

Annual Banquet- Dance!



The IEEE

Newsletter

The Magazine of the North Jersey Section

Saturday, February 20th

7:00 P.M.

**ROBIN HOOD INN
VALLEY ROAD
CLIFTON, N. J.**

*Make Reservations with W. Glomb
by February 10, 1965*

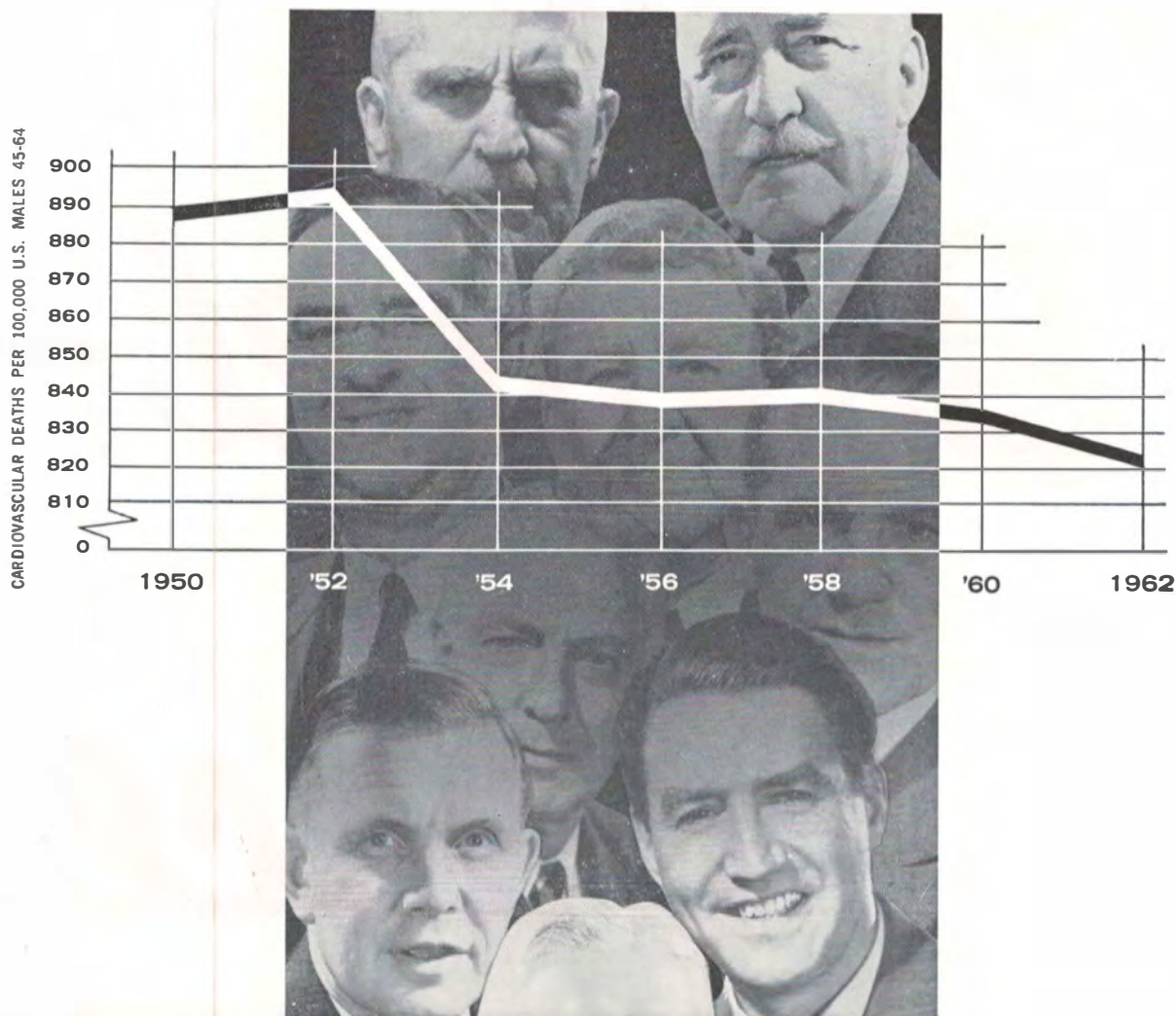
(See Page 5 for details)

F E B R U A R Y 1 9 6 5

Volume 11 / Number 6

Your Heart Association Reports:

HEART RESEARCH PAYS OFF FOR MEN 45 TO 64



Here's good news for all men in the U.S., aged 45 to 64. The death rate from the cardiovascular diseases in their age group dropped 7½% since 1950, the year following the first Heart Fund campaign.

This dramatic trend is making medical history. For the first time, deaths from high blood pressure and the heart disease it causes are down 50% among men in their most productive years. Deaths from strokes are down 26%.

Score it as another triumph for heart research in its quest for new ways to control and prevent the heart and blood vessel diseases. But remember—these diseases are still the nation's Number 1 killer, claiming more than 950,000 lives a year. More Heart Fund dollars will assure more gains.

**GIVE ...SO MORE
WILL LIVE**  **HEART FUND**

Editorial Notes

While one editor is on his way out, extending his stay, another one is on his way in. They meet in the hallway to discuss the past achievements of the Newsletter and its bright future.

Among its achievements, the Newsletter is now published on time and is in the IEEE members' hands before or about the first of the month. It is now possible to schedule meetings in the first part of every month. Through the efforts of the staff and the response from advertisers, the Newsletter is self-supporting.

In the future, after a smooth transition with no loss of ground, the Newsletter looks forward to stronger membership support through comments, ideas for improvement, and maybe offers of help. Let it become not only a newsletter to the members, but also a voice for the membership.

In the meantime, we'll enjoy ourselves and honor our newly elected Fellows of the IEEE, Kelly, Leeds, Sarnoff, and Section Award Winners at the Annual Banquet and Dance on Saturday, February 20, 1965.

M. K.

Calendar

Thursday, 28 January 1965

N. Y. Basic Sciences Division

"Developments in Microelectronics"

9:30 A.M.—Morning Session

1:30 P.M.—Afternoon Session

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

Registration at the Door.

Tuesday, February 9

Joint: Computers—Engineering
Writing & Speech

8:00 P.M.—"Protecting Computer
Programs from
Unauthorized Use"
ITT Communications
Systems
Paramus, N. J.

6:30 P.M.—Pre-meeting Dinner
Cambridge Inn
Garden State Plaza

Thursday, February 11

Automatic Control

8:00 P.M.—"Specifying the
Dynamic Performance of
Complex Control Systems"
Mr. George Biernson,
Sylvania

6:30 P.M.—Pre-meeting Dinner
Pomptonian Restaurant
Rte. 23 at Stevens Ave.
Cedar Grove, N. J.

Aerospace & Navigational Electronics

8:00 P.M.—"Present Status of
Research on
Clear Air Turbulence"
Willkie Memorial Auditorium
20 West 40th St., N. Y. C.

6:30 P.M.—Pre-meeting Dinner
Old Seidelberg Restaurant
626 Third Ave., N. Y. C.

