

NORTHERN
NJ
SECTION



The

Newsletter

The Magazine of the Northern New Jersey Section of the IRE

Volume 8

MARCH 1962

Number 7

*The Northern New Jersey Section
of the Institute of Radio Engineers
cordially invites its members and their wives to attend*

*The Annual Section Banquet
at the Suburban Hotel, East Orange, New Jersey
cocktails at six fifteen, dinner at seven fifteen
on the evening of the fourteenth of March 1962.*

*Mr. Donald G. Fink will talk on
"Information, Science and the I.R.E.—Past and Future"
Dancing will conclude the evening's program.*

R. S. V. P.

SOME TIPS ON PREPARING A RESUME

- Head resume with your name and address and phone number.
- Show the title of the position desired. DON'T use the words "Position or job desired". Just state the name of the job.
- Use "specialist" rather than "expert" in describing the job wanted.
- Next show a summary of your background and qualifications. Here is your chance to arouse the reader's interest — to make him want to know more about you.
- Next show your employment in chronological order — last job first. Be sure to show in the description of the work done backing for the things you stated in your summary of qualifications. Or else show some very outstanding thing that you accomplished.
- Educational is next. BE BRIEF. Show school, degree, and field of specialization.
- All personal data belong at the end of the resume. The recipient is not at all interested in personal details about you until you have aroused his interest in what you can do for him.

SOME RESUME DON'TS

DON'T

- give a biographical history of yourself.
- expound your business philosophy.
- state personal opinions.
- emphasize your interest such as, "I am interested in a position in your personnel department that will add to my present background." Talk about employer's interests.
- editorialize or generalize.
- list all of your duties as though it were a job analysis.
- go into detail about work below your top level.
- use defensive expressions such as "my proven abilities".
- "sell" your past companies. Emphasize and sell YOU.
- criticize former employers.
- show reason why you left jobs.
- show past salaries or salary you now want.
- list references.
- say "Willing to go anywhere".
- say "Available at once".
- send carbon copies.
- use caption "Miscellaneous".
- use "etc." anywhere in your resume.
- discuss social background or family connections.

If you use a photo make it not over 2" x 3" in upper right-hand corner of Page 1.

Price \$4.60 per hundred

RESUMES

OFFSET PRINTING



EDITORIAL NOTES

SECTION OFFICERS NOMINATED

The nominating committee headed by Dr. Thomas T. Goldsmith, Jr. and assisted by Mr. Paul R. Adams, Mr. R. Burnap, and Dr. George M. Anderson submitted the following slate of officers for the year 1962-63 to the executive committee. The committee approved the slate for submission to the membership: Chairman, Alanson W. Parks Jr. (SM '48), Ballantine Laboratories, Inc.; Vice chairman, Charles W. Vaderson (M '47) I.T.T. Laboratories; Secretary, Alfred E. Hirsch Jr. (M '56), Bell Telephone Laboratories; Treasurer, John P. Van Duyne (M '55), Boonton Radio Corporation.

It is to be noted that the nominations submitted by the nominating committee shall be announced in the notice of the meeting preceding the annual meeting. At this same meeting nominations also may be made from the floor when supported by a petition signed by at least 10 percent or 10 voting members, whichever is less, qualified to vote for the office of the candidate nominated.

IRE WIVES ONLY

Once again I would like to take this opportunity to write a small editorial to the wives of the IRE members.

On March 14th the NNJ Section will hold their Annual Section Banquet. This is the night when you and your husband will meet the other members and their wives at the gay and enchanting Hotel Suburban in East Orange, the home of "Paris In The Sky". Of course we will not go to "Paris" but Mr. Parks, chairman of the Annual Banquet, has promised an evening as enjoyable as an evening in the "City of Light". Clip out the coupon below. Borrow ten dollars from your husband and send in your reservations to Mr. Parks. If time is short — come anyway — and pay at the door. The officers of the section are looking forward to meeting each and every one of you.

IRE + AIEE = IEEE

On page 9 of the Newsletter the details of the merger between the IRE and the AIEE are printed for your information. The proposed name of the new organization will be The Institute of Electrical and Electronics Engineers (IEEE) not to be confused with the (IEE) the Institute of Electrical Engineers (British Society). One must admit that no grass is growing under the feet of the National Committees established to wed the two organizations.

The Newsletter By Any Other Name Would Be Just As Read.

The name of our Magazine has been changed from "The Northern New Jersey Newsletter" to "The Newsletter". The members of the editorial staff want to thank the members who helped us in our decision by writing a letter to the editor expressing their views. We hope you like the new name, the new format with the living colors, and above all we hope you continue to read "The Newsletter" and that the editorial content of the magazine contributes to your increased participation in the Northern New Jersey Section.



The Northern New Jersey

Newsletter

Published monthly by the Northern New Jersey Section
of the Institute of Radio Engineers

Deadlines for all material are the first of the month preceding each month of publication.

All communications concerning the NNJ Newsletter, including editorial matter, advertising, and mailing, should be addressed to:

N.N.J. NEWSLETTER
P.O. Box 226 - Glen Ridge, N. J.
Telephone: Pilgrim 4-0453

SECTION OFFICERS:

HUGH S. WERTZ, *Chairman*
ALANSON W. PARKES, JR., *Vice-Chairman*
MORRIS LEVINE, *Secretary*
JOHN R. FLEGAL, *Treasurer*
DR. GEORGE M. ANDERSON, *Past Chairman*

NEWSLETTER STAFF

Editor: Edward J. Byrum
Business Manager: Kenneth A. Harris
Associate Editor: Mike M. Perugini
Associate Editor: Howard L. Cook
Associate Editor: Frederick I. Scott, Jr.
Professional Groups Editor: Gunther Karger
Student Editor: Bernard Meyer
Meetings Editor: Brian Eden
News Editor: William C. Willmot

1961-1962 Meeting Schedule

Exec. Comm. Meetings
28, 1962

VALUE

makes the
Tektronix
Type 545A
your best
investment



VERSATILITY

... for pulse-sampling applications ... for transistor-rise-time testing ... for semiconductor-diode-recovery-time studies ... for strain-gage and other transducer measurements ... for differential-comparator displays ... for multiple-trace work in general laboratory experiments.

... for single-shot or recurrent or triggered main-sweep presentations ... for either conventional or trigger-free delayed-sweep presentation

With 16 plug-in units
 Oscilloscope

RELIABILITY

... from a company that has originated its own designs in over 50 different laboratory oscilloscopes—incorporating many special components designed and made by Tektronix to provide optimum performance and assure continuing reliability.

... from a company that has specialized in manufacturing ONLY laboratory oscilloscopes and associated instrumentation.

... from a company that has emphasized quality in design for quality in performance for 15 years.

CONTINUING ASSISTANCE

And to maintain high performance, Tektronix backs up every Type 545A Oscilloscope with comprehensive field services from 37 Field Offices and 20 Repair Centers throughout the United States and Canada. For Tektronix believes that a manufacturer's responsibility to the user of his product continues throughout the life of the instrument.

...
 ne of
 rated
 sweep

Time
 multi-
 plies.
 \$1550
 \$260

Call your Tektronix Field Engineer
 for a demonstration of the versatile
 and reliable Type 545A Oscilloscope
 in your own application.

UNION FIELD OFFICE
 UNION, N.J. • Phone: MUrdock 8-2222

"Information Science and IRE—Past and Future"

Is Topic for 1962 Fellow's Night Meeting

BY BRIAN EDEN

Four members of the Northern New Jersey Section, who were recently elevated to IRE Fellow status, will be honored at a section banquet dinner-dance on March 14 at the Hotel Suburban, 141 So. Harrison Street in East Orange. The 1962 Fellow awards to these men — Albert R. D'Heedene, John G. Kreer, Edward L. Norton, and David Slepian — represent a clean sweep for Bell Telephone Laboratories in the annual selection of new Fellows in the NNJ Section.

Donald G. Fink, Director of the Philco Scientific Laboratory and a distinguished IRE Fellow himself, will present a timely talk on Information Science and the IRE — Past and Future. Mr. Fink, whose travels in industry and as former President of the IRE have practically covered the globe, will trace the development of information science from IRE's founding in 1912 to the present, and will describe the ways in which communications engineers have developed increasingly more sophisticated ways of dealing with the transmission and storage of symbolic intelligence. He will also project future progress in this field over the next fifty years with particular reference to systems capable of performing functions of intelligence.

Information science has indeed come a long way in a relatively short time since the beginning of the IRE. Machines have been developed that can accept, store, look up, and analyze copious facts, present them in fresh combinations that can illuminate fresh contexts, and manipulate numbers and simple logical propositions with superhuman speed and accuracy. In so doing the machines can be used to predict the results of actions and to help human beings make decisions. They can do many, many other things. In the military, they allow the United States to carry out nuclear tests without actually detonating any bombs and to develop new weapons without actually firing them. In Los Angeles, they were put to work finding the most economical routes for 258 garbage trucks. And pretty soon, they will be catching those who try to nip Uncle Sam out of his full share of tax money. Militarily and commercially, a great deal has been done with the handling of symbolic intelligence. But, by no means is the field of information science fully exploited as Mr. Fink will point out.

Engineers today face some formidable problems in dealing with information. How to get it into a form that is

acceptable by a machine, how to transfer it quickly and reliably from one location to another, how to find it again once it is put somewhere — these are just a sampling. Engineers must develop new "senses" comparable, for example, to a radar's antenna. Devices for reading type-written symbols (some already developed) and devices for deciphering handwriting and spoken words are some of the areas receiving particular attention.

LADIES . . . IT'S YOUR NIGHT TOO

The NNJ Section cordially invites the wives of Section members to be a part of this entertaining evening which will include a savory dinner, enlightening talk and cha-cha-cha.

MEETING FACTS ANNUAL BANQUET DINNER-DANCE AND FELLOWS' NIGHT

Speaker . . . Donald G. Fink
Director Philco
Scientific Laboratory

When . . . 6:15 P.M., Wednesday
March 14, 1962
(Meeting at 8:30 P.M.)

Where . . . Hotel Suburban
141 So. Harrison Street
East Orange, N. J.



DONALD G. FINK

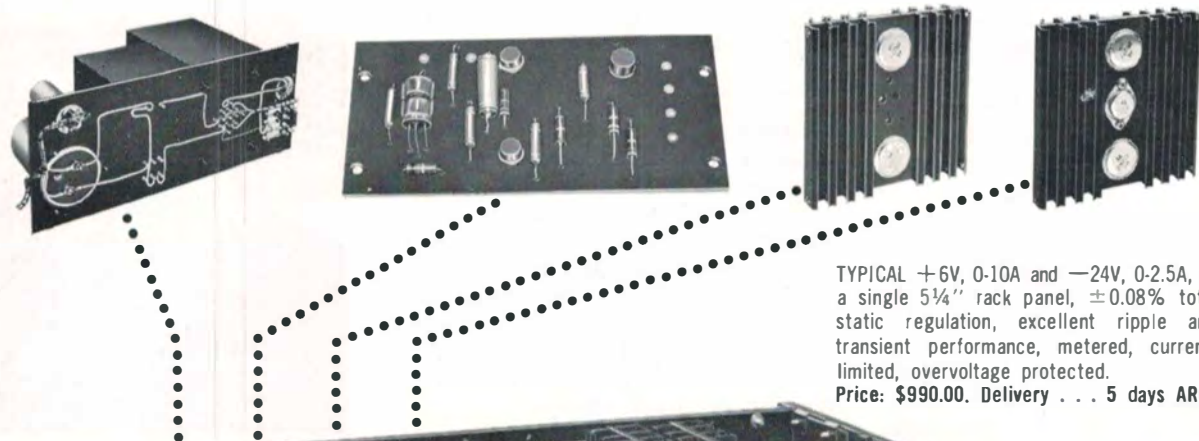
Mr. Fink was graduated in 1933 from the Massachusetts Institute of Technology with the degree of Bachelor of Science in Electrical Communications. In 1943 he was granted the degree of Master of Science in Electrical Engineering by Columbia University. Following his graduation, Mr. Fink was a research assistant on the staff of the Departments of Geology and Electrical Engineering at M.I.T. In 1934 he joined the staff of the journal *ELECTRONICS* and served as its editor-in-chief from 1946 to 1952.

