IEEE

The Newsletter

The Magazine of the Northern New Jersey Section

Volume 9 JUNE, 1963 Number 10

JUNE FIELD TRIP:

SPACE COMMUNICATIONS TERMINAL AT ITT FEDERAL LABS, NUTLEY, N. J.

DATE: FRIDAY, JUNE 14, 1963

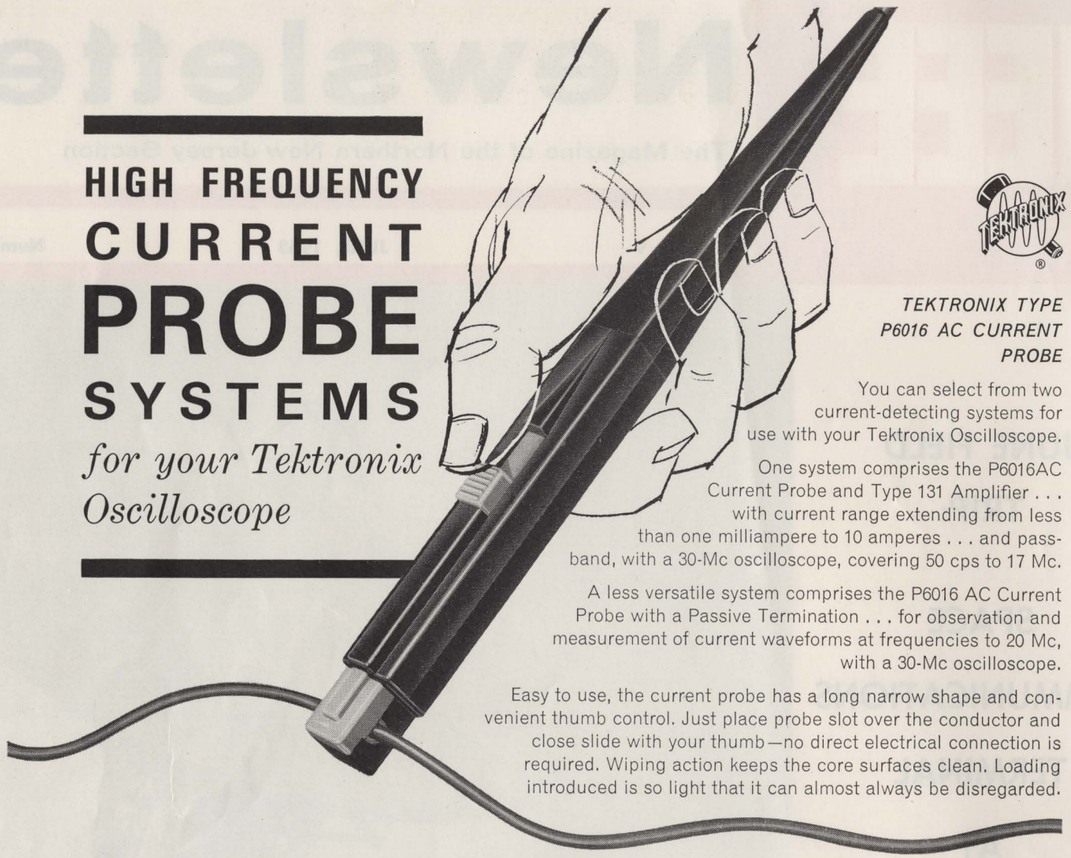
TIME: 8:00 P.M.

PLACE: ITT LABS, NUTLEY

DI[illegible]R: COPPER HOOD, 6:00 P.M.

HIGH FREQUENCY CURRENT PROBE SYSTEMS

for your Tektronix Oscilloscope



TEKTRONIX TYPE P6016 AC CURRENT PROBE

You can select from two current-detecting systems for use with your Tektronix Oscilloscope.

One system comprises the P6016AC Current Probe and Type 131 Amplifier . . . with current range extending from less than one milliampere to 10 amperes . . . and pass-band, with a 30-Mc oscilloscope, covering 50 cps to 17 Mc.

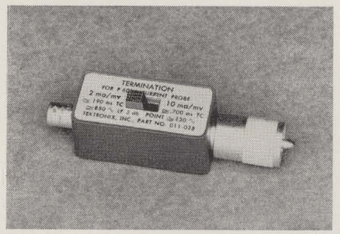
A less versatile system comprises the P6016 AC Current Probe with a Passive Termination . . . for observation and measurement of current waveforms at frequencies to 20 Mc, with a 30-Mc oscilloscope.

Easy to use, the current probe has a long narrow shape and convenient thumb control. Just place probe slot over the conductor and close slide with your thumb—no direct electrical connection is required. Wiping action keeps the core surfaces clean. Loading introduced is so light that it can almost always be disregarded.