Tuesday, February 16

Electromagnetic Compatibility

8:00 P.M.—"RF Radiation Hazards"
Paul C. Constant, Jr.
At: Willkie
Memorial Auditorium
20 W. 40th St., N. Y. C.

6:30 P.M.—Pre-Meeting Dinner
Old Seidelberg Restaurant
626 - 3rd Ave., N. Y. C.

Wednesday, February 17

Microwave Theory & Techniques

8:00 P.M.—"Recent Developments,
Solid State
Microwave Materials"
Dr. J. W. Nielsen
Arnold Auditorium,
Bell Telephone Labs.
Murray Hill, N. J.

6:30 P.M.—Pre-meeting Dinner
Wally's
Watchung, N. J.

Thursday, February 18

Spring Study Group

7:00 P.M.—"Electrical Underground
Distribution Systems"
Session 1 of 8
Jersey Central
Power and Light,
Madison Ave. at
Punch Bowl Rd., Morristown

7:00 P.M.—"SCR Course for Modern
Industrial Plants"
Session 1 of 7
Vail Hall, Bell Tel. Bldg.,
540 Broad St., Newark

N. Y. Section—Instrumentation Division

6:30 P.M.—Seminar on Standards of
Electrical Measurement
First of 8 Sessions
Western Union Auditorium,
160 West Broadway, N. Y. C.

Power

8:00 P.M.—Tour of New York
Herald Tribune Building
230 W. 41st St., N. Y. C.

Send for Tickets

Saturday, February 20

North Jersey Section Annual Banquet-Dance

7:00 P.M.—Reception

8:00 P.M.—Banquet
Robin Hood Inn
Valley Rd.
Clifton, N. J.

Wednesday, February 24

Joint: Component Parts and Reliability

7:30 P.M.—"Cost and
Reliability Considerations—
Integrated Circuits"
Mrs. Frances Hugle
Stevens Institute
Seminar Room
Stevens Center,
Hoboken, N. J.

The IEEE Newsletter

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Volume 11

February, 1965

No. 6

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ABOUT ADDRESS CHANGES

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.

**REPORT ALL ADDRESS CHANGES TO:
INSTITUTE OF ELECTRICAL AND ELECTRONICS
ENGINEERS, BOX A, LENOX HILL STATION,
NEW YORK 21, N. Y.**

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Executive Committee Meetings

at Verona Public Library

February 3

March 3

IEEE Convention March 22-25

April 7

May 5

June 2

Thursday, March 18

Automatic Control

"The Ubiquity of
Control Theory in
Biological Processes"
Prof. R. W. Jones,
Northwestern U.

Wednesday, March 24

N. Y. Power

6:30 P.M.—Ravenswood Tour
Vernon Blvd. and
40th Ave., L. I. C.

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Ballantine DC/AC Voltmeter/Ohmmeter

Model 345

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0 — 350 V ac ($\frac{20 \text{ Hz}}{1000 \text{ MHz}}$); 0 — 5,000 M Ω**

Ballantine's Model 345 DC/AC Voltmeter/Ohmmeter is a multi-purpose instrument for use in the laboratory and on the production line.

It features a single, 5-inch, mirror-backed logarithmic scale and decade switching for both ac/dc volts and ohms measurements . . . and assures you of unrivalled ease, speed, accuracy and resolution in making these measurements. Its logarithmic scale, for example, permits an accuracy specification of 1% of indication for dc; 2% of indication for ac; and 3% of indication for ohms.

Since there are no wrong scales to read, errors in reading are reduced greatly. Because of the instrument's decade switching, you can make more measurements without the need for range switching.

The Model 345's accuracy is maintained for power line voltage changes of $\pm 20\%$, so necessary for use on the production line. Because its built-in ac and dc reference standards enable you to check its accuracy in a few seconds, there's no need of removing it from service.

PARTIAL SPECIFICATIONS

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Resistance Range 0 to 5,000 M Ω
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above 100 M Ω not specified

DC VOLT METER

Voltage Range 0 to $\pm 1,100$ V
in five ranges

Accuracy $\pm 1\%$ of indication from
1 V to 1,100V; $\pm 1.5\%$ of indication
 ± 1 mV, below 1 V

AC VOLT METER

Voltage Range 0 to 350 V in five ranges

Frequency Range 20 Hz to 1,000 MHz

Accuracy 50 Hz to 100 MHz, $\pm 2\%$ of indication from 1 V to 350 V; 0-1V,
 $\pm 2\%$ of indication ± 5 mV; 100 MHz — 1,000 MHz, $\pm 10\%$ of indication ± 5 mV

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N. Y. Instrumentation Div.

STANDARDS SEMINAR

Dates: Thursdays from February 18
through April 8, 1965

Time: 6:30 to 8:30 P.M.

Location: Western Union Auditorium
160 West Broadway,
New York City
(near Canal Street Station
of all subways)

Material covered will include:

1. Feb. 18—

Introduction

F. L. Hermach, engineer, National
Bureau of Standards, Washington,
D.C.

2. Feb. 25—

Direct Current Resistance Measure- ments

H. L. Daneman, Leeds & Northrup
Co., Phila., Pa.

3. Mar. 4—

Capacitance and Inductance Standards
Dr. John F. Hersh, engineer, General
Radio Co., Concord, Mass.

4. Mar. 11—

Measuring DC Voltage and Current
John C. Melcher, Head, Instruments
& Control Group, Leeds & Northrup
Co., Philadelphia, Pa.
Precision Potentiometers

Dr. W. G. Amey, Manager, Research
Division, (same company).

5. Mar. 18—

AC Voltage and Current Measure- ments at Power Frequencies

R. Estoppey, staff engineer, Research
and Development Dept., Weston In-
strument Division, Daystrom, Inc.,
Newark, N. J.

6. Mar. 25—Not yet scheduled

7. Apr. 1—

Power and Energy Measurements

John Philbrick, specialist, Measure-
ments Standards Meter Dept., General
Electric, Somersworth, N. H.

8. Apr. 8—

RF Microwave Voltage Standards Measurements

Wallace F. White, project engineer,
Ballantine Laboratories, Inc., Boon-
ton, N. J.

Attendance fees are: \$25 for non-
members; \$15 for members of any affil-
iated professional society; \$1 for student

Continued on Page 12

ADVANCE MEETING NOTICE

Section Meeting, Thursday, March 18, 1965

Co-Sponsored by

Group on Automatic Control

"The Ubiquity of Control Theory in
Biological Processes" will be discussed
by Professor Richard W. Jones of North-
western University. Current biological
thinking shows a widespread introduction
of the terminology and concepts of control
and feedback into the study of life
processes at all levels of organization.
This development will be examined by
considering some specific examples
largely chosen to illustrate aspects of the
temperature regulating process.

Joint: Computers Engineering Writing & Speech

Protecting Computer Programs From Unauthorized Use

The development of computer software theory and techniques has paralleled the development of computer hardware theory and techniques. While hardware developments are protectable by patents, the same is not true of software developments. Once a program is written, it becomes available to others by one means or another.