Obtaining a leave of absence from his editorial duties in 1941, Mr. Fink became a member of the staff of the Radiation Laboratory at M.I.T., where, in 1943, he headed the loran division. He then transferred to the Office of the Secretary of War as an expert consultant on radio, navigation, and radar. During his war service, Mr. Fink traveled over 80,000 miles from Cairo, Egypt, to Darwin, Australia, siting loran stations and arranging for use of the loran system by the allied forces. In 1946 he participated in the atom bomb tests at Bikini, as a civilian consultant on the staff of Admiral Blandy.

In 1948, Mr. Fink was chairman of the IRE Television System Committee, and in 1950 he was a member of the Senate Advisory Committee on Color Television.

(Continued on page 26)

Custom solid-state regulated power supplies ...to your specs ...in 5 days!



TYPICAL +6V, 0-10A and -24V, 0-2.5A, in a single 5 1/4" rack panel, $\pm 0.08\%$ total static regulation, excellent ripple and transient performance, metered, current-limited, overvoltage protected.
Price: \$990.00. Delivery . . . 5 days ARO!



Just five working days after you place your order, we will deliver high-performance transistor-regulated DC power supplies, assembled from our unique "C/M" (Custom/Module) building blocks, *which we shelf-stock in quantity.*

Proven circuitry, MIL transformers and chokes, generous derating, thoroughly tested. Full complement of optional over-current, overvoltage, and programming features, including constant-current. Thousands of voltage-current combinations available, up to 30V and 30A. Other ranges, special packaging and full MIL conformance are also available on rapid, dependable delivery schedules.

Prices are competitive. Workmanship is superb. For prompt service and full data:

Call: B. B. TAYLOR CO., FIELD ENGINEERS
Baldwin 3-8000 (Long Island).



**DIVISION OF TRIO LABORATORIES, INC.
PLAINVIEW, LONG ISLAND, NEW YORK**

CHAIRMAN'S CORNER

Hugh S. Wertz



Two very important events for our IRE members are coming up in March and while details are available elsewhere it seems advisable to lay stress on them to minimize the chance of forgetting the dates.

As you all know, every year in March we have had a Fellows' night to pay honor to those members in our Section who have been singled out for the Fellows award. This is a real honor and I wish to congratulate in this column in the name of the Section (I have already done so in a personal letter to each of them) Albert R. D'Heedene, John G. Kreer Jr., Edward L. Norton and David Slepian, all of Bell Telephone Laboratories. This year the Fellows' night is the 14th of March and in order to make it very clear that we would like everyone to come, the name of the affair has been changed to "Annual Section Banquet". We want you not only to bring yourself but also your wife since an excellent dinner will be served and dancing will follow the program.

The whole affair (note the difference from the plans of many former years when the dinner was held in one place and the program in another) will be at the Hotel Suburban, 141 South Harrison Street, East Orange, New Jersey. The cocktail hour starts at 6:15 P.M. followed by dinner and an interesting talk by Donald G. Fink, the Director of Research and General Manager of the Research Division of Philco. His topic will be "Information Science and the IRE — Past and Future". Dress is informal. Let's make this the high point of the year for a Section affair!

The next big event of the month for IRE members is the IRE International Convention (the IRE Show) at the Waldorf Astoria and the New York Coliseum on March 26-29, 1962. You have probably all received word about this but just in case you tucked your card away and did nothing about it, please be sure to look it up and mark the date on your calendar.

Please support both of these big events in our IRE year!

Hugh S. Wertz

KAHANT ASSOCIATES

STRUTHERS-DUNN, INC.—Military and Industrial Sealed and Open Relays and Timers. FEDERAL-PACIFIC — 250° scale Panel Instruments, Instrument Switches. ASSOCIATED RESEARCH, INC. — High Voltage AC and DC Testers up to 150 KV, Megohmmeters. TRANSFORMERS — Standard and Special Power and Control Types, Indoor and Outdoor.

60 Park Place, Newark 2, N. J.
Cortlandt 7-5326 (N. Y.) Mitchell 2-3930 (N. J.)

WHEELER LABORATORIES, INC.

SUBSIDIARY OF HAZELTINE CORPORATION
Consultation - Research - Development
Radar and Communication Antennas
Microwave Assemblies and Components
Harold A. Wheeler and Engineering Staff
Main office: Great Neck, N. Y. HU 2-7876
Antenna Laboratory: Smithtown, N. Y.

NEW AT IRE SHOW

FROM **SANBORN**,
OF COURSE!



SANBORN MODEL 2007

MAGNETIC DATA RECORDER

This Sanborn-Ampex Model 2007 is a four-speed, seven-channel 50 KC recording system. It records and reproduces up to seven channels of information on standard 1/2" mag. tape.

SEE IT AT BOOTH 3103-3105

Your Sanborn representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOwell 7-3933



Professional Group on Engineering Writing and Speech

New Jersey PGEWS To Sponsor Workshop

6TH NATIONAL SYMPOSIUM ON ENGINEERING WRITING AND SPEECH

Mayflower Hotel, Washington,
D. C., September 13, 14, 1962

If you are interested in presenting a paper, now is the time to start getting ready. The theme of the Symposium will be: "Engineering Writing and Speech—An Art or a Science?" The following topics suggest the scope of interest, but need not be limited to those listed:

EWS is an art, EWS is a science
Writing proposals that pay
Better reading for better EWS
The EWS prima donna
Visual communication
Engineers vs. Writers
Tutorial EWS material
EWS and Capitol Hill
ASPR
EWS economics
EWS in government, EWS in industry
What's with "brochuremanship"
Genesis 11:7

The time table of the Program Committee is as follows:

MARCH 15, 1962 deadline for submission of title of paper and abstract of not more than 750 words. The letters and spaces in the title for the paper should not exceed fifty (50). Submit brief biographical sketches of the author or authors, suitable for publication in the Symposium Proceedings. For papers with more than one author, please indicate a single author for the paper presentation. Prospective authors are invited to send *five copies* of the abstract and biographies to:

J. E. Durkovic
Program Chairman—PGEWS
c/o ARINC
1700 K Street, N. W.
Washington 6, D. C.

May 1, 1962 — Authors will be notified of paper acceptance or rejection.

AUGUST 1, 1962 — Complete paper must be submitted to the Program Committee.

All papers must contain new information and not have been published or presented at any national society meeting. Papers presented at local meetings are acceptable.

Under the sponsorship of the NNJ Chapter of PGEWS, an integrated series of six filmed lectures by Dr. Edwin L. Peterson of the University of Pittsburgh will form the basis for a six-session discussion workshop on the art and craft of effective writing. The subjects of the lectures, which range from sentence analysis to the more general aspects of style, should be helpful to all those interested in perfecting their writing skill.

The series will be held at the Systems Division building (Auditorium) of

Kearfott Division, General Precision, 1225 McBride Avenue, Little Falls, N. J. Sessions will be held on Thursday evenings and will start promptly at 7:30 P.M. and will end about 9:30 P.M. Registration is free, and since the workshop will be limited to 50 participants, advance registration is necessary. For further information, contact Mr. Dave Carson, Bell Telephone Laboratories, Murray Hill, N. J. (582-6683) or Mr. Walter Smith, RCA Harrison, N. J. (Hu 5-3900, Ext. 3257).

The Art And Craft Of Writing

The workshop series is scheduled to begin on April 5, 1962. (There will be no session on Thursday, April 19th.)

APRIL 5 *Writing Forceful Sentences:*

Part I explains the sentence and how its major and minor ideas are structured.

APRIL 12 *Writing Forceful Sentences:*

Part II discusses and illustrates five basic methods of constructing an exact-meaning sentence.

APRIL 26 *From Sentences To Paragraphs:*

Discusses the methods of developing the "explaining paragraph" and how generalization must be expanded with details.

MAY 3 *The Exact Small Things:*

Points on the dangers of vague generalities in writing and emphasizes the importance of "explicit" word choice.

MAY 10 *Nouns and Verbs vs. Adjectives and Adverbs:*

Discusses the function of the four most useful parts of speech and shows that weak adjectives and adverbs can often be omitted by careful selection of nouns and verbs.

MAY 17 *Style In Writing:*

Considers the view that an individual's style of writing expresses his true self and that simplicity and clarity are best achieved through a naturalness of style.

Proposed Unification of IRE and AIEE Discussed

Tentative broad outlines of the way in which the consolidation of the American Institute of Electrical Engineers and the Institute of Radio Engineers might be put into operation were discussed at a "Town Meeting" during the Winter General Meeting of AIEE on January 31st. Patrick E. Haggerty, President of IRE, and Warren H. Chase, President of AIEE participated in the discussion as did AIEE and IRE members serving on subcommittees that have been studying various aspects of the merger. Although not officially approved by either Board, the following picture of the proposed principles of consolidation emerged from the discussion.

NAME

A tentative name for the consolidated group is the Institute of Electrical and Electronics Engineers (IEEE). Assets of the two groups would be merged. Omission of the word "American" from the name reflects the international interests and scope of the group.

GRADES

Grades of membership currently planned correspond to existing grades in both groups, although nomenclature changes in some cases. Qualifications, rights and privileges would remain substantially unchanged. Dues for each grade of membership would be based on the lowest rate now prevailing in either society.

REGIONS

In North America, seven Regions would be established at first, with an eighth Region representing the rest of the world. Provision would be made for additional regions when increased membership warrants. Regions, each of which would be represented on the Board of Directors, would have the option of subdividing into two or more Districts, with the approval of the Executive Committee.

SECTION

Each existing Section of AIEE and IRE would become a Section of IEEE. Sections of the two groups serving identical areas would merge promptly in most cases. If circumstances warrant, Sections might continue as dual Sections with the provision that each would maintain a voting member on the Executive Committee of its sister Section.

STUDENT BRANCHES

Student Branches, most of which are now joint, would be similarly integrated.

Committees and other units not specifically covered in the plan would remain in existence until other arrangements are made.

P.G.

To serve professional — as opposed to geographic — fields of interest, a series of Professional Technical Groups would be established composed of interested members of IEEE and non-members (to be called Affiliates) who would see to it that each special field of interest is adequately covered. The core of the Professional Technical Groups would be the existing Professional Groups of IRE and Technical Groups of AIEE.

An overall Professional Technical Group Committee would guide the operation of these units. The chairman of this committee would be a Vice President of IEEE and a member of both the Board of Directors and the Executive Committee.

COMMITTEES

Thirteen Standing Committees are proposed to deal with such subjects as finance, awards, students, editorial, etc.

Four times each year the Board of Directors, composed of 25 members, would meet. Ten times each year, a nine-member executive committee would meet to supervise month to month operations. Detailed operations of IEEE would be administered by a full-time paid secretariat headed by a General Manager, reporting to the Executive Committee.

PUBLICATIONS

Two monthly publications, Electrical Engineering and Proceedings of the IEEE would be issued, each covering specified fields of information. In addition, periodicals covering technical interest of Professional Technical Groups would be issued, under the general title of Transactions on (name of field of interest).

Other publications will include a student journal, directory, and special publications.

CONVENTION

A general meeting open to all members would be held annually in New York, probably in early spring, in conjunction with an exposition.

(Continued on page 26)

NEW AT IRE SHOW

FROM
HEWLETT-PACKARD,
OF COURSE!



HEWLETT-PACKARD MODEL 175A 50-MEGACYCLE OSCILLOSCOPE

A 6 x 10 cm viewing area on an internal graticule CRT make it easier to observe and measure complex signals without the need of an astigmatic control. Other key features in this new 50-Megacycle Oscilloscope are 12 kv cathode ray tube, advanced circuitry, simplified layout of components and controls.

SEE IT AT BOOTH 3205-3215

Your Hewlett-Packard
representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOwell 7-3933



round the PG Circuit

By GUNTHER "GUS" KARGER



New NNJ Chapter being organized

Mr. George Marmar wishes to announce that he is organizing an NNJ Chapter of the PG on Automatic Control. He indicates that the purposes expected to be served by this chapter are:

1. Stimulate individual interest in generating technical papers in the PGAC publication, thereby contributing to the pool of technical knowledge and advancing the individual's career.