P6016 and TYPE 131 SYSTEM

Sensitivity with 50 mv/div Oscilloscope Input: 1 ma/div basic sensitivity. 10-position switch provides calibrated steps from 1 ma/div to 1 amp/div, 1-2-5 sequence, accuracy within 3%. Continuous uncalibrated adjustment is possible by using variable control on the oscilloscope. **Noise:** Equivalent to a 100 μamp pk-to-pk input signal. **Risetime (with Fast-Rise Plug-In Unit in a Type 540-Series Oscilloscope):** 20 nsec (approximately 17-Mc passband at 3-db down). **Delay Time:** 40 nsec or less measured at the 50% pulse-amplitude points. **Low-frequency Response:** 50 cps at 3-db down. **Maximum Current Rating:** 15 amps pk-to-pk. **Power Requirement:** 105-125 volts ac, approximately ½ watt at 117 volts (Part Number 015-030); 210-250 volts ac, approximately 1 watt at 234 volts (Part Number 015-045).

P6016 and PASSIVE TERMINATION SYSTEM



Sensitivity: Either 2 ma/mv or 10 ma/mv of oscilloscope sensitivity, accuracy within 3%. **Risetime (with Fast-Rise Plug-In Unit in a Type 540-Series Oscilloscope):** 18 nsec (approximately 20-Mc passband at 3-db down). **Delay Time:** 20 nsec or less measured at the 50% pulse-amplitude points. **Low Frequency Response:** At 2 ma/mv—about 850 cps at 3-db down (5% tilt of 10-μsec square pulse). At 10 ma/mv—about 230 cps at 3-db down (5% tilt of 35-μsec square pulse). **Maximum Current Rating:** 15 amps pk-to-pk.

COMMON TO BOTH SYSTEMS

Direct Current Saturation Threshold: ½ amp. **Maximum Breakdown Voltage Rating:** 600 v, with thumb slide closed. **Insertion Impedance:** After a step function has been applied to the conductor under test, the impedance inserted in series is: (1) 0.06 Ω after 50 nsec, (2) 0.04 Ω after 100 nsec, (3) 0.015 Ω after 1 μsec, and (4) 0.006 Ω after 10 μsec. Capacitance between conductor and probe case is typically 1 pf, depending upon wire size.

P6016 and TYPE 131 SYSTEM $235

For 117-volt operation, please order part number 015-030.

For 234-volt operation, please order part number 015-045.

P6016 and PASSIVE TERMINATION SYSTEM . . . . . $ 90

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Note: P6016, Type 131 and Passive Termination can be ordered separately if desired. Other Current Probe accessories also available.

FOR A DEMONSTRATION OF THIS CURRENT PROBE PLEASE CALL YOUR TEKTRONIX FIELD ENGINEER.

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EDITORIAL NOTES

WE GET LETTERS

When you made the list of Fellows in the April issue, the name of Ray Heising was omitted. One of our most distinguished Fellows!

Porter H. Evans
Morristown

In reading the April issue of the NEWSLETTER I was interested in the list of Fellows as of March 1. To my surprise I found my name was not in the list.

I have been a Fellow of AIEE for 25 years as well as a Senior Member of IRE and in fact am a Life Member of each of the two.

Karl Honaman
Glen Ridge

I notice that the list of fellows in the April number of THE NEWSLETTER does not include Ray Heising or myself. I have been a fellow of both societies for about thirty years.

R. V. L. Hartley
Summit

I always enjoy reading THE NEWSLETTER.

In your April issue you listed the Fellows of Northern New Jersey Section, and perhaps you were unaware of my Fellowship Award which was bestowed upon me in 1950. I'm sure you're interested in listing all your members.

My very good wishes.

Jack R. Poppele
South Orange

We also omitted the name of Avery G. Richardson of Boonton.

To all those we failed to list, we apologize. We plan to check our records with those at IEEE headquarters as the AIEE and IRE lists are merged. This, we hope, will eliminate, or at least minimize errors of this type.

The
Newsletter

Published monthly by the Northern New Jersey Section of the Institute of Electrical & Electronics Engineers

Volume 9 **JUNE, 1963** **No. 10**

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

THE NEWSLETTER
P.O. Box 241 - Morristown, N. J.
Telephone: JEfferson 9-4909

THE COVER

Part of the ITT space communications terminal is this 40-foot fixed paraboidal antenna. See it and a 30-foot transportable model during the Section's Field Trip scheduled for Friday evening, June 14 at ITT Federal Laboratories, Nutley, N. J.