Mr. Roland T. Bryan, a registered patent lawyer, will treat this problem in his talk on "Practical Protection of Computer Programs." The talk will include a review of general principles in the laws of patents, copyrights, trade secrets, and unfair competition under which computer programs may be protected. Some practical guidelines will be given for those working in the field.

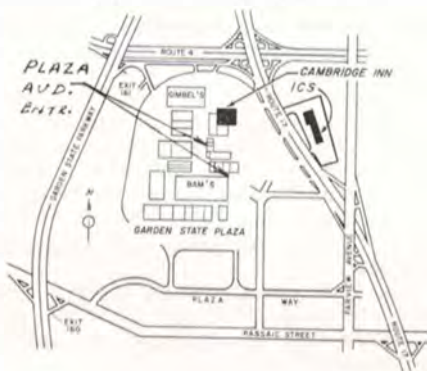
Mr. Bryan is a partner in the firm of Robertson, Smythe and Bryan, Stamford, Connecticut, and is a registered patent lawyer as well as a member of the Bars of New York and Connecticut.

He received a degree in engineering from Cornell University and practiced as a research and design engineer in the conventional and atomic power fields.

Mr. Bryan graduated in law from St. John's University and has since practiced law for Babcock & Wilcox Co. He was Corporate Counsel for Reeves Brothers, Inc. before joining his present firm.

Meeting Notice

Date: Tuesday,
February 9, 1965
Time: 8:00 P.M.
Place: ITT Communication
Systems, Inc.
Routes 4 and 17,
Paramus, N. J.
(Opposite Garden
State Plaza)
Subject: Practical Protection of
Computer Programs
Speaker: Mr. Roland T. Bryan
**Pre-Meeting
Dinner:** 6:30 P.M.
Cambridge Inn
Garden State Plaza



North Jersey Section ANNUAL BANQUET - DANCE

Saturday, February 20, 1965

7:00 P.M. - 1:00 A.M.

ROBIN HOOD INN
Valley Road
Clifton, New Jersey

RECEPTION — 7:00 P.M.

Generous assortment of hot and cold hors d'oeuvres, and cocktails of your choice.

BANQUET — 8:00 P.M.

Menu includes: appetizer, soup, Roast Prime Ribs of Beef, salad, vegetable, potatoes, dessert, and beverages.

FORMAL PROGRAM

Welcoming remarks by J. K. Redmon, Chairman, North Jersey Section.
"IEEE — Status Report" — Donald G. Fink, Manager, IEEE.

Mr. Fink, a distinguished IEEE Fellow himself, and editor, author, research laboratory director, and now manager of the Institute, is uniquely qualified to discuss the current status of the Institute.

Introduction and Recognition of
Newly-Elected Fellows:

A. Sidney Brookes
John W. Emling
John R. Hefele
Charles H. Hoffman
John E. Karlin
Harry R. Seelen

Awards:

Mervin J. Kelly: Harald T. Friis; Morris
E. Leeds: John G. Ferguson; David
Sarnoff: Henri Busignies.

Section Awards: A. W. Parkes
and J. Schwanhausser.

DANCING — 10:00 P.M. to 1:00 A.M.

to the melodious music of William Hands.

Reservations are limited to 235, so here is what you should do to insure your space for this gala event. TODAY: Complete the coupon below and follow the directions detailed.

RESERVATION COUPON:

To: Walter L. Glomb
Dinner Chairman
Space Communications Laboratory (52113)
ITT Federal Laboratories
390 Washington Avenue
Nutley, New Jersey 07110

Enclosed please find my check (or money order) made payable to the North Jersey Section IEEE in the Amount of \$ (\$6.00 each) for which please reserve in my name tickets for the North Jersey Section, Annual Section Dinner on February 20, 1965.

Enclosed also is a self-addressed, stamped envelope to return the tickets to me. (If received after February 10th, or without stamped self-addressed envelope, tickets will be held at the door.)

Name (Please Print)

Address



Executive Committee Column

IEEE EDUCATION COMMITTEE

The engineer today finds himself in a rapidly expanding and advancing technology which at times seems to defy the individual's ability to keep abreast. One of the greater responsibilities of a professional society such as IEEE is to provide a cooperative atmosphere where those who have special knowledge can impart this knowledge to other engineers who have a need. The Education Committee of the North Jersey Section is charged with being the organizing force which brings these people together. This must, by nature, be a sensitive, responsive committee which will try to anticipate the special educational needs of our section members and do its best to organize programs which will satisfy these requirements. There is no intent to compete with local engineering colleges but rather to supplement their programs in those areas where they are not yet prepared to instruct. It is important that the Education Committee members alone do not supply ideas which result in the various educational programs within the section. Each specialized Group Chapter should be encouraged to organize and conduct courses or seminars in those special fields where they excel. The Education Committee stands ready and anxious to provide whatever assistance the Group might need to make the course more successful. The general membership also provides a very important part in this picture. One of the greatest contributions any member can make, short of actually working on the committee, is to let the Education Committee know just what courses he would like to see offered. Without this sort of communication we are operating in a vacuum, completely insulated from the very information necessary to the establishment of successful courses. If you have heard of a successful and interesting course in some other Section, pass the word along. We most likely could have the same or a similar course in this area. Another valuable bit of information is the knowledge of a well-informed and articulate specialist among your associates who might be willing to teach in one of our courses. Often good ideas go by the wayside for lack of men to present the course. No course or seminar is any better than the instructors or lecturers. Unless a course has the promise of helping educate our members in a sound and useful manner it should not be allowed to use up valuable time.

We work with a composite group from as varied backgrounds as can be assembled within the Section. Power, Communications, Electronics, and several other of the categories of engineers found in the IEEE are represented in this group. By this heterogeneous mixture an attempt is made to keep lines of communication with as many fields as possible. This is a committee which is always open. If you would like to participate, let us know.

This coming Spring there are two courses which have been organized by this committee. One of these is definitely power-oriented. This will be devoted to the study of Underground Power Distribution. Every attempt has been made to make available the very latest technology in this field. The other course to be offered is in the field of Semiconductor Control. This course is patterned after a similar course given in the Spring of 1964 in the Connecticut Section. It was very popular there and is a good example of how we can profit by information on what other sections are doing. For the Fall of 1965 we are organizing a very exciting course of broad general interest. This is to be a general survey of the subject of Magnetics. It will start out with a modern look at the understanding of the theory of magnetic materials and continue right through the studies of modern materials and practices. The course will cover the spectrum from the very low power frequencies to the very high microwave frequencies spaced from microvolts to gigawatts. The Power engineers will be amazed at how much they have in common with the Electronics specialists. This is going to be the first course since the merger which will make use of the knowledge of every member of the Education Committee.

Of course, work is still underway toward planning for next Fall's Educational Program as well as next Spring's. If you have something to contribute, please contact the Chairman of the Education Committee.

Charles G. Gorss
Hewlett-Packard Boonton Division
Green Pond Road
Rockaway, N. J.
OA 7-6400 — Ext. 231

professional notices

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N. Y. Power and Industrial Section

TOUR OF NEW YORK HERALD TRIBUNE BUILDING

Visit the City Room and the Editorial Desk. See the news assembled, written, and printed. You will find the Tour valuable as well as interesting.