2. Encourage interchange of non-proprietary technical information and knowledge of techniques acquired in the solution of highly specialized problems, thereby accelerating the advance of the member's technical proficiency.

Persons interested in this movement are requested to contact:

Mr. George Marmar
5 Vanderberg Place
Cedar Grove, New Jersey.

Electron Devices

The PG on Electron Devices will hold its meeting on March 15 to hear Professor Wayne B. Nottingham of MIT discuss "General Theory of the Cesium Plasma Diode Energy Converter".

Efficient thermionic energy converters may be constructed as diodes and operated in an atmosphere of cesium vapor. Voltage-current curves reveal much concerning the detailed physical mechanisms which are self-coordinating and can be optimized to achieve a favorable over-all operating efficiency. These controls include the selection of the emitter and collector materials as well as the control of their temperatures. Two other controllable parameters are the cesium concentration and the diode spacing. Efficient operation calls for ionization both at the emitter surface and in the inter-electrode space. Space ionization depends on the presence of a suitable number of high energy electrons to ionize either by direct impact or through some cumulative process. The application of a detailed analysis of these mechanistic features to the interpretation of converter performance as exhibited by voltage-current curves will be given.

Local Chapter will entertain its National PG during the Convention

The local chapter of the PG on Vehicular Communications will be host at the traditional annual dinner of its National Professional Group.

Entertainment will be provided after a dinner at the Shelbourne Hotel, on Monday, March 26, 1962. Although the event cannot officially begin prior to 7:00 due to a conflict with the National IRE cocktail party, the doors will be open at 6:30. All members and their guests are cordially invited to attend. For further information and reservations, please contact:

in New York

Mr. John D. Meehan,
New York Central Railroad,
General Office, Room 1315,
466 Lexington Avenue, New York
MU 9-8000 Ext. 2951

in New Jersey

Mr. Gunther Karger,
Microwave Services Int., Inc.
Denville, New Jersey
OA 7-7400

Wall Street vs. The Electronics Industry

Mr. J. Fox of the Metropolitan Chapter of the PG on Engineering Management wishes to announce that his group will jointly meet with the New York Section IRE and the Communications and Electronics Division of the AIEE New York Section on April 4. The program will consist of a panel discussion on "WALL STREET'S VIEWPOINT ON THE ELECTRONICS INDUSTRY" and the panelists from Wall Street and industry will include:

Mr. Philip Leserman, Chairman of the Board, Leserman-Stenbuck Ltd.

Mr. A. J. Catapano, Senior Analyst for Aerospace and Electronics, Merrill Lynch, Pierce, Fenner & Smith.

Mr. Dudley Anderson, Vice President, Laird & Co.

Mr. Philip Clark, Senior Research Analyst, Burnham & Co.

Emphasis will be placed on the survival characteristics of electronics companies in the competitive space age. This

should be one of the most interesting meetings of the season and all are invited to attend. The event will be held in the new United Engineering Center on the U.N. Plaza which can easily be reached by taking the 50th Street cross-town bus to the last stop which is directly at the meeting place.

CALENDAR OF EVENTS

PGED

**March 15
7:30 P.M.**

"GENERAL THEORY OF THE CESIUM PLASMA DIODE ENERGY CONVERTER."
Western Union Auditorium
60 Hudson Street
New York, N. Y.

PGVC

March 26

ANNUAL NATIONAL PGVC DINNER

**7:00 P.M.
8:00 P.M.**

Cocktails
Dinner
Shelbourne Hotel
Lexington Avenue & 37th Street
New York, N. Y.

PGEM

April 2

"WALL STREET vs. THE ELECTRONICS INDUSTRY"
New York Section IRE & N. Y. Section AIEE

**6:00 P.M.
7:30 P.M.**

Pre-meeting dinner
United Engineering Center
Room 125
U. N. Plaza
New York, N. Y.

PGPEP

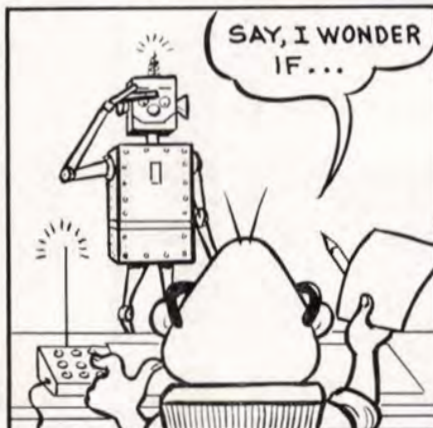
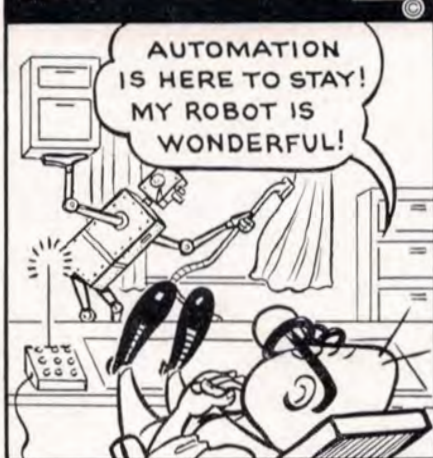
April 5

WHITE ROOMS, CONCEPT, CONSTRUCTION REASON AND OPERATION

7:30 P.M.

IBM BUILDING Product Display Center
590 Madison Ave.
New York, N. Y.

HOBBLE-TRIP



New Student Chapter Formed at Union County Technical Institute

IRE headquarters have given official recognition to a new student chapter located at Union County Technical Institute, 2589 Morris Avenue, Union, N. J. The Institute was founded in 1960 and offers two technical courses for students: Electronics Technology and Drafting and Design Technology.

The Officers of the Student Chapter are: Chairman: Richard Kisley, Vice Chairman: Louis Campolo, Treasurer: Kenneth Blum, Secretary: James Ryan, IRE Representative: Gary Woerner.

Call for Papers 1962 Western Electronic Show and Convention (WESCON)

August 21 - 24, 1962

Memorial Sports Arena and Statler-Hilton Hotel, Los Angeles, California.

The following materials should be submitted by April 15, 1962:

1. 100 to 200 word abstract, including title of paper, name and address of author.
2. 500 to 1,000 word summary of the paper.
3. Indication of the technical field in which the paper falls (Use IRE Professional Group classification).

IRE Seventh Region Conference May 24, 25, 26, 1962 Seattle, Washington

The Seattle Section of the Institute of Radio Engineers will host the IRE Seventh Region Conference on May 24, 25, and 26, 1962 in Seattle, Washington. The theme of the conference will be "Space Communications" and it will stress the impact of electronics on the cultural and social life of the future. Because of the international importance of this conference and to celebrate the 50th Anniversary of the founding of the Institute, The Board of Directors of the IRE will hold their annual meeting during the conference. The Seattle World's Fair will designate Friday, May 25, 1962 as "Electronics Day" in honor of the occasion.

NEW AT IRE SHOW

FROM VARIAN,
OF COURSE!



VARIAN MODEL G-14 RECORDER

This all-new solid state graphic recorder features major advances in its highly sensitive voltage ranges, fast pen speed, compact size and versatility.

SEE IT AT BOOTH 2708-2720

Your Varian representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOWell 7-3933

take the headache out of
your packaged circuitry
design with new

U.S. PATENT NO. 2,921,095 CANADIAN PATENT NO. 604,810

JFD MINIATURE TANK CIRCUITS

Now—two conventional components in an unconventional high density format help cut production time and costs.

New JFD miniature tank circuits employ a precisely wound air core coil across a miniature trimmer piston capacitor. Result: an unusual combination of variable capacitance and fixed inductance that delivers **more** circuitry and reliability per dollar.

Compactness

More capacitance and inductance in **less** cubic volume—ideal for high density formats.

Economy

Both a trimmer and an inductor at slightly more than the cost of the trimmer capacitor alone.

Assembly Speed

You mount only **one** unit instead of the two that would otherwise be necessary...save time and labor...eliminate production breakage.

Reliability

Exceptionally high **ruggedness** and **dependability** under extreme environmental conditions.

JFD Tank Circuits are available in standard or special models with toroids or ferrite cores, shielded or unshielded, in series or parallel coil design, with any JFD standard panel mount, miniature, MAX-C® or Sealcap® capacitor.

model	self-resonant frequency range, MC		nominal Q (80-220 mc.)
	min.	max.	
LC371	475 mc.	1000 mc.	230
LC372	290 mc.	850 mc.	230
LC373	230 mc.	650 mc.	230
LC374	190 mc.	525 mc.	230
LC375	165 mc.	425 mc.	230

Call your JFD franchised distributor for quantities up to 299 units, or your nearest JFD sales engineer or representative for further details or specialized assistance.



JFD

AT WORK IN THE NEW FRONTIERS OF ELECTRONICS

JFD ELECTRONICS CORPORATION

Components Division • 6101 16th Avenue, Brooklyn, New York • Phone DEwey 1-1000 • TWX-NY25040 • Cable-JEFDEE NY

JFD WESTERN
P. O. Box 3416, Van Nuys, Calif.
Phone: EMpire 4-4131

JFD NORTHEASTERN
Ruth Drive, P. O. Box 228, Marlboro, Mass.
Phone: HUNtley 5-7311

JFD MIDWESTERN
P. O. Box 588, Skokie, Illinois
Phone: 675-1140

JFD CANADA
51 McCormack Street, Toronto, Ontario, Canada
Phone: ROgers 9-1129

VARIABLE TRIMMER PISTON CAPACITORS • FIXED METALIZED INDUCTORS • LC TUNERS • DIPLEXERS
FIXED AND VARIABLE. DISTRIBUTED AND LUMPED CONSTANT DELAY LINES • PULSE FORMING NETWORKS

BE SURE TO VISIT JFD BOOTH No. 1226 AT THE IRE SHOW, MARCH 26-29, 1962.

FEEDBACK: PLUS and MINUS

Here are some reactions to the suggested name change . . .

The reasons for changing the name are insufficient. The name is not important; it's what's inside the magazine that matters! Consider the *New York Times*. Is this newspaper worthwhile because of its name or because of its content?

Until good reasons for changing and a better name are found, why not keep *Newsletter*?

R. G. SOKALSKI, Chairman
Student IRE Chapter

Stevens Institute of Technology
Hoboken

I do hope the list of proposed names was given in jest; it reads like a parts catalog. Discarding a good name before a more appropriate alternative is proposed is a way of doing business reminiscent of *Alice in Wonderland*.

May I suggest *Bulletin*?

J. B. WALSH

3 Churchill Road
Cresskill

How about *Communicator*, *Northern Light* or *News*?

M. J. SARULLO

RCA
Harrison

DELAY LINES

CONTINUOUSLY VARIABLE
STEP VARIABLE

Tapped Fixed
MIL Specifications

AD-YU ELECTRONICS LAB., INC.
249 TERHUNE AVE. PASSAIC, N. J.
GREGORY 2-5622

To adopt such titles as *Atomic State*, *Electronic State* and *Amplifier* implies a serious limitation to the activities of NNJ members. A little more thought ought to derive better names than *Probe*, *Rocket*, *Crystal* and *Vista*. If this is the sum and substance of your thinking, why not keep the very good masthead you now have? Other members in this area think as I do.

T. R. KENNEDY, JR.
Member since 1919

128 Howard Terrace
Leonia

How about *Local Oscillator*, implying a regional voice?

S. LINDER

Bell Telephone Labs
Whippany

I suggest *spIRE*. The expanded magazine will be the authority to which members will look when they want information of the month's events. The *spIRE* will radiate news of these events.

Other possible names are: *dIREctor*, *wIREless*, and *IREgional*.

O. B. JACOBS

20 Hamilton Road
Morristown

The suggested new names have one common undesirable feature; none indicates clearly that information is being conveyed. Since the publication should function as a communications medium, I suggest *NNJ IRE Data Link*. However, hold off on the IRE part until merger with AIEE is resolved.