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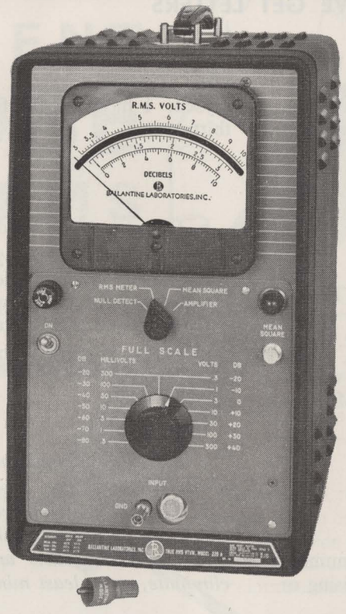
New BALLANTINE True RMS VTVM

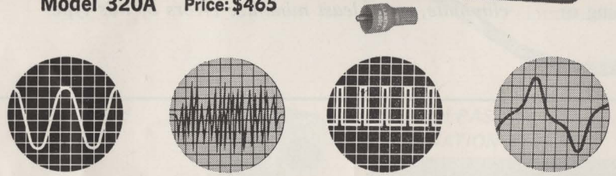
Measures 10 μV to 320 V regardless of Waveform

You can read voltages with the same high precision and accuracy over the entire five inch logarithmic scale.

Our accuracy specification of "2% of reading" is far more accurate over half the scale than for a linear meter rated at "1% of full scale."



Model 320A **Price: $465**



SPECIFICATIONS

Voltage Range.....10 μV to 300V (to 10,000 V with optional accessory)
Frequency Range.....5 cps to 4 Mc (3 db bandwidth is 2 cps to 7 Mc)
Measures signals with Crest Factor....5 full scale to 15 down scale
Accuracy above 300 μV, in % of READING AT ANY POINT ON SCALE, 2%, 20 cps to 400 kc; 3%, 10 cps to 2 Mc; 4%, 5 cps to 4 Mc
Input Impedance.....10 megohms in parallel with 11 or 27 pF
Amplifier..Choice of balanced or single ended, 5 cps to 4 Mc, up to 90 db gain, 50 V into 20K load
DC Output.....Proportional to mean square of ac input, for connection to recorder; output 1V; source resistance 1000 ohms
Power requirements.....115/230 V, 50-420 cps, 90W
Accessory (optional).....To measure up to 10,000 volts, use Model 1320 Multiplier (40 megohms, 3pF)

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How To Keep Engineers

Getting and keeping outstanding engineers and scientists has resulted in the development of a recognition program by the Martin Co. to insure individual accomplishment is both rewarded and publicized.

Among the mechanisms to provide a meaningful "pat on the back," Martin has instituted: A Technical Articles and Paper Awards Program, a Liberal Invention Incentive Program, a Technical/Scientific Book Program, an Engineer-based Public Relations Plan, and an Annual Honors Night Banquet.

Employees at all company divisions are eligible to participate in a plan which provides cash awards ranging from $50 to $1,000 for published technical articles and papers. Each quarter, judging committees comprised of engineering and research department heads meet to determine the prizes for journal and magazine contributions.

The incentive program for inventions works in a similar manner. Invention review boards at each division may give as much as $1,000 to an employee with an invention idea—even if the company should decide later not to pursue a patent on the device. When an invention by an employee results in a useful patent, the inventor shares in the royalties in an arrangement that brings him anywhere from 5 per cent to 20 per cent of the net profit attributable to the invention.

A special program was set up more than a year ago to encourage qualified Martin engineers and scientists to write books needed in their specialized fields. Help is provided in finding publishers, and, in some cases, the company will purchase large quantities of the author's books for distribution to its customers.

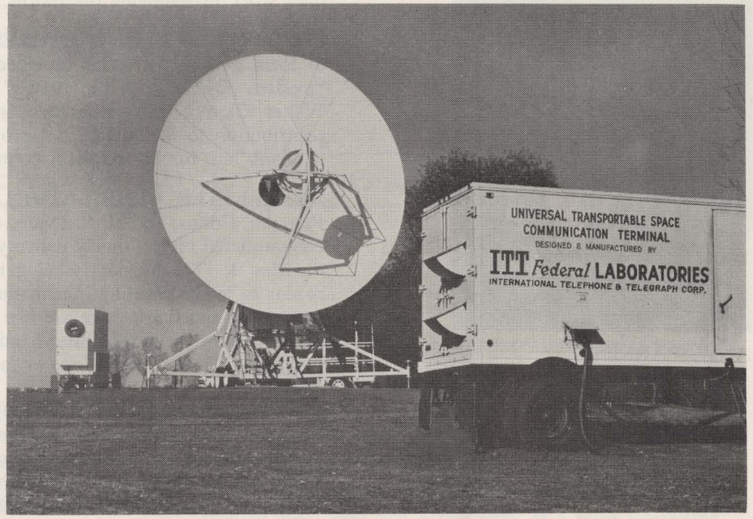
Engineers are provided with added recognition for their achievements through the company's public relations office. Those who have won awards, either through the established company programs or via special society honors, receive notice in news stories published in the company's employee newspaper and releases to the popular, trade, and technical press.

(Reported in April, 1963 NSPE *Newsletter*)

JUNE FIELD TRIP — ITT FEDERAL LABORATORIES

SPACE COMMUNICATION TERMINAL

The June meeting of the Northern New Jersey section will be a field trip to a group of space communication ground stations operated