Thursday, February 18, 1965 — 8 P.M.
Attendance Limited — No Children Permitted. Advance Registration Required. Send your request for tickets to: John J. Rose, Consolidated Edison Co., 4 Irving Place — Room 1250-S, New York, N. Y. 10003. Please enclose stamped, self-addressed envelope.

New York Herald Tribune Building, 230 West 41st Street, New York 3, N. Y. Between 7th and 8th Avenues. 9th Floor Auditorium.

PLEASE POST ON BULLETIN BOARD — ALL COURSES ARE OPEN TO THE PUBLIC

The Institute of Electrical and Electronic Engineers North Jersey Section

SPRING 1965 STUDY GROUP

ELECTRICAL UNDERGROUND DISTRIBUTION SYSTEMS

In the past decade there has evolved an increased interest in electric underground distribution systems to provide electric service in residential areas. The trend toward aesthetics in the development of new, suburban communities characterized by cluster developments, curved streets, irregular lot arrangements and zoning for research and development areas has increased the awareness of the aesthetic values by the public.

Technological advancements in products and materials, development of new techniques, work methods and codes have advanced the economic feasibility of underground distribution systems. Continued dynamic growth and development in these areas will, in time, reduce the overall cost such that it may be competitive with overhead in high load density areas.

This dynamic growth and interest in underground distribution systems presents a challenge and has developed the need for a better understanding among all concerned.

This study group is intended for the utility engineer, consulting engineer, contractor and architect who are primarily concerned with and desire additional knowledge in underground distribution. Those who attend will each acquire a basic understanding of the concept; materials and equipment; techniques; operation; reliability and economics of underground distribution.

TIME: 7:00 - 9:00 p.m. starting Thursday, February 18, 1965.

LOCATION: Jersey Central Power & Light Company, Headquarters Bldg., Madison Avenue at Punch Bowl Road, Morristown.

REGISTRATION FEE: \$20.00 to members of IEEE, ASME, ASCE, AIME, NJSSPE, etc.
\$25.00 to non-members.

For advanced registrants (registrations received at least one week before first session) deduct \$5.00, thereby reducing the cost of the course to \$15.00 for members and \$20.00 for non-members.

ADVANCED REGISTRATION FORM

Name Position Tech. Society Affiliation

Company Affiliation Location

Check or Money Order Enclosed

☐ Member \$15.00

☐ Non-Member \$20.00

Send registration Forms to and/or call the following for copy:

Mr. J. C. Gass
Allis-Chalmers Mfg. Co.
2222 Morris Avenue
Union, New Jersey
Phone: 687-3700

Mr. J. C. Skroski
Jersey Central Power & Light Company
Madison Avenue at Punch Bowl Road
Morristown, New Jersey
Phone: 539-6111

ELECTRICAL UNDERGROUND DISTRIBUTION SYSTEMS

Session No. 1 Thursday, February 18, 1965

FUNDAMENTAL CONCEPTS AND SYSTEM DESIGN

An analysis of the evolution of underground distribution system encompassing the design relative to the primary transformer-secondary system, operating voltage levels, front vs. rear lot construction, etc.

Instructor: R. F. Gilton, Senior Project Engineer
Allis-Chalmers Manufacturing Co.

Session No. 2 Thursday, February 25, 1965

CABLE DESIGN AND APPLICATION

Primary, secondary and service cable designs for direct burial, duct, conduit and cable in pipe system, type of insulation, protective covering, trenching procedures, cable termination and system design arrangement will be explored.

Instructor: Representative from a Cable Manufacturer

Session Nos. 3 and 4 Thursday, March 4 and 11, 1965

TRANSFORMER DESIGN AND APPLICATION

Transformer design criteria, reliability of core and coils, interchangeability of ratings, noise levels, cable termination, switching, fusing, fault indicators and lightning protection.

Instructor: Representative from an Electrical Equipment Manufacturer

Session Nos. 5 and 6 Thursday, March 18 and 25, 1965

TYPICAL INSTALLATION AND OPERATION OF UNDERGROUND DISTRIBUTION SYSTEM

Installation and construction practices, material used, reliability, utility and underwriter requirements, operation, and economics of various types of systems.

Instructor: R. E. Albright, Division Engineer
Jersey Central Power & Light Co.

Session No. 7 Thursday, April 1, 1965

TELEPHONE UNDERGROUND DISTRIBUTION SYSTEMS

The history, materials, design, economics, requirements and joint trench occupancy as related to telephone underground systems will be reviewed.

Instructor: C. Willcox, Planning Engineer
Underground Plant, New Jersey Bell Telephone Co.

Session No. 8 Thursday, April 8, 1965

HIGH RISE APARTMENT DISTRIBUTION SYSTEMS

A review of the primary, transformer-secondary distribution, transformed enclosures, cable designs, insulation, installation and construction practices pertaining to "vertical underground" distribution systems.

Instructor: F. J. McGaughey, Application Engineer
Allis-Chalmers Manufacturing Co.

The Institute of Electrical and Electronic Engineers

North Jersey Section

SPRING 1965 STUDY GROUP

SEMICONDUCTOR CONTROL FOR MODERN INDUSTRIAL PLANTS

The industrial control field is experiencing such a dynamic growth in so many areas today that it presents a challenge for plant personnel to keep abreast of the field. In the past ten years semiconductor circuits have revolutionized the control of industrial processes.

The study group is intended to give a broad background on the fundamentals of semiconductor devices and their application to industrial motor and power control. The subject will be treated in a fashion to be a refresher course for the experienced engineer, yet to still be a basic course for engineers, technicians, maintenance and other personnel who have had little or no direct experience with semiconductor devices.

The Educational Committee has always felt that actual practical experience is necessary for a complete understanding of any subject; however, in most study groups it has not been feasible. This year we feel we can accomplish this end by supplying a complete set of components, which will enable the student to build an experimental size silicon controlled rectifier AC-DC motor speed control system. Through analysis and troubleshooting of the SCR motor speed control in class, and actual construction and operation of the unit at home, the individual can acquire a thorough understanding of the SCR. The construction and troubleshooting techniques derived from the experimental speed control can then be applied to all forms of static state industrial control. Also, this unit will have a practical use as an adjustable speed power source for an electric drill or other small universal motor.

As can be seen from studying the schedule of sessions, your instructors will be some of the top people of the leading manufacturers of semiconductor devices and control circuits.

PERTINENT DETAILS FOR IEEE STUDY GROUP

Starting Date:	Thursday, February 18, 1965
Time:	7:00 - 9:00 P.M.
Place:	Vail Hall, N. J. Bell Tel. Bldg., 540 Broad St., Newark, N. J.
Registration Fee:	\$20.00 to members of IEEE, ASME, AIME, ASCE, etc. \$25.00 to non-members
Kit of Components:	\$8.00 (includes SCR control kit, SCR manual, and Hobby manual)
Special Offer:	Advance registrants, whose mail registrations are received before Thursday, February 11, will obtain a \$5.00 savings, thereby making the total cost of the course \$15.00 to members and \$20.00 to non-members.