F. HACKENBERG
172 W. Pleasant Ave.
Maywood

To compound the difficulty of a choice, I suggest *Bulletin*, *Emitter*, *Report*, *Scanner*, *Circulator*, *Orbit*, *Reporter* and *Wave* be considered.

My selection would be *Scanner*.
J. R. FLEGAL, Treasurer
NNJ Section
Bell Telephone Labs
Murray Hill

NEW AT IRE SHOW

FROM KIN TEL,
OF COURSE!



KIN TEL MODEL 303 DC VOLTAGE STANDARD

Model 303 DC Voltage Standard is a compact source of accurate, precisely adjustable, positive or negative DC voltage for lab or industrial use.

SEE IT AT BOOTH 3605-3607

Your KIN TEL representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOWell 7-3933

MEET OUR NEW FELLOWS

For Fundamental Contributions to Circuit Theory.



EDWARD L. NORTON

Edward L. Norton was born in Rockland, Maine, on July 29, 1898. He received the S.B. in Electrical Engineering in 1922 from the Massachusetts Institute of Technology and the M.A. in Physics in 1928 from Columbia University.

Mr. Norton joined the Bell System in 1922 in the Engineering Department of Western Electric, which in 1925 was organized into Bell Telephone Laboratories. In his early work with BTL, he was concerned primarily with electrical, mechanical, and acoustical network theory. This work included the development of a technique for the design of filter type networks by synthesis from the roots and poles of a polynomial describing the insertion loss of the network. Some 13 patents resulted from work during this period.

From 1924 until the start of the war, Mr. Norton was assigned the task of investigating the theory and operation of electromechanical devices. This analysis, together with experimental methods developed at the time, provided a means for determining how closely a given physical unit approached the ideal structure from a standpoint of energy utilization.

During and after the war, he was concerned with military work, primarily an anti-aircraft gun director and later the control system for the first model of the Nike missile. He is now Head of the High-Speed Data Terminals Department.

Mr. Norton is a Member of the American Physical Society and a Fellow in the Acoustical Society.

For Contributions to the Development of Networks for Communications Systems.



ALBERT R. D'HEEDENE

Albert R. D'Heedene was born in Brussels, Belgium on June 18, 1904. He obtained the BSME degree from New York University in June 1924. Since that time he has served as a Member of the Technical Staff at Bell Telephone Laboratories.

Mr. D'Heedene developed some of the first commercial filters of the Campbell-Zobel type for the early carrier telephone systems. In this work, he was one of the first to evaluate parasitic effects and to establish means for controlling components to realize precise performance. He also pioneered the early application of the Tchebychev parameters devised by Caver.

From 1936 to 1960, Mr. D'Heedene has supervised the development of numerous types of transmission networks. These achievements included networks to correct for gain and delay distortion, discriminators, impedance correcting and balancing networks, and filters. His work in the latter area covered the first commercial applications of crystal filters, filters using coaxial and waveguide components; and microwave isolators.

In the IRE he has been active for many years on the Circuits Committee and the Papers Review Committee.

For Contributions to Information Theory and Noise Analysis



DAVID SLEPIAN

David Slepian was born June 30, 1923, in Pittsburgh, Pennsylvania. He attended the University of Michigan from 1941 to 1943, at which time he entered the U. S. Army and served in the Signal Corps until 1946. From 1946 to 1949 he attended Harvard University, receiving the MA in 1947 and the Ph.D. in Physics in 1949. The year 1949-1950 was spent at the University of Cambridge, England, and at the Sorbonne, Paris, as a Parker Fellow in Physics from Harvard.

In 1950 he joined the Bell Telephone Laboratories as a research mathematician and has remained at this position since. His interests here have been in communication theory and applied mathematics, especially applications of probability theory.

Dr. Slepian is a member of AAAS, American Mathematical Society, Institute of Mathematical Statistics, IRE, Sigma Xi, Society for Industrial and Applied Mathematics, and URSI Commission 6. He served on the Administrative Committee of PGIT from 1958 to 1960 and is presently on the Council of SIAM.

For Contributions to Standardization



JOHN G. KREER, JR.

John G. Kreer, Jr., born March 25, 1903, is a Member of the Technical Staff at Bell Telephone Laboratories in the Military Communications Engineering Department. He is currently working on a project associated with the Minuteman Missile Program.

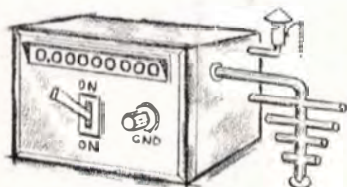
Mr. Kreer was educated at the University of Illinois, where he received the BSEE degree in 1925, and at Columbia University, where he received his MA in Physics in 1928. He is now working toward the Ph.D. in Physics at Columbia.

His work at BTL has included pioneering research on circuits and amplifiers with particular emphasis on non-linear elements of the vacuum tube and ferro-magnetic type and on feedback amplifiers. He also participated in the development of carrier transmission systems, which included the design of the line amplifier for the type "J" open-wire system, the invention of the regulating system used in the type KZ cable carrier system and several patents relating to carrier systems. During World War II, he was engaged in military work on sonar and radio communication systems, and later was involved in studies of transistor circuits. Since 1954, he has been concerned with military projects and took part in BTL's activities on NASA's Project Mercury.

Mr. Kreer, continuously active in professional affairs, has served on many committees of the IRE and is now Vice-Chairman of the Standards Committee. He is a member of the American Association for the Advancement of Science, the American Standards Association and Pi Mu Epsilon.



13 MILESTONES IN INSTRUMENTATION



THE ZYFER ZERO VOLTAGE POWER SUPPLY

At last, a unit that fills the empty gap between positive and negative DC power supplies! Machined from a solid ingot of bismuth, and filled with liquid helium, here is the ultimate in superconductive zero references — infinitely stable, because there is nothing to vary, and accurate to 18 decimal places. No adjustments are ever required; the ON-ON control switch has no internal connections, but provides a feeling of accomplishment when thrown to either position.

Every Zyfer is guaranteed fool-proof and idiot-proof, since it is inspected by our own technicians and tested by our own engineers. It cannot be short-circuited, as it has only a single terminal, and cannot be mis-read — the digital display shows a fixed reading of zero, to nine places; this is merely for reassurance, which should certainly count for something, even when it's Nothing.

THEN
for valid values of voltage
— either polarity —

NJE CORPORATION: POWER SUPPLIES UNLIMITED



MODEL QR-36-4
0-36V 0-4A; $\pm 0.005\%$ Reg.

Stock models up to 250,000 volts, up to 120 amperes. Specials to your specifications — solid-state or VT, regulated or "brute-force", constant voltage or constant current. For a catalog or a quote, ask:



**BURLINGAME
ASSOCIATES**

Main Office:
510 South Fulton, Mt. Vernon, N. Y.
MOunt Vernon 4-7530

Professional Reading Habits

A group of scientists — 297 chemists and 404 physicists — recently were wired for sound in connection with a study of scientists' professional reading habits. Each participant was given a "random alarm mechanism," an electronic device the size of a package of cigarettes designed to emit audible alarms at random moments. If the scientist was reading a scientific periodical when the alarm sounded, he filled out a short questionnaire indicating the nature of his reading matter. Results of the 14-day study, sponsored by the National Science Foundation and conducted by Case Institute of Technology, show that U. S. physicists and chemists do not read more than an estimated 5% of the current professional literature published in their fields.

Demand to Double for Scientists, Engineers by 1970

In a report entitled "The Long-Range Demand for Scientific and Technical Personnel — a Methodological Study," the National Science Foundation points out that by 1970 the demand for scientists and engineers may nearly double. The study, conducted by the Bureau of Labor Statistics, was made to develop a systematic method for projecting the long-range demand and to establish a system for checking and improving the estimates at regular intervals. Projections indicate the demand for scientists and engineers may rise about 85% between early 1959 and 1970 — from a total of 1,096,000 in 1959 to 2,032,000 in 1970.

Mid-Atlantic Area Tops in Scientists

The National Science Foundation has announced that the Middle Atlantic States had the largest number of full-time employed scientists. This group also had the highest median salary — \$10,000 annually. Lowest median salary, \$8000, was reported by those in the West North Central and Mountain geographic divisions. Median salary for all others reporting was \$9,000. Of the more than 110,000 scientists reporting to the National Register of Scientific and Technical Personnel, nearly 20% were in the Middle Atlantic States, with the East South Central States employing the fewest, about 3%. These figures apply to the 1960 registration.

NEW AT IRE SHOW

FROM HARRISON LABS,
OF COURSE!



HARRISON LABS MODEL 865B POWER SUPPLY

H-Labs Model 865B is a compact, constant voltage/constant current DC power supply. It was designed to meet the needs for a general purpose and reliable source of power for engineers working with transistor circuitry.

SEE IT AT BOOTH 1429-1431

Your Harrison Labs representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOwell 7-3933

Cut along dotted line

NORTHERN NJ SECTION

FEBRUARY						
S	M	T	W	T	F	S
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

HUGH S. WERTZ, *Chairman*
ALANSON W. PARKES, JR., *Vice-Chairman*

MORRIS LEVINE, *Secretary*
JOHN R. FLEGAL, *Treasurer*

MARCH 1962

APRIL						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				NNJS LECTURE SERIES 8 P.M. GROVE ST. SCHOOL MONTCLAIR, N. J. 1	2	3
4	5	6 Shrove Tuesday	7 Ash Wednesday	NNJS LECTURE SERIES 8 P.M. GROVE ST. SCHOOL MONTCLAIR, N. J. 8	9	10
1	12	13	NNJS MEETING ANNUAL DINNER DANCE 14 HOTEL SURBURBAN 6 P. M. East Orange	NNJS LECTURE SERIES 8 P.M. GROVE ST. SCHOOL MONTCLAIR, N. J. 15 PGED - NYC - 8 P.M.	16	17 St. Patrick's Day
8	19	NEWSLETTER DEADLINE FOR MATERIAL TO APPEAR IN MAY ISSUE 20	21 Spring Begins	NNJS LECTURE SERIES 8 P.M. GROVE ST. SCHOOL MONTCLAIR, N. J. 22	23	24
5	IRE NATIONAL CONVENTION PGVC - NYC - 8 P.M. 26	IRE NATIONAL CONVENTION 27	IRE NATIONAL CONVENTION NNJS EXEC. COMM. MEETING VERONIA LIB. 7:30 P.M. 28	IRE NATIONAL CONVENTION 29	30	31

THE SPOKESMAN FOR THE RADIO ENGINEER

SIXTH ANNUAL CONVENTION

JUNE 4, 5, AND 6, 1931

CHICAGO, ILLINOIS

Preprinted from a forthcoming issue of the PROCEEDINGS of the Institute of Radio Engineers. Price to nonmembers, 50 cents
Institute of Radio Engineers
33 West 39th Street, New York City

By S. C. HOOPER

(Director, Naval Communications, Navy Department, Washington, D. C.)

THE GREAT human desire is for uplift to equality — equality in worship, political rights, home life, comforts, travel, news, entertainment, and health. Thousands of years were spent in the efforts of humanity for political and religious equality, and during the past century has come the living wage, and the possibility for all to enjoy their own homes. The present age is one in which individuals are striving for a semblance of equal luxury and entertainment, and in the accomplishment of this, the engineer becomes the great leader, for it is the engineer who conceives of improvements, and makes inventions which bring about electrical, mechanical, sound, and other devices cheap enough for even the poor to make use of electric lights, good literature, current newspapers, telephones, moving pictures, automobiles, and by means of such inventions even the poor can hear the finest music, witness, through the moving picture, the scenes of the world, and hear the addresses and sermons of interest. This is the day in which the engineer makes his great contribution to assist the public in the struggle for equal happiness.

It is only a very small number of individuals from the world's total who contribute anything in conception and fulfillment of the advancement of science, invention, and applications to improve human comfort and happiness. Foremost among these today stand the radio engineers. It is, therefore, a great honor to be of the membership of this society.

