vice-president or chief engineer, who will serve as a panel member. The junior representative will be a young engineer who will be seated with the students attending the seminar. The half hour panel session will be followed by a one-hour discussion.

All students are cordially invited to attend the Winter Power Meeting which will be held at the Statler Hilton Hotel from January 26 to 31, 1969. Students will be admitted free.

Students attending the luncheon seminar have a grand opportunity to spend the entire day at the Winter Meeting; the technical sessions should prove both informative and stimulating.

The Newsletter thanks Professor Stella Lawrence of Bronx Community College for this month's report on Student Affairs.

Membership Survey North Jersey Section

(Use average values; one week = 168 hours)

	Hours Per Week	Events Per Month
1. Business		
1.1 Hrs/wk. at place (or places) of employment including driving time and prorated business trips.	____	
1.2 Days/mo. on business trips		____
2. Family and Personal (outside of 1.1)		
2.1 Hrs/wk. eating and sleeping	____	
2.2 Hrs/wk. watching TV	____	
2.3 Hrs/wk. reading non-technical publications	____	
2.4 Hrs/wk. home and car maintenance	____	
2.5 Hrs/wk. other family and personal (social, medical, recreation, hobbies, children, church, etc.)	____	
2.6 Events/mo. family and personal (concerts, bowling, church, etc.)		____
2.7 Number/mo. non-technical magazines received (including those shared with family)		____
3. Civic and Political		
3.1 Hrs/wk. meetings and preparation	____	
3.2 Meetings/mo.		____
4. Professional and Technical (outside of 1.1)		
4.1 Hrs/wk. technical reading and study	____	
4.2 Hrs/wk. related meetings and preparation	____	
4.3 Meetings/mo.		____
4.4 Number/mo. technical and trade magazines or journals received		____

5. (a) Your age_____, (b) Years since joining IEEE_____, (c) Number of section IEEE meetings attended last year_____, (d) Number of regional or national IEEE meetings attended last year_____.

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Maitland McLarin
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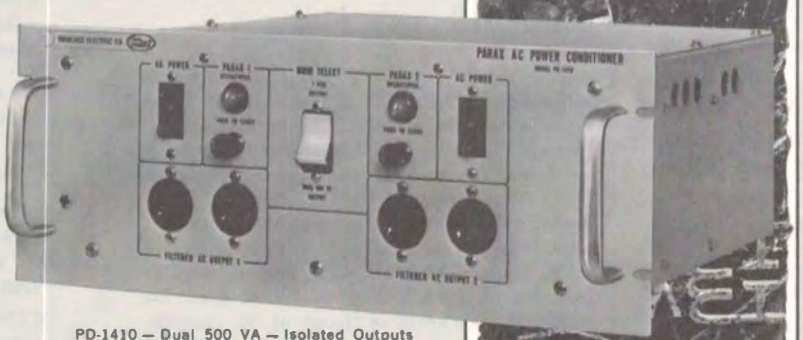

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