ADVANCE REGISTRATION FORM

Name Position Tech. Society Affiliation

Company Affiliation Location

Check or Money Order Enclosed ☐ Member \$23.00 ☐ Non-Member \$28.00

Send registration forms to and/or call the following for information:

Samuel F. DeNisi
c/o General Dynamics/Electro Dynamic
150 Avenel St., Avenel, N. J.
Phone: 636-9100

Mr. Al Dolan
c/o Westinghouse Electric Corp.
1180 Raymond Blvd., Newark, N. J.
Phone: 621-9000

SEMICONDUCTOR CONTROL FOR MODERN INDUSTRIAL PLANTS

Session No. 1 Thursday, February 18, 1965

FUNDAMENTALS OF SEMICONDUCTORS

Rectifiers, silicon controlled rectifiers, zener diodes, transient voltage suppressors, photo conductive devices — What they are — How they work — Power capabilities — Care — Handling.

Instructor: Dr. William Green, Product Manager/Switching Devices
Semiconductor Division; Westinghouse Electric Corp., Youngwood, Pa.

Session No. 2 Thursday, February 25, 1965

BASIC CIRCUITRY

Rectifier & SCR circuits. Elementary explanation of static switching and phase control.

Instructor: Mr. Donald Pisarcik, Application Engineering Manager
Semiconductor Division; Westinghouse Electric Corp., Youngwood, Pa.

Session No. 3 Thursday, March 4, 1965

UTILIZATION OF SILICON CONTROLLED RECTIFIERS

SCR dynamic characteristics, protection and ratings of semiconductors. Introduction to new semiconductor devices. Detailed analysis of experimental motor speed control for home construction.

Instructor: Mr. John Hey, Application Engineer
Rectifier Components Division; General Electric Co., Auburn, N. Y.

Session No. 4 Thursday, March 11, 1965

FRACTIONAL H.P. APPLICATIONS OF SCR'S

Control systems for use with fractional H.P. DC motors and universal type motors. Consumer products systems for use with electric hand and bench tools and with household appliances. Discussion and troubleshooting the experimental motor speed control.

Instructor: Mr. John E. Mungenast, Manager, Light Industrial Sales
Rectifier Components Division; General Electric Co., Auburn, N. Y.

Session No. 5 Thursday, March 18, 1965

SILICON CONTROLLED RECTIFIERS FOR DC MOTOR CONTROL — PART I

Motor field control, armature power supplies. Application of SCR controls to existing motors and generators.

Instructor: Mr. Sol Berman, Manager, Application Engineering Section
Electric Regulator Controls, Norwalk, Conn.

Session No. 6 Thursday, March 25, 1965

SILICON CONTROLLED RECTIFIERS FOR DC MOTOR CONTROL — PART II

Regulating systems, system drives, addition of features such as dynamic braking, controlled deceleration, etc.

Instructor: Mr. Donald Thorson, System Development Engineer
Cutler Hammer, Inc., Milwaukee, Wisconsin

Session No. 7 Thursday, April 1, 1965

SILICON CONTROLLED RECTIFIERS FOR AC MOTOR CONTROL

Motor starters, frequency conversion, AC adjustable speed drives, use of rectifiers and silicon controlled rectifiers on induction and synchronous motor control.

Instructor: Mr. C. R. Helmick, Systems Engineering Dept.
Westinghouse Electric Corp., Pittsburgh, Pa.

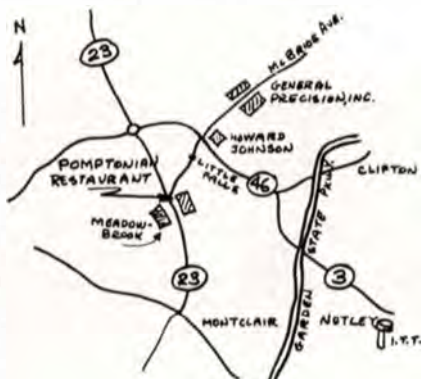
Automatic Control

Specifying the Dynamic Performance of Complex Control Systems



Mr. George Biernson, Senior Engineering Specialist of the Applied Research Laboratory of Sylvania Electronic Systems, will speak at the February meeting of the Group on Automatic Controls. The meeting will be held at the Pomptonian Restaurant, Route 23 at Stevens Avenue, Cedar Grove, New Jersey on Thursday, February 11, 1965 at 8:00 P.M.

In practical situations it is often required for a design to proceed despite a lack of significant information. In such cases it is very desirable to be able to describe the dynamic performance within practical limits of uncertainty by specifying



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Meeting Notice

Subject: Specifying the Dynamic Performance of Complex Control Systems
Speaker: Mr. George Biernson, Senior Engineering Specialist, Sylvania Electronic Systems
Place: Pomptonian Restaurant, Route 23 at Stevens Avenue, Cedar Grove, New Jersey (across street from the Meadowbrook)
Date: February 11, 1965 at 8:00 P.M.
Pre-Meeting Dinner: Top Sirloin Roast Beef Dinner, \$3.25 (includes gratuity) at 6:30 P.M.

ing a few readily measurable critical parameters. The approach Mr. Biernson discusses has been very effective in such situations.

A pre-meeting dinner will be held at 6:30 P.M. at the Pomptonian Restaurant. The meeting program will start at 8:00, and all are most welcome at either time.

About The Speaker

George Biernson (A'53, M'57, SM'62) was born in Newton, Mass. He received the BSEE and the MS in Economics at the Massachusetts Institute of Technology.

In 1956 he joined the Applied Research

Laboratory of Sylvania Electronic Systems, where he is now a Senior Engineering Specialist. He has worked on radar and control systems, and more recently on bionics research, with particular emphasis on color vision. He designed the control system for the high-accuracy 60-foot antennas which are now being used in the Syncom satellite communication system at Camp Roberts, California and Ft. Dix, New Jersey.

He was one of the founders of the IEEE group on Automatic Control, and was secretary of the group and chairman of the Boston Section. He has served on several committees working on automatic control terminology.

Biomedical Electronics

ULTRASONICS

DISCUSSION GROUP

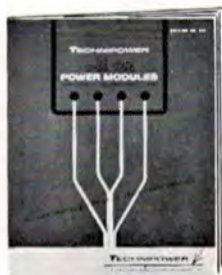
All those interested in forming an Ultrasonics Discussion Group, please write to Dr. Gilbert Baum, Ultrasonics Laboratory, Bldg. #3, Bronx VA Hospital, 130 W. Kingsbridge Rd., Bronx, N. Y. 10468, or phone LU 4-9000, Ext. 236.

The primary purpose of this group is the discussion and dissemination of the diagnostic applications of ultrasonography, including physics and instrumentation. In addition, the application of intensified focused ultrasound in research and therapy will be discussed from time to time. Meeting times and place for this group are to be established.