The first application of the radio art for practical purposes was only thirty-five years ago. The entire art has developed since that time. Probably half the industry of radio has been written during these few years, and the names of the inventors, engineers, and executives, mostly in their prime now, are listed in our YEAR BOOK. They include many famous figures in the world today and their names will occupy forever promi-

nent places in scientific and business history.

We are blessed with the confidence which grows from successful achievement, while still with active years ahead, and this great advantage will spur us on to solve what may be considered the more difficult problems with which we are faced. The leaders in this field have, as a rule, made greater success of their lives than they hoped to make, and during the remaining years we should, in the spirit of fraternalism of this great organization, be friendly and kindly to one another. We should "live and let live" and be friends at peace with one another.

What is the purpose of the Institute Proceedings? It is to tell about radio—radio communications—for what is radio but radio communications? It is not sound pictures in themselves, nor wire communications except as used in connecting to radio, it is radio communications.

This term includes mobile, point-to-point traffic, broadcasting, special services, and the amateur. These services comprise radiotelegraph, radiotelephone, radiotelevision, and radio transmission of power. The uses of radio are many; there is no all-seeing guide to pilot these uses into the fields of greatest relative value to the nation; the path is more dependent on individual imagination, energy, and competition. Sometimes comparatively unimportant applications are given undue importance in the limited spectrum, due to the energy with which presented, while others much

NEW AT IRE SHOW

FROM DYMEC,
OF COURSE!



DYMEC MODEL DY-2401A INTEGRATING DIGITAL VOLTMETER

Model DY-2401A Integrating Digital Voltmeter represents a new concept in digital voltmeters. It combines a laboratory instrument's precision and flexibility with the programming and electrical output features necessary for automated systems use.

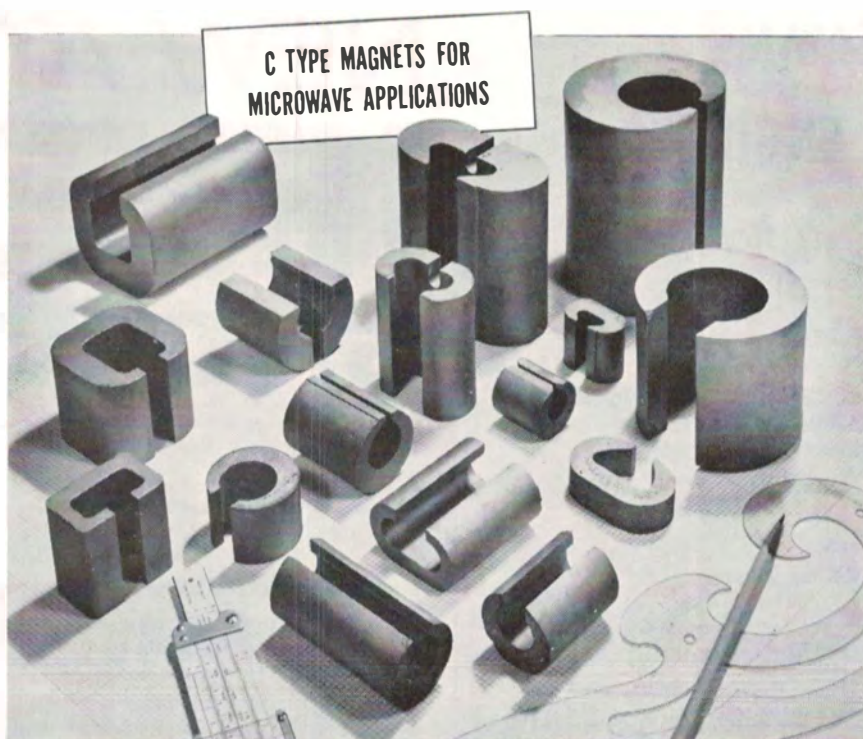
SEE IT AT BOOTH 3015-3017

Your Dymec representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOwell 7-3933



Available in a wide range of sizes to meet your design needs in ★ TRANSVERSE FIELD ISOLATORS ★ DIFFERENTIAL PHASE SHIFTERS ★ DUPLEXERS

Arnold C-type Alnico Magnets are available in a wide selection of gap densities ranging from 1,000 to over 7,500 gauss. There are six different basic configurations with a wide range of stock sizes in each group.

The over-all size and gap density requirements of many prototype designs can be met with stock sizes of Arnold C Magnets, or readily supplied in production quantities.

When used in transverse field isolators, Arnold C Magnets supply the magnetizing field to bias the ferrite into the region of resonance, thus preventing interaction between microwave networks and isolating the receiver from the transmitter. These magnets are also used in differential phase shifters and duplexers, and Arnold is prepared to design and supply tubular magnets to provide axial fields in circular wave guides.

A feature of all Arnold C Magnets is the excellent field uniformity along the length of the magnet. Versatility in design may be realized by using multiple lengths of the same size magnet stacked to accomplish the needs of your magnetic structure.

Let us work with you on any requirement for permanent magnets, tape cores or powder cores. ● *For information on Arnold C Magnets, write for Bulletin PM-115.*

7849

Address Dept. TN-3



THE ARNOLD ENGINEERING COMPANY, Main Office: MARENGO, ILL.
NEW YORK, Office: 610 E. Palisade Ave., Englewood Cliffs, N. J.
Telephone: LOwell 7-4640

more important lag behind for lack of adequate support, and later have difficulty in obtaining suitable frequency channels. The licensing authority then has trouble in readjusting licenses, court action follows and financial losses result. The public is uneducated in these matters and the lack of a proper agency to undertake this education as to the relative importance of the various services, and to disseminate the arguments for and against competition is a serious matter, and often delays some important adaption of a new type of service. Some group allied with radio should undertake this work. Perhaps the Institute can assist in this.

In the United States our broadcasting is, I believe equal or better than in other countries. That is because all of the public is interested and because it is not owned by the government. We need have no fears for the future of our broadcast system because the public will be heard. True some engineers feel that the limit of power on certain channels should be raised but that will all eventually adjust itself. Also we know there is often too much advertising permitted on each program. Those who pay to broadcast their wares will eventually realize that too much advertising on a program turns the listener against them. A good program and just a word or two to let the audience know to whom he is indebted will make the sale. The Institute might help this situation by an educational campaign.

Probably radio vision and radio transmission of power are too far in the future so far as mature development is concerned to demand at the present more than those channels necessary for experimental work along those lines. When, if ever, these projects become practical facts, the public will demand the necessary revision of channels, such as was made when broadcasting first became popular.

Radio communications have made wonderful strides since 1915, but we must be very careful and look to the future. All nations must carefully protect the channels assigned to mobile services, for ships and aircraft have no other means of communicating, for the experimenter, and for national defense, and must have the necessary channels with a safe margin. The discipline of the air in mobile bands is below that of other services.

Radio point-to-point communications have brought about opportunities for better and more direct communication between the peoples of all nations, and the competition with wire communications has resulted in improved service and cheaper rates. Only good can result from such improvement, and with inter-

national broadcast, and greater flow of news, the understanding between the peoples of all the world will be greater, and the likelihood for wars will decrease. Competition between nations for ownership of the radio systems is not conducive to good feeling, and best results will follow if each nation, either through public or private ownership, controls its terminals on its sovereign soil, and operates with other nations through traffic agreements.

Too much competition, or "cutthroat competition" for public utilities, is fatal to the communication companies, and, in the end the public pays the bill. In the United States there appears to be danger to our best interests in having too much competition. On the other hand, to set aside the natural law of competition is removal of the guarantee of public protection, and research may suffer. Some middle ground is desirable for the best results. And, if the radio engineer is to be protected, he should give study to this question, and see to it that the Government finds the right answer.

The same applies to production of radio sets. The present depression in radio manufacturing has resulted, to a large extent, from over-production. Do we see any signs of any guiding hand to reduce this production along any sensible well-thought-out lines? And is this a matter in which the radio engineer should have a voice?

On these subjects the public is uninformed and confused; nor is it particularly interested. They lack the much needed source of reliable information. Who will this be — a financier, a radio company, a wire company, or an engineer? There are organizations representing the manufacture of radio equipment, organizations on patent matters, on legal matters, on standards and phraseology, but there is no one standard bearer to speak to and for the public as to what is best for the latter's interest and those of the nation in radio, and to represent the public before the government. On reflection, this seems a most amazing lack, that we engineers have felt ourselves responsible for radio since its inception yet we have no standard bearer. The result? Engineers are in need, greed is ruling, and the interests with the best legal talent most often obtain the desired channels. This is, in a way, an indictment of the radio engineer.

Among radio engineers there is a co-operation resulting from close daily associations through the medium of the ether, bringing us all into close relationship and understanding. This close association disregards race and nationality and is bound to have a definite influence towards good will and peace. This we

should bear in mind as we grow older and become less interested in the purely technical.

As engineers you have done a marvelous work in discovery, and in development of apparatus and systems, but in the application of our work in best form to serve the people, we find our success varied according to our forms of government, and to the nature of the lands we inhabit. It would seem as though there were a gap between the engineer and the executive power of a nation which prevents the engineer from realizing his dreams in the best form. The gap is so wide in some countries that it almost stifles the engineer, and in others, makes the application of his ideas so difficult that his reward is small and the people themselves fail to receive the full right-of advantage.

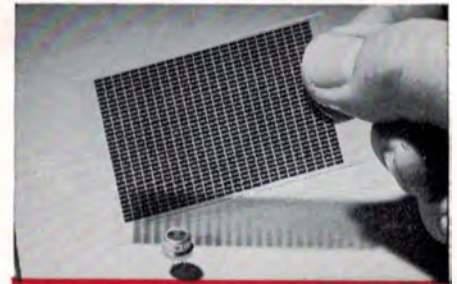
Engineers as a rule have vision and are practical men. They evolve an idea for something worth while and then invent the apparatus, but why does their original idea for the proper application of the system have so much difficulty in realization? I have come to the conclusion that it is because the engineer lacks a certain broadening to be attained from study of law and political matters. This situation arises from the fact that there is no university wherein a broad course in communications includes outlines of law and business. So, even though he invents his apparatus, the engineer lacks the practical knowledge and confidence to impress upon proper authority the correct method of application.

Consider the example of the United States. Had we had radio engineers eight years ago, properly trained in law, political sciences, and in the adaption of radio to communications, the present situation would have been foreseen and we would have known how to organize and present, to the government and companies, completed solutions of the problems that would have been accepted. The radio statutes and orders governing radio stations would have been so eminently satisfactory that the companies today would not place themselves so much in the hands of legal departments. Some government officials, knowing about radio, and a few engineers undertook to guide the art into certain channels, and on the whole, their ideas were good and they were honest. But, others entered the picture without full knowledge, and in their efforts to make money, challenged the intelligence and honesty of purpose of those who understood the situation.

The result is not at all as we would wish it to be. For lack of this training, radio today is a compromise between engineers, department store managers,

NEW AT IRE SHOW

FROM BURROUGHS,
OF COURSE!



BURROUGHS BIP 1001 HIGH DENSITY THIN FILM PLANE

This new High Density Memory Plane has a storage capacity of 128 words, 24 bits (3072 bits). This is almost 10 times the bit density of previously available planes. Word interrogation occurs by linear selection. Price of the BIP 1001 represents a 50% cost reduction per bit.