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IEEE ELEVATES 125 TO GRADE OF FELLOW FOR OUTSTANDING PROFESSIONAL CONTRIBUTIONS

The Board of Directors of the Institute of Electrical and Electronics Engineers (IEEE) has elevated 125 of its members to the grade of Fellow. The election of these Fellows is effective as of January 1, 1965. Presentation of the Fellow award certificates will be made locally by the IEEE Section to which each Fellow belongs. Recognition of the awards will also be made by the President of IEEE at the Annual Banquet, March 24, 1965

A. Sidney Brookes, Public Service Electric and Gas Co., Newark, N. J.

For contributions in the fields of lightning protection and power cable design.

John W. Emling, Executive Director, Transmission Systems Engineering Div., Bell Telephone Laboratories, Inc., Murray Hill, N. J.

For contributions to the principles of the design and rating of communication systems.

John R. Hefe, Bell Telephone Laboratories, Murray Hill, N. J.

For contributions to research and engineering on visual communications.

Charles H. Hoffman, Public Service Electric and Gas Company, Newark, N. J.

For contributions to the economic planning of large power systems.

John E. Karlin, Head, Human Factors Research Dept., Bell Telephone Labs., Murray Hill, N. J.

For contributions to the understanding of man-machine problems and their relation to telephony.

Harry R. Seelen, Manager, Operations, Radio Corporation of America, Harrison, N. J.

For contributions to the design and development of electronic receiving tubes, cathode-ray tubes and color kinescopes.

during the IEEE International Convention in New York City.

The grade of Fellow is the highest in the 150,000-member IEEE and is awarded by invitation only. It is a hallmark of unusual distinction and is conferred only upon persons of outstanding and extraordinary qualifications in their particular fields.

Reflecting the international membership of the IEEE, the 1965 Fellows come from Canada, Germany, India, Japan, The Netherlands, and Switzerland as well as the United States.

The North Jersey Section is proud to contribute the following members:



A. S. Brookes graduated from the Massachusetts Institute of Technology in 1926 with a degree of BSEE. In that year he entered the cadet engineer training course of Public Service Electric and Gas Company.

After three years on a lightning investigation, a cooperative venture of Westinghouse and Public Service, he entered underground engineering. During the next thirty years he was associated with all phases of underground from residential distribution and low-voltage networks to 138 kv transmission. At present he supervises underground engineering with a title of Distribution Plant Engineer Underground.

His committee activities have been numerous and have included membership in IEEE Insulated Conductors Committee, National Association of Corrosion Engineers, and the AEIC Cable Engineering Section (Chairman 1956-58). In connection with the latter he was active on the AEIC-EEI-Mfrs. 345 kv cable test project at Cornell. In 1962 he became the U. S. Representative to the CIGRE Committee on High Tension Cables. He is the author of numerous papers on lightning, corrosion and cable problems.



John W. Emling is Executive Director of the Transmission Systems Engineering Division at Bell Telephone Laboratories, Incorporated, Murray Hill, New Jersey. He began his Bell System career in 1925 with the Development and Research Department of the American Telephone and Telegraph Company, where he was concerned with transmission standards and the development of a system for effective transmission rating. After joining Bell Telephone Laboratories in 1934, he continued in similar work until World War II, when he undertook developments in the field of underwater acoustics.

From 1945 to 1947 Mr. Emling was engaged in transmission and field engineering on power line carrier. He then turned to Systems Engineering, particularly economic studies, and in 1951 was named Systems Studies Engineer. In 1952 he was appointed Transmission Engineer, with responsibilities including transmission engineering of the projected trans-atlantic telephone cable system. This involved several visits to England as a member of the team working with British Post Office engineers on plans for the new cable. As Director of Transmission Engineering, the post he assumed in 1955,

Mr. Emling was concerned with Systems Engineering Studies in the fields of engineering economy, voice-frequency transmission, rural carrier, radio, television and further transmission and planning studies of the trans-atlantic cable system. In 1962 he was appointed to his present position as Executive Director of the Transmission Systems Engineering Division with responsibility for the Systems Engineering aspects of all types of transmission systems and for Human Factors Research on communication systems.

Mr. Emling received the BSEE degree from the University of Pennsylvania in 1925. He is a member of the Acoustical Society of America, the Institute of Electrical and Electronics Engineers, and the American Association for Advancement of Science. He also belongs to the Eta Kappa Nu and Tau Beta Pi honorary engineering societies. A native of Erie, Pennsylvania, he and Mrs. Emling live in Morristown, New Jersey.

John R. Hefe

*Photograph and biography
not available at time
of publication*



C. H. Hoffman received his Bachelor's degree in electrical engineering in 1938 from Lehigh University and his Master's degree from the Massachusetts Institute of Technology. He has been with Public Service Electric and Gas Company since 1940 in various assignments, mostly related to power system planning and digital computer applications. He is now head of the System Planning and Development Department, which is charged with the determination of when, where, and what changes or additions to system facilities are justified in order to provide an adequate electricity supply service at minimum cost.

Mr. Hoffman served on active duty in the U. S. Navy from 1942 to 1945, with two years of this period spent as a radar maintenance officer on the USS Wasp.

Mr. Hoffman is a member of several industry committees, including the EEI System Planning Subcommittee and the AEIC Committee on Power Distribution. He is the author of numerous technical papers, including a series applying digital computer techniques to power system planning. He is a licensed professional engineer in the State of New Jersey and is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi.

Mr. Hoffman lives at 510 Crescent Parkway, Sea Girt, where he and his wife are active in community affairs.

Continued from Page 4

members. Those wishing to register prior to February 18, 1965 should make checks payable to Instrumentation Division, New York Section, IEEE. Checks, along with name, company, professional society and self-addressed envelope should be mailed to Robert H. Postal, Study Group Chairman, American Cyanamid Co., Wayne, N. J. Early registration is appreciated, preferably by Feb. 1st.



John E. Karlin was born in Johannesburg, Transvaal, South Africa and received the BA (1938) and MA (1939) degrees in psychology from the University of Cape-town, South Africa. He continued his studies under a Commonwealth Scholarship and received the PhD from the University of Chicago in 1942.

For the next three years he was engaged in military communications research at Harvard University's Psycho-Acoustic Laboratory, meanwhile taking night courses in electrical engineering at Harvard and at Northwestern University.

In 1945 he became the first research psychologist to join Bell Telephone Laboratories where he was engaged initially in studies of hearing. In 1949 he was part of a small group formed in the research department to look into methods of determining what telephone users are likely to want in the future. This work was later extended to include man-machine problems, particularly human communication characteristics as they affect the man-machine coupling problem in telephony. Dr. Karlin currently heads the human factors engineering research department at Bell Laboratories.

He is a Fellow of the American Psychological Association and the Institute of Electrical and Electronics Engineers, and is a member of the Acoustical Society of America and the American Association for the Advancement of Science.



Harry R. Seelen received his BS from Providence College in 1929. He entered the employ of RCA in 1929 and advanced through various engineering and supervisory positions in the Engineering Department. In 1949 he became Manager of the Engineering Department at the Lancaster plant, and in 1954 became Operations Manager, Color Picture Tubes at the Harrison plant.

In 1955 he was awarded The RCA Award of Merit for development of the color tube.