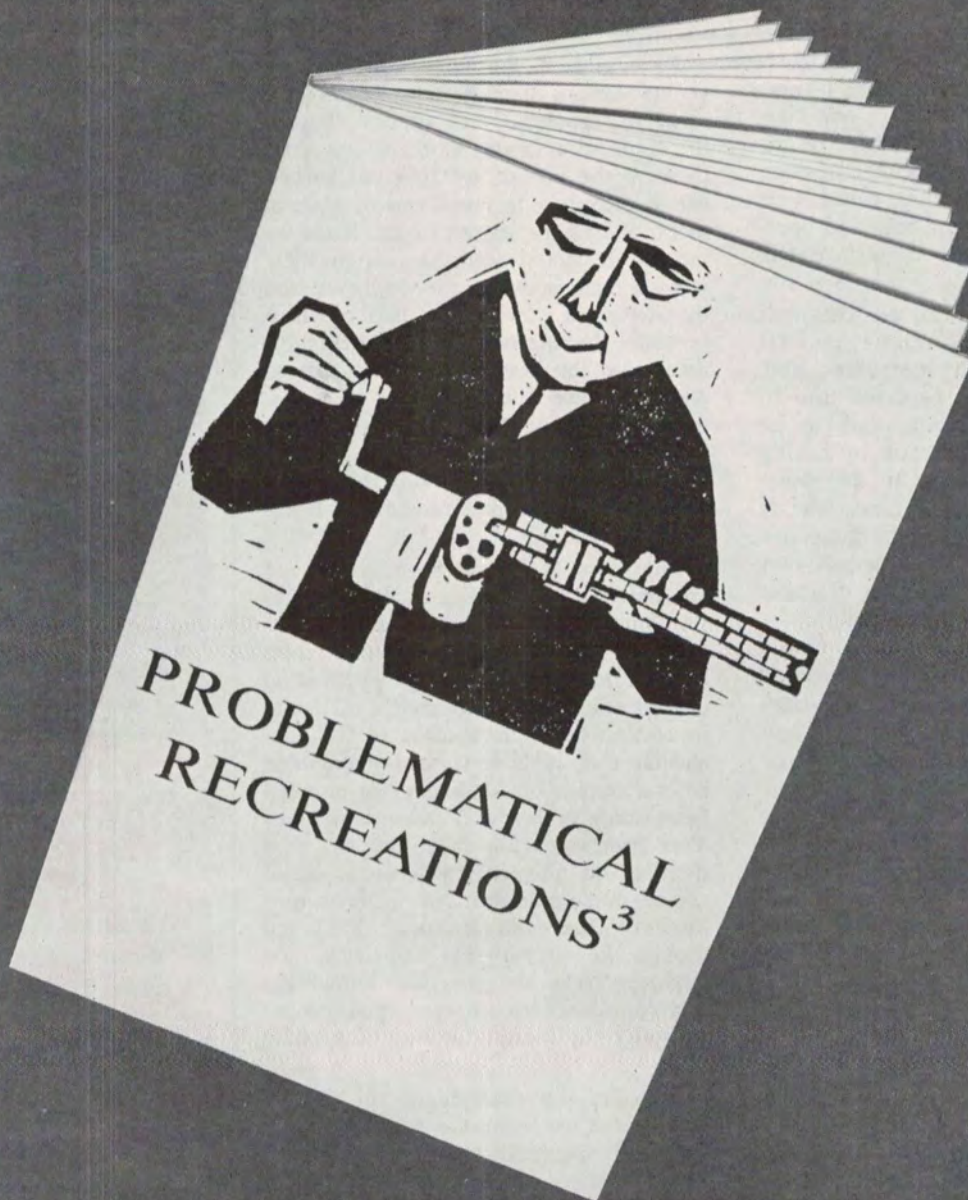
SEE IT AT BOOTH 1211-1215

Your Burroughs (Electronic Comp. Div.) representative is

rmc ASSOCIATES

IN NEW YORK: RMC Associates
236 E. 75th St.
New York 21, N. Y.
TRafalgar 9-2023

IN NEW JERSEY: RMC Associates
391 Grand Ave.
Englewood, N. J.
LOWell 7-3933



WIT-SHARPENER

YOURS FOR THE ASKING . . . our third collection of perplexing puzzles to stimulate the erudite, entertain the curious, and amuse the witty. Thirty-one brain-twisters, cleverly illustrated, in each and every booklet. Write to Mr. Harry Laur and ask for "Problematical Recreations³." At the same time question Mr. Laur about opportunities

at Litton Systems, Data Systems Division. New answers . . . possibly yours . . . are being sought for design, development, and manufacture of data systems including data acquisition elements, digital computers and processors, data display and evaluation facilities, and high-speed communications networks.



LITTON SYSTEMS, INC.

DATA SYSTEMS DIVISION

6700 Eton Avenue • Canoga Park, California

An Equal Opportunity Employer

politicians, theater owners, and lawyers.

Had the engineers proceeded properly in the beginning they would have first reached accord among themselves as to what the set-up should be, they would have next elected a suitable spokesman, and have organized the necessary propaganda to assist putting their ideas across, and then the problem of getting Congress and the executive branch to provide the needed laws and regulations would have been very easy.

What can be done to remedy the situation in the future? The answer is: first, influence our universities to give the engineer a broader training; second, provide one spokesman for the radio engineer; third, provide an organization which will instruct the spokesman in the policies of the radio engineer.

This is not a difficult problem. We have the very organization and power right here in this organization, if we care to use it. Might we not take a leaf from the book of the American Bar Association. That organization, as an organization, represents the legal talent of the United States. It has committees appointed to consider all manner of pertinent subjects of interest to the Association. These committees make their studies and publish them to the members, and the organization ballots on important questions. Then the president of the association is provided with the result of the ballot and is in position to express the desire of the lawyers of the United States. The following up of this is not a difficult task. The strength of the organization is such that it has a tremendous influence for the benefit of the legal fraternity and for the good of the nation.

Now, I say to the radio engineers that if you wish to continue as at present, merely along the lines of least resistance, the fortunes of fame and wealth resulting from your achievements, and the great wealth of your imaginative genius, in which the public has a tremendous interest at stake, will pass to manufacturers, wholesalers, jobbers, politicians, and lawyers; you will only be the slaves. But, if you wish to have the applications of this great radio art made as you know they should be made in the interests of the public, and reap adequate benefits for your own purposes and in order that you may extend your studies of research, you should stir yourselves now before it is finally too late, discuss the question, elect your spokesman, and the radio world will be yours.

Nothing can be accomplished without free and frank discussion, and representative opinion expressed through some sort of ballot, and even then your leader must

go further than speech making to put across your ideas. For example:

What should be the division of the radio spectrum?

What should be the organization of channels for broadcasting?

What should be the limit on the power of transmitters?

What should be the amount of advertising permitted and its form?

What should be the policy of the government in the question of ownership and operation of radio?

Should radio and wire systems be united?

Should the Institute of Radio Engineers make suggestions as to the qualifications of radio commissioners?

Should there be a tax on radio sets?

Is the government efficient in its radio systems?

Should there be some form of radio patent pool?

Should there be some form of co-operative regulation of production?

Should the Institute PROCEEDINGS include papers on different views on such questions, and ballot to determine the crystallization of opinion pro and con?

The Institute to date contains a wonderful historic record, and it makes valuable contributions in standardization and nomenclature work, but it requires someone to breathe the spark of life into its organization to make it a vital factor in the life of each nation. Such might be effected by devoting one-third of its pages to discussion of live issues, balloting on these issues, and selecting a spokesman to present its desires before the public and their administrators.

There is one matter which I feel certain that this Institute could carry on, a worthy task, in bringing before the American public the names of members who have done noteworthy work in advance of science and its application, and that is to sponsor a bill before the Congress of the United States to secure recognition of our leaders. Foreign nations have not been backward in bestowing decorations, medals and cash prizes in such matters. Likewise the American Congress has made numerous awards for those who have advanced aviation the medical profession and heroes of the battlefield, yet, except for the efforts of individual companies, little recognition has been made of the individuals who have pioneered in the great art of radio. It would seem that recognition in the way of bestowal of decorations and cash prizes would be an inspiration to the coming generation, as well as a due recognition of some of our members.

POLARAD micro/notes

There seems to be a recurrent theme in our day after day visits with microwave design engineers—"Signal generators that just do the job today aren't enough! We've got to have capabilities far beyond our immediate needs before we can get the appropriation."

It's easy to sell Polarad Model PMK Signal Generators in the face of this argument, because this unit, operating from 10 to 21 gc, with a 10 milliwatt calibrated power output, has more modulation capability than any other we know of. Read the specifications for yourself and see how Polarad builds in "features for the future."

Microwave Signal Generator



**Model PMK 10,000 to 21,000 mc
MODULATION SPECIFICATIONS**


Modulation:	Internal or external pulse, square wave, or FM
Internal Pulse Modulation:	
Width	0.2 to 10 microseconds.
Repetition Rate	10 to 10,000 pps.
Delay	2 to 2,000 microseconds.
Sync	internal, external pulse or sine wave.
Rise Time	0.1 microsecond.
Decay Time	0.1 microsecond.
Internal Square Wave:	
Rate	10 to 10,000 pps.
Sync	internal.
Internal FM:	
Type	Linear sawtooth.
Frequency	5 mc minimum.
Deviation	10 to 10,000 cps.
Rate	internal or external, pulse or sine wave.
Synchronization	
External Pulse Modulation:	
Polarity	Positive or negative.
Rate	10 to 10,000 pps.
Pulse Width	0.2 to 50,000 microseconds.
Amplitude	15 to 40 volts peak.
Output Synchronization Pulses:	
Polarity	Positive, delayed and undelayed.
Rate	10 to 10,000 pps.
Amplitude	15 volts peak minimum.
Rise Time	Less than 0.25 microsecond.
External Sync:	
Type of Input	Positive, negative, or sine wave.
Amplitude	Pulse: 5 to 50 volts peak; sine wave: 5 to 40 volts rms.

Robert Savold

POLARAD ELECTRONICS CORP.

43-20 - 34th Street, Long Island City 1, N. Y.

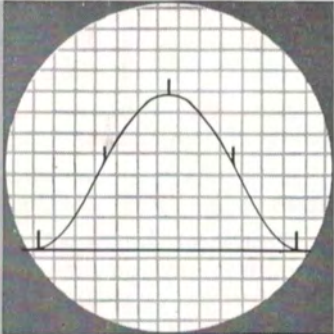
EXeter 2-4500



KAY

ELECTRIC

COMPANY



Electronic Instruments

- SWEEPING OSCILLATORS
- FREQUENCY MARKERS
- AUDIO SPECTRUM ANALYZERS


- PRECISION ATTENUATORS
- RANDOM NOISE GENERATORS, ETC.

AS ADVERTISED OPPOSITE "MEETINGS WITH EXHIBITS"
IRE PROCEEDINGS, 1960-61

Write For Complete
Catalog Information

KAY ELECTRIC COMPANY

14 MAPLE AVENUE • PINE BROOK, N. J. • CAPITAL 6-4000



UNIVERSAL TOROID COIL WINDING, INC.

INDUCTORS • MAGNETIC AMPLIFIERS

TRANSFORMERS • SATURABLE REACTORS

CUSTOM DESIGNED/MANUFACTURED TO CUSTOMER SPECIFICATIONS


We will be pleased to offer our quotation for your requirements on both prototype and production quantities. Quotations will be offered promptly. Prototypes are available within 7 days.

Our engineering staff is ready to assist you with your problems.

Write for detailed catalogs.

ECONOMY

FAST SERVICE



QUALITY

RELIABILITY

UNIVERSAL TOROID COIL WINDING, INC., 171 COIT ST., IRVINGTON, N. J. Tel. ESsex 4-9806

Who's the Oddball?

It had been Harry's first trip abroad. What really got him was the crazy money system in Britain. Imagine, 12 pence to the shilling, 20 shilling to the pound. And when he put a penny ("Boy, you should see those cartwheels!") in the weighing machine his usual 182 pounds came out 13 stone!

His associates put up with his yacking until Tom spoke up. What about 12 inches to the foot, 3 feet to the yard, 1760 yards to the mile? Or 16 ounces to the pound? What about 231 cubic inches to the gallon, 43,560 square feet to the acre? Harry's only answer was a blank stare.

Tom's designs often incorporate ball bearings which come in metric sizes and require an unholy amount of figuring on inch-dimensioned housing tolerances. And in Munich last year he learned that a liter of beer is not only all of a quart and more, but is also, for practical purposes, a nice round 1000 cubic centimeters. Now he is trying to convince Harry that we should throw out all our crazy measures and adopt the metric system like most other countries.

"You must be nuts," retorts Harry. "Do you want us to scrap all our rules, scales, micrometers, and gages? To have to teach people to think with all new numbers? Who can picture a 16-millimeter bolt? It's too late to change now."