He has written articles on tube design and construction. He holds patents in this field and has been associated with many of the major tube developments emanating from RCA in the last 25 years.

RAVENSWOOD TOUR

Group will meet at Ravenswood at 6:30 P.M. on Wednesday, March 24, 1965. Group is limited to 40 persons.

Means of transportation either by car or IRT train to Vernon—Jackson Station then bus at street level to Vernon B'ld. & 40th Avenue or Independent train either "E" or "F" to Queens Plaza then Welfare Island bus to Vernon B'ld. & 40th Avenue.

Send for tickets to:

A. Mazarella, Room 1341-S, 4 Irving Place, New York City, N. Y.

Note: No request will be honored without stamped self-addressed envelope.

Microwave Theory & Techniques

RECENT DEVELOPMENTS IN SOLID STATE MICROWAVE MATERIALS

Some recent results on the preparation and properties of new microwave magnetic materials and on the improvement of materials currently used in microwave devices will be presented. The discussion will be in two parts: the growth and improvement of properties of single crystals, and the use of hot pressing for the preparation of polycrystalline materials.

Meeting Notice

Date: Monday, February 17, 1965
Time: 8:00 P.M.
Place: Arnold Auditorium, Bell Tel. Labs., Murray Hill, N. J.
Subject: Recent Developments, Solid State Microwave Materials
Speaker: Dr. J. W. Nielsen, Airtron
Pre-Meeting Dinner: 6:30 P.M. Wally's Tavern-on-the-Hill, Watchung, N. J.

James W. Nielsen, Ph.D., Airtron Division of Litton Industries is Manager of the Solid State Materials Laboratory. Dr. Nielsen directs Airtron's work on the growth of very large, single crystal yttrium iron garnets for application in microwave limiters, especially for high power and high duty cycle radars.

A native of St. Michael, Nebraska, Dr. Nielsen graduated from Kearney State College in March 1945. He spent 16 months in the Navy, and then attended the University of Minnesota, 1947-1948, and received his M.S. in Physical Chemistry in June 1948. He received his Ph.D. in Physical Chemistry in 1953.

Joint: Component Parts & Reliability

Integrated Circuits — Cost and Reliability Considerations

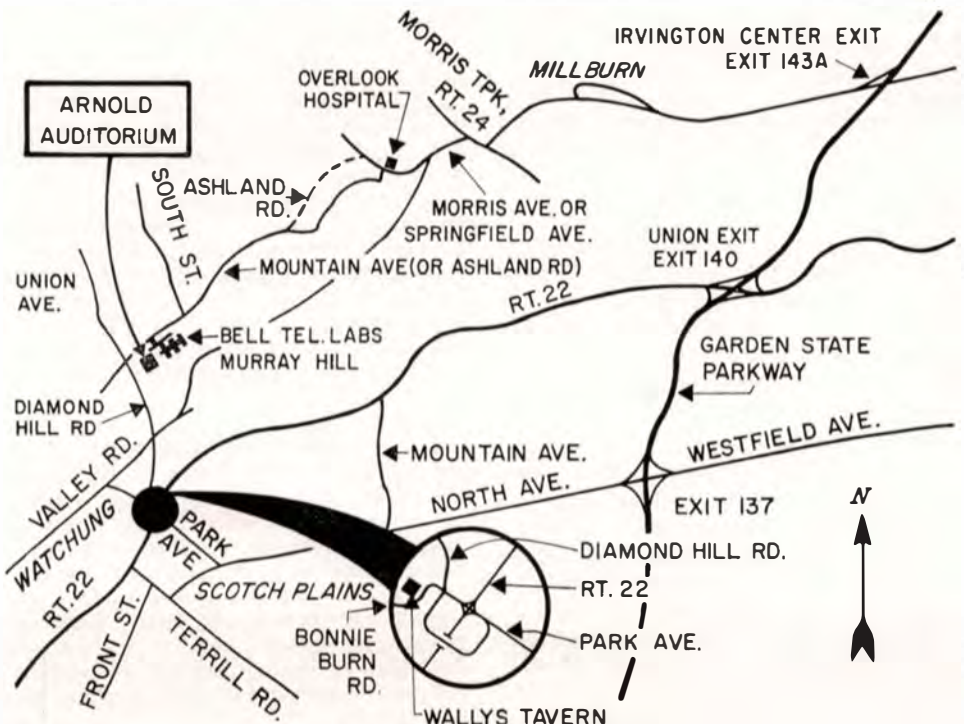
Meeting Notice
Date: Wednesday, February 24, 1965
Time: 7:30 P.M.
Place: Stevens Institute of Technology Seminar Room 4th floor Stevens Center Hoboken, New Jersey
Speaker: Dr. Frances Hugel Director of Research and Development Stewart-Warner Sunnyvale, California



One of the major challenges of the industry today is to find or develop "subsystems" of the complexity, say, of several J. K. Flip Flops whose power levels are compatible with miniaturization and whose utility can justify high volume production.

It is possible to derive a general expression correlating system cost with device complexity and such investigations indicate that minimum system cost would be achieved with silicon circuits larger and more complex than what is now generally available.

Dr. Hugel holds a PhD in Mathematics from the University of Chicago, a BS in Chemistry from the same institution and an MS in Chemical Physics from the University of Cincinnati. Prior to joining Stewart Warner in 1963 Mrs. Hugel was associated with other well known laboratories where her activities included X-ray techniques for weld inspection, single crystal growth, various semiconductor applications, and the design and process development of integrated circuits.



PARKES and SCHWANHAUSSER

Honored by

North Jersey Section Award

at Annual Banquet and Dance



John Schwannhausser's participation in IEEE started as a member of AIEE Student Chapter at Rutgers University. Upon graduation with honors in 1949 with a BSEE, he joined the Cadet Engineering Training Course at Public Service Electric and Gas Co. Later, he became Assistant Engineer in the Essex Division, Electric Distribution Dept., Irvington, N. J. In 1960, he received an MBA from Rutgers and became Planning Engineer. Two years later he was promoted to Division Distribution Engineer, where he is responsible for Engineering Design, Maintenance, and Operation of Electric Distribution Facilities of Essex County.

Besides holding various chairmanships in the New Jersey Division of the AIEE, he also served as member-at-large, secretary, treasurer, vice-chairman, and chairman. In his capacity as chairman (1962-3) he was instrumental in the merger of the New Jersey Division of the AIEE and the Northern New Jersey Section of the IRE as the North Jersey Section of the IEEE.

John is also a member of Beta Gamma Sigma (Business Administration Honor Society), and Tau Beta Pi. As an undergraduate he was a member of Chi Psi. He has served nine years as trustee of Alpha Rho Chapter of the Chi Psi Alumni Association.

John, who lives in Summit, N. J. with his wife and four children, is active in his community. He has served as Past President of the Wilson School PTA; Past President Summit Council of Churches, Commission on Education of Summit Methodist Church. In the latter organization he is active as a member of the Official Board and institutional representative of Boy Scout Troop #66.