Too late? Maybe it is. Our international competitors may be foreigners in the countries where they are trying to extend their markets, but at least their products come in familiar sizes. They are busy now adopting all sorts of international dimensional standards which are leaving the U. S. in the oddball category. In the ISO, like the UN, each country has an equal vote.

A bill which would authorize a study to determine the practicability and desirability of the adoption of the metric system by the U. S. was introduced by Representative James Roosevelt in the current session of Congress. It has gone no further than the Science and Astronautics Committee of the House.

But it doesn't require an Act of Congress to adopt the metric system within a company, an industry, or even a state. Use of the metric system was legalized in the U. S. back in 1866.

It may not be too late now, but considering the rate foreign countries are going, it very soon will be. What do you think?

from MACHINE DESIGN, July 20, 1961
by Colin Carmichael, editor

Expansion — from Curriculum to Campus — Marks New Era at

NEWARK COLLEGE OF ENGINEERING

The new year marks a significant turning point in the history of Newark College of Engineering, for this January its trustees gave final approval to a plan to increase the campus from two to twenty acres under a \$7,000,000 expansion program.

NCE's plan provides for a new academic building, student center, physical education building, athletic fields and extensive parking areas. The college now has six buildings to accommodate over 3,900. Its new campus and facilities, slated for completion by 1965, are the result of a study by its board that predicts an enrollment of 7,000 students within the next four years. Ground-breaking for the new campus, which will extend NCE from High to Lock Street to the west and from Bleeker to Warren Street to the south, is scheduled for early this fall.

In addition to this phase of expansion, the college already has another plan that will add three more structures to the campus by 1975, when enrollment is expected to reach approximately 12,000. This final phase will complete a twenty-five-year development program at the college.

College in Transition

As the facts and figures indicate, NCE, like other major institutions of higher learning, is a college in transition, preparing for tremendous future enrollments that will eventually boost the supply of qualified engineers and scientists. And

hand in hand with NCE's bustling building program go revisions of the engineering curriculum, up-dating and reshaping it into a series of programs as modern and functional as the college's facilities.

NCE now offers the B.S. in chemical, civil, electrical, mechanical and industrial engineering; the M.S. in the first four of these fields and in management engineering; and the Sc.D. in electrical and chemical engineering. Other fields of study on the undergraduate level are currently under consideration. The Graduate Division is mapping out steps to include additional doctoral programs.

What a potential NCE student has before him is a college that offers an educational continuum that need not be broken by his job obligations in the area. As well, he will find at NCE programs of study that encompass not only the high standards of academic requirements but those which have been established



out of the college's keen awareness of a graduate engineer's responsibilities on the job and in his community.

Master's Degree in EE

It will be of special interest to IRE members of northern New Jersey that NCE's Department of Electrical Engineering offers, besides the program leading to the Doctor of Engineering Science, eight major areas of study on the Master's level. Each area presents an integrated program of required and elective courses. The complete list of areas include Electrical Circuit Design and Synthesis; Automatic Control and Industrial Electronics; Electronic Computers; Communications; Electroacoustics; Electric Power Systems; Electric Machinery; and Fields and Waves.

Electrical Engineering, which is NCE's largest department with fifteen faculty members and four teaching specialists, presently utilizes classrooms and laboratories in Weston and Colton Halls. However, even more room is required, especially for proposed equipment additions. To meet these needs the 1965 academic building will be turned over mainly to housing facilities of this one department.

NCE Research Foundation

Two major operations at the College are playing significant roles in the activities of EE in both undergraduate and graduate categories. These are the NCE Research Foundation, a non-profit, independently organized and financed affiliate of the college founded in 1959, and the NCE Computer Center, established last spring on campus.

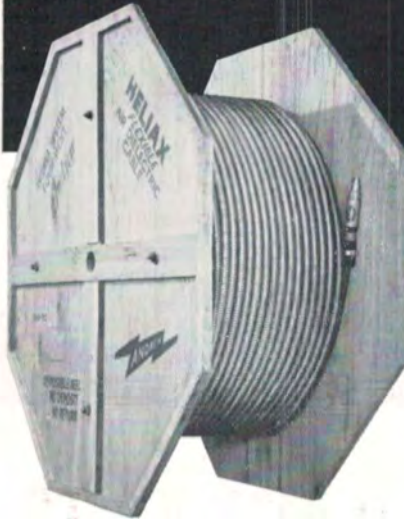
The Foundation, created through a \$300,000 grant from Thomas M. Cole, president of Federal Pacific Electric Company, in Newark, is devoted primarily to



Rendering of NCE's 1965 campus shows (in light tones) the student center, left, academic building, center top, and physical education building. The new four-story academic building will be devoted mainly to electrical engineering.

HELIAX

THE APPROVED
FLEXIBLE AIR DIELECTRIC
CABLE



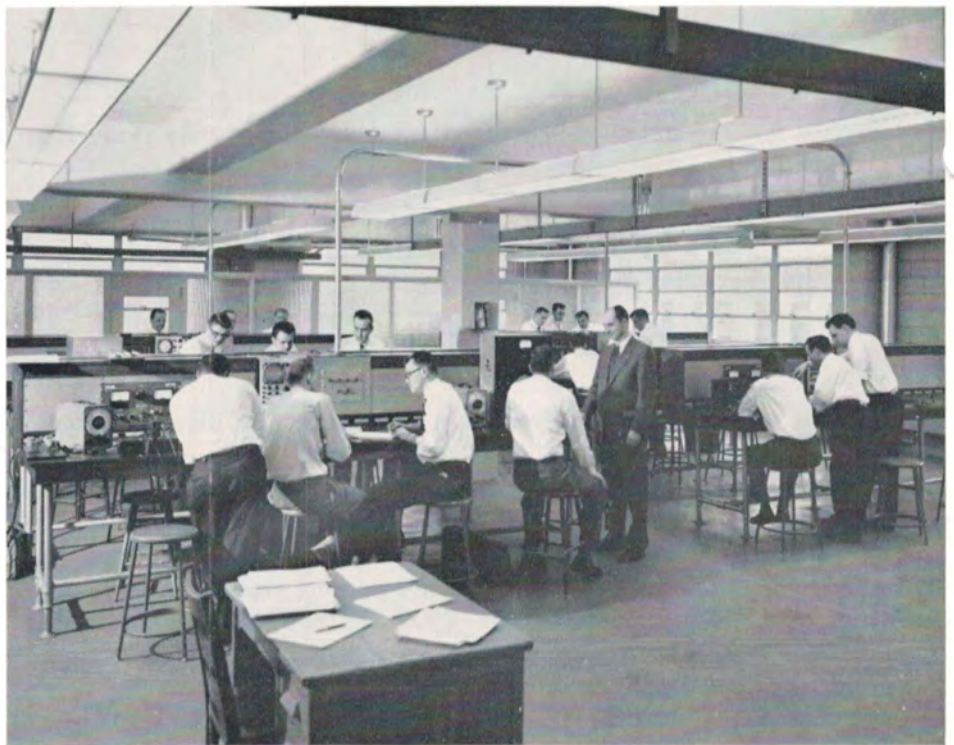
For Military and Commercial Use

HELIAX is the flexible, low loss, low VSWR coaxial RF cable for use in all applications from VLF through microwave. It is available in continuous lengths limited only by shipping reel size and with a complete selection of end fittings. All copper conductors minimize RF loss, provide corrosion protection.

Size	Andrew Type No.	RG No.	Bushings Drawing No.
3/8"	H3-50	RG268/U	RE49B761A
7/8"	H5-50	RG269/U	RE49B762A
7/8"	H5-75	RG284/U	RE49C774
7/8"	HT5-100	RG285/U	RE49C775
1 1/8"	H7-50	RG270/U	RE49B763A
1 1/8"	H7-75	RG286/U	RE49C776
1 1/8"	H7-100	RG287/U	RE49C777
3 1/8"	H2-50	RG288/U	RE49C778
3 1/8"	H2-75	RG298/U	RE49C779

Andrew

P. O. Box 416 • Ridgewood, New Jersey
Phone: Gilbert 5-2500



In progress: a three-hour session in Advanced Electronic Circuits. The area is one of EE's newest, located in Weston Hall. Behind glass panels in the rear are the analog computer and the microwave laboratories of the department.

improving the qualifications of teachers and graduate students through research opportunities and other special study programs. It uses NCE's instructing staff and various facilities toward these goals.

During this academic year the Foundation's budget is over \$200,000, including appropriations for twenty-six basic research projects. Faculty and graduate students of the Department of Electrical Engineering are effectively sharing in this phase of the Foundation's work, exploring new areas in fields such as electrical contacts, electromedical research, transistor equivalent circuits, and adaptive servomechanisms. Under a program of the Foundation and college, the department is presently sponsoring five fellowships on the Master's level and developing others under the doctoral program. Using funds from an additional \$250,000 contribution made by Mr. Cole two months ago, the department and Foundation expect to appoint this fall a research professor in electrical engineering.

NCE Computer Center

NCE's Computer Center provides the first completely transistorized IBM 1620 computer on any New Jersey campus. The machine, together with equipment for paper tape and punched card operations, is available to faculty and students throughout the year, and, since its installation, has played a major role in NCE research undertakings.

In the long view, however, no equipment or structure has taken a more prominent role in the history of NCE

than its theme of dedication to engineering education and citizenship. Dr. Allan R. Cullimore, who served as the first president of the college from 1920 to 1949, established NCE's ruling philosophy on two principles: that engineering is a discipline, requiring the highest ideals of work and ethics; that the engineer has a duty as a citizen perhaps even greater than do members of other professions, because of his specialized training in both logical and creative thinking.

History of NCE

NCE traces its theme of work and dedication to its very beginning in 1885 when the city and state founded the Newark Technical School, forerunner of the college, at 21 West Park Street. Professor Charles A. Colton, a mining engineer of Rose Polytechnic Institute, in Indiana, was named as its first director. The School's first class, numbering 100 students, started courses in evening study covering drawing, mathematics, physics and chemistry. As the enrollment grew, Professor Colton constantly made changes and improvements in the course.

By 1919 it was apparent that instruction at the college level should be offered during the daytime, and in September of that year the first day class matriculated for a degree program. One year later Dr. Cullimore, formerly of the University of Delaware, was appointed director of the school and head of the college, which, by this time, had begun to flourish in numbers and prestige. In the mid-twenties NCE instituted evening programs leading

to the B.S. degree. Incorporated into the Evening Division later on, the programs have continued to attract hundreds of students and play an important part in their industrial and professional advancement.

During World War II, the college trained approximately 10,000 individuals under a special Engineering, Science and Management program that geared them for war production work. This later undertaking was so successful in the upgrading of personnel that, after the war, NCE created its Special Courses Division. Presently, the Division gives instruction in sixty-five subjects under twelve evening certificate programs designed to implement the qualifications of technicians in business and industry.

Dr. Robert W. Van Houten, who has been president of NCE since 1949, knows intimately the tradition and history of his institution. He received his B.S. in civil engineering at NCE in 1930 and



Signals are read and recorded from a vacuum tube voltmeter in an EE laboratory.

the professional degree in that field two years later. Joining the college immediately after graduation, he held numerous academic and administrative posts before his appointment as president.

Dr. Van Houten, like his predecessor, firmly believes that the engineer is uniquely well-fitted to render exceptional service in government and in civic affairs, in every endeavor and on every level of society, because of his education and special aptitudes. He has repeatedly emphasized the importance of the humanities, professional society affiliations and public service.

Currently serving as president of the 10,000 member American Society for Engineering Education, Dr. Van Houten recently stated that "as long as engineers are content to work hidden away within the ranks of industry or quietly within their own small companies or strictly as engineering consultants, they will never attain a truly professional status. The key to the mark of professionalism," he continued, "lives in the word *service*, to one's company first, but additionally to the larger world which gave the engineer his education and which needs his talents so desperately."



measures
from

100 MICROVOLTS to 320 VOLTS

regardless
of
waveform

TRUE RMS

frequency range 5 to 500,000 cps

FEATURES

Built-in calibrator . . . easy-to-read 5 inch log meter . . . immunity to severe overload . . . useful auxiliary functions

SPECIFICATIONS

VOLTAGE RANGE: 100 microvolts to 320 volts

DECIBEL RANGE: -80 dbv to +50 dbv

FREQUENCY RANGE: 5 to 500,000 cycles per second

ACCURACY: 3% from 15 cps to 150KC; 5% elsewhere. Figures apply to *all* meter readings

MAXIMUM CREST FACTORS: 5 at full scale; 15 at bottom scale

CALIBRATOR STABILITY: 0.5% for line variation 105-125 volts

INPUT IMPEDANCE: 10 MΩ and 25 μμf, below 10 millivolts; 10 MΩ and 8 μμf above 10 millivolts

POWER SUPPLY: 105-125 volts; 50-420 cps, 75 watt. Provision for 210-250 volt operation

DIMENSIONS: (Portable Model) 14 3/8" wide, 10 1/8" high, 12 3/8" deep—Relay Rack Model is available

WEIGHT: 21 lbs., approximately

Write for catalog for complete information

**BALLANTINE
VOLTMETER Model 320**

Price:
\$445.



— Since 1932 —



BALLANTINE LABORATORIES INC.

Boonton, New Jersey

CHECK WITH BALLANTINE FIRST FOR LABORATORY AC VACUUM TUBE VOLTMETERS, REGARDLESS OF YOUR REQUIREMENTS FOR AMPLITUDE, FREQUENCY, OR WAVEFORM. WE HAVE A LARGE LINE, WITH ADDITIONS EACH YEAR. ALSO AC/DC AND DC/AC INVERTERS, CALIBRATORS, CALIBRATED WIDE BAND AF AMPLIFIER, DIRECT-READING CAPACITANCE METER, OTHER ACCESSORIES.

Represented by GAWLER-KNOOP COMPANY

178 Eagle Rock Ave., Roseland, New Jersey

RESISTANCE

CAPACITANCE

INDUCTANCE

PRECISE, RELIABLE AND RAPID
COMPARISON OF COMPONENTS

IMPEDANCE COMPARATORS

- TESTS RESISTORS, CONDENSERS, INDUCTORS
- Percentage deviation from standard read on large meter
- Rapid response — no buttons to push
- High accuracy and stability
- Self calibrating — requires no recalibration when changing ranges

	MODEL 60	MODEL 1010
FREQUENCY	60 CPS	Either 1 KC or 10 KC
FULL SCALE RANGES..	±1%, ±5%, ±10%, ±20%	±5%, ±10%, ±20%
IMPEDANCE LIMITS:		
Resistance	5 ohms to 5 megohms	5 ohms to 5 megohms
Capacitance	500 mmfd. to 500 mfd.	50 mmfd. to 10 mfd.
Inductance	15 millihy. to 10,000 hy.	100 microhy. to 100 hy.
PRICE	\$199.00	\$329.00

OTHER MODELS AVAILABLE

MODEL	BRIDGE VOLTS	FULL SCALE RANGES
1000	2.5V-1000 CPS	±1, 5, 10%
1025	2V-1 KC, 25 KC	±5, 10, 20%
400	2.5V-400 CPS	±1, 10, 20%
60-S	.2V-60 CPS	±1, 2, 10, 20%
60-L	.6V-60 CPS	±1, 5, 10, 20%



WRITE FOR CATALOG

Representatives in Principal Cities



INDUSTRIAL TEST EQUIPMENT CO.
55 EAST 11th STREET • NEW YORK 3, N. Y.

Visit Booth #3611—IRE Show, N. Y. Coliseum — March 26 - 29

BALLOU INC.

51 North Broad Street
Ridgewood, New Jersey

N. Y. City Phone: WOrth 4-4640
N. J. Phone: GilbErt 4-6990

— Representing —

AirBorn Connectors, Inc., Dallas, Texas

Precision Engineered Electronic Connectors to MIL-C-8384, MIL-E-5272, MIL-C-5015 and MIL-STD-202.

Heinemann Electric Company, Trenton, N. J.

Magnetic-Hydraulic Circuit Breakers, Overload Relays and Slow Operate Time Delay Relays.

E. V. Naybor Laboratories, Port Washington, N. Y.

Solenoids, Position Indicators and Slow Release Time Delay Relays.

Nelson Electric Manufacturing Co., Tulsa, Oklahoma

Switchgear, and Control Equipment 15KV and under, Motor Control Centers, Weatherproof and Explosion-Proof Enclosed Circuit Protective and Control Equipment.

COMPETENT, EFFICIENT, EXPERIENCED SERVICE.

MERGER . . .

(Continued from page 9)

The combined program would be known as the IEEE INTERNATIONAL CONVENTION AND ELECTRICAL AND ELECTRONICS ENGINEERING SHOW and would include more fields of interest than either of the two present programs. Combined attendance is estimated at 100,000. A second general meeting would be held each year, probably in June, in conjunction with Regional Meetings or special technical conferences. Organizational matters of Sections, Regions, Districts and Standing Committees would be discussed here.

REGIONAL AND DISTRICT MEETINGS

Regional and District Meetings also would be held for the presentation of technical papers. Electrical and electronics shows could be associated with these Regional Meetings.

To take initial steps, a 14-man committee, composed equally of AIEE and IRE members, would select and employ the General Manager, act as a Nominating Committee for all new Directors and Officers, prepare and approve the bylaws for IEEE and, in general, take all necessary steps to implement the establishment of IEEE on January 1, 1963. This committee would go out of existence immediately upon the first Annual Meeting.

DR. FINK . . .

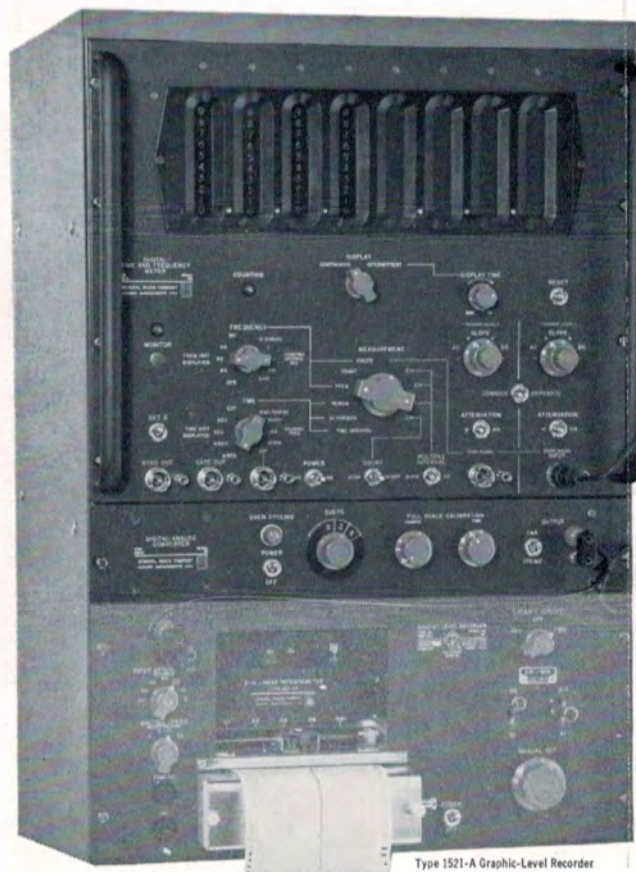
(Continued from page 5)

In 1952, Mr. Fink joined the research staff of the Philco Corporation. In 1956 and 1957 he was Editor of the Proceedings of the IRE and in 1958 he served as President of the Institute of Radio Engineers, traveling 65,000 miles in that year attending IRE conferences throughout Europe and North America. In December 1961, he was appointed Director of the Philco Scientific Laboratory.

Since 1957, Mr. Fink has been an active member of the Army Scientific Advisory Panel, which advises the Secretary of the Army "in the field of Science and matters related thereto", and is Vice Chairman of its Communications and Electronics Subpanel.

Mr. Fink is the author of numerous books, including ENGINEERING ELECTRONICS, PRINCIPLES OF TELEVISION ENGINEERING, TELEVISION STANDARDS & PRACTICE, MICRO-WAVE RADAR, RADAR ENGINEERING, TELEVISION ENGINEERING, COLOR TELEVISION STANDARDS, and TELEVISION ENGINEERING HANDBOOK.

The Counter with a Memory *also writes*



Type 1521-A Graphic-Level Recorder

1132-A DATA PRINTER, \$1450, for unattended measurements

Provides permanent printed records on adding machine tape. The printer has a 12-column register capacity, eight of which are used to print counter output. The remaining four columns can be used to display additional data such as time from a digital clock. Printing rate

is adjustable from one print every twenty seconds to three prints per second. A keyboard and print-command bar allow numbers to be typed manually between automatic prints. An output for driving an IBM summary punch is available as a special option.

The G-R Counter's unique storage circuits vastly simplify graphic analog recording. To decode the Counter's output to a d-c analog voltage you simply add G-R's all electronic Digital-to-Analog Converter.

For those desiring tabulated digital data, a Data Printer is available which connects directly to the Counter (no modifications or adaptor kits required).

1130-A Digital Time and Frequency Meter

Measurement Ranges:

Frequency: dc to 10 Mc
Period: 10 μ sec to 10⁷ sec
Time interval: 1 μ sec to 10⁷ sec
Also measures 10 periods, frequency ratios, phase shifts, pulse characteristics, and counts random events.

Display:

8 digits intermittent; 4 digits continuous readout (previous count displayed continuously during counting interval;

changes to new value when count is completed).

Sensitivity: 0.25v rms

Accuracy: ± 1 count \pm time-base stability. A variety of plug-in time-base generators are available with short-term stabilities ranging from 1 part in 10⁶/min to 1 part in 10⁹/min.

Price: From \$2,585 to \$2,950 depending on time-base generator desired.

1134-A Digital-to-Analog Converter . . . \$595

Will drive any standard 1 ma (or 100 mv) recorder

High Accuracy —

Linearity: $\pm 0.05\%$ of full scale
Stability: $\pm 0.02\%$ for $\pm 15\%$ line voltage variations;
 $\pm 0.03\%$ for ambient temperature changes over the range from 0 to 50 C.

All Electronic — No mechanical

data printer required to convert counter output to steady analog signal. Operates directly from the G-R Counter's

internal storage system.

• Either 1 ma or 100 mv output. Connects readily to most d-c strip-chart recorders.

• Records first 3, last 3, or last 2 digits of the G-R Counter's 4-digit continuous display which may be set to read any four consecutive digits of count over the range from dc to 10 Mc.



GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS

Branch Engineering Office in NEW YORK

Broad Avenue at Linden, Ridgefield, New Jersey

George G. Ross • J. P. Eadie • Peter Bishop • Edward F. Sutherland

Tel: N. Y. WOrth 4-2722 • N. J. WHitney 3-3140

LOCAL SERVICE DEPARTMENT

For your convenience the New York Office has a Service Department, manned by factory-trained service engineers. This Department can supply prompt and efficient repairs or recalibration of any G-R equipment. Considerable time can be saved by taking advantage of these facilities.



SYSTEMS IMPLEMENTATION ENGINEERING

Tropo-scatter - Switching - Microwave - Multiplex

Telecommunications systems engineering of a highly advanced nature is spotlighting the electronics/communications scene in Europe. Three major tropospheric scatter communications systems are now being engineered. Federal Electric holds the responsibility for the complete implementation of these systems, from initial site studies to installation and check-out.

We are now offering positions to Senior Communications Engineers who have a broad background in long lines and microwave communications and who are thoroughly knowledgeable of standard U. S. or European planning and operating specifications for large-scale telecommunications systems.

A degree, a minimum of ten years' experience and proven ability to plan a communication system which must work in all environments under all conditions, and with input devices ranging from the telephone to the digital computer, are our general requirements. We seek particular experience in Multiplex, Switching, Tropo-scatter and Microwave Systems. These positions are at our Paramus, New Jersey, headquarters.

To obtain further details or for consideration, send a detailed resume of your education and experience to Manager, Professional Staffing, Dept. NNJ.

FEDERAL ELECTRIC CORPORATION

Service Division of International Telephone and Telegraph Corporation
Paramus Industrial Park, Paramus, New Jersey

An equal opportunity employer.

ITT