Alanson W. Parkes became a senior member of IRE in 1948. He was co-organizer of the Northern New Jersey Sub-Section in 1947 and served in all of its offices including Chairman in 1950. In 1961 he again served the Northern New Jersey Section as Vice-Chairman, and as Chairman in 1962 during a portion of the amalgamation of IRE and AIEE. Al served in Naval Aviation in World War I coming out as a Chief Radioman, Aviation. He received an AB in physics at Clark University, Worcester, Mass, under Dr. Robert H. Goddard of rocket fame, taught physics at Lafayette College from '22 to '26 and at Harvard College from '26 to '30 while obtaining two Masters degrees, one from Lafayette for special work there and at MIT, and one from Harvard in 1929. He worked summers at the Radio Frequency Laboratories and its offshoot Aircraft Radio Corporation 1927 thru 1929 and went to work with Aircraft Radio Corp. as an engineer in 1930, where he was Vice President from 1948 until he became President of Ballantine Laboratories in 1959, which position he now holds. He has served as Trustee of Clark University and is currently serving a second term on the Board of Education in Boonton. Al and his wife Virginia Orbison Parkes reside at 200 Overlook Ave. in Boonton.

ELECTROMAGNETIC COMPATIBILITY

RF RADIATION HAZARDS

The New York Metropolitan Group on Electromagnetic Compatibility will hold a meeting on Tuesday, February 16. The meeting will be held at the Willkie Memorial Auditorium, 20 W. 40th Street, at 8:00 P.M. A pre-meeting dinner will be held at the Old Seidelberg Restaurant, 626 3rd Avenue at 6:30 P.M.

Paul C. Constant Jr., Section Head in the Engineering Division of Midwest Research Institute (MRI) will speak on Radiation Hazards Measurements. The general discussion will cover RF radiation hazards, instrumentation, and specific techniques developed to measure RF power dissipated in a spark during the ignition of some volatile, flammable fuels.

Speaker:

Mr. Constant is responsible for the technical supervision of research problems concerning scattering of electromagnetic waves, index-of-refraction profile measurements, electromagnetic probing techniques and electromagnetic compatibility. He has conceived of new and unique methods of control, measurement, and display, resulting in patentable systems, and has consulted on the design of receivers, control mechanisms and test equipment for unique communication systems.

Aerospace & Navigational Electronics

PRESENT STATUS OF RESEARCH ON CLEAR-AIR TURBULENCE

Meeting Notice

The February 1965 meeting of the New York Metropolitan Chapter of the Group on Aerospace and Navigational Electronics (GANE) will be held as follows:

- Date:** Thursday,
February 11, 1965
- Time:** 8:00 P.M.
- Place:** Willkie Memorial
Auditorium
20 West 40th Street
New York, New York
- Subject:** The Present Status of
Research on
Clear-Air Turbulence
- Speaker:** Major General
Joseph D. Caldara,
USAF (Ret.)
Flight Safety Foundation,
Incorporated
468 Park Avenue South
New York, New York
- Pre-Meeting
Dinner:** 6:30 P.M.
Old Seidelberg Restaurant
626 Third Avenue
New York, New York

Major General Joseph D. Caldara is now President of the Flight Safety Foundation. Prior to this appointment, he was the Air Force's first Deputy Inspector General for Safety in history, consolidating under his command all Air Force functions involving ground, air, missile, and nuclear safety. As a direct result of a five-year safety program which General Caldara initiated, fewer pilots were killed and the aircraft accident rate dropped to an all-time low. General Caldara is a graduate of the University of Maryland and while in Military Service was graduated from Air War College and National War College, as well as the old Air Corps Military and Advanced Flying Schools.

Mr. Constant holds a BEE degree from the University of Minnesota and an MA degree in mathematics from the University of Missouri at Kansas City. He is presently Vice Chairman of ASA Committee on Radio-Frequency Radiation Hazards and a senior member of IEEE.

All questions pertaining to the dinner meeting should be directed to:

Mr. Ed Steel
Technical Wire Products, Inc.
129 Dermody Street
Cranford, N. J.
Phone BR 2-5500 — Ext. 43

Mr. Arnold Albin
Fairchild Camera & Instr. Corp.
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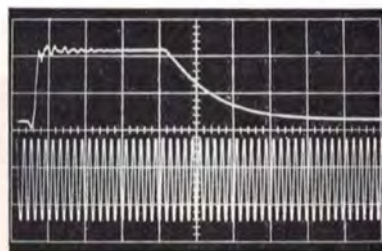
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The single-beam oscilloscope display shows two different signals, each at a different vertical sensitivity and sweep speed. Single-exposure photograph.

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INSTRUMENTS



HEWLETT-PACKARD'S COMPACT RECEIVER-RECORDER LINKS LOCAL FREQUENCY STANDARDS WITH USFS

The transmission of phase-stable low-frequency radio waves by the National Bureau of Standards — on stations WWVB (60 kc) and WWVL (20 kc) — has made possible improvements in frequency control and frequency calibration during the past decade. The traceability of these transmissions with accuracy approaching $1/10^{10}$ is accomplished with Hewlett-Packard's new, compact Model 117A. It combines a

special antenna, receiver, phase comparator and built-in strip recorder.

Fixed at 60 kc, to tune in WWVB, source of the Bureau's main standard-frequency broadcast, the receiver has better than 1 microvolt sensitivity. The chart recorder may be set at 50 micro-seconds full scale reading for accurate long-term comparisons, or at $16\frac{2}{3}$ microseconds for high resolution or short-term comparisons.

In Model 117A, a phase-locked oscillator does the filtering and electronically tracks the phase of the received signal with negligible error, a bandwidth of 0.3 cycle, and a resulting time constant of about 1.7 seconds. This is equivalent to a filter without phase shift, yet with Q of approximately 200,000.

Hewlett-Packard's new compact receiver-recorder — Model 117A — measures only $3\frac{1}{2}$ " high, weighs less than 15 pounds and costs only \$1150 — including antenna.



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The 6203A has a DC voltage output of 0-7.5v and DC current output of 0-3a. The input is 105-125/210-250 vac 48-440 cps and the load regulation is (constant voltage) 5mv (constant current) 0.05% or 1 ma. Ripple and noise in constant voltage is 200 μ v rms and in constant current is 500 μ a rms. Remote

programming in constant voltage is 200 ohms per volt and in constant current is 1000 ohms per amp. The meter ranges are 0-10 volts and 0-4 amps. The 6203A costs \$179.00.

The 6207A has a DC voltage output of 0-160v and a DC current output of 0.2a. The input is 105-125/210-250 vac 57-63 cps and the load regulation is (constant voltage) 0.02% plus 2 mv (constant current) 200 μ a. Ripple and noise in constant voltage is 500 μ v rms and in constant current is 200 μ a rms. Remote programming in constant voltage is 300 ohms per volt and in constant current is 1000 ohms per amp. The meter ranges are 0-200 volts and 0-0.2 amps. The 6207A costs \$194.00.

Both the 6203A and 6207A are $3\frac{1}{2}$ " high, 13" deep and $8\frac{1}{4}$ " wide. And each weighs about 18 pounds. For full information on the complete Harrison Laboratories Series, contact your RMC Field Engineer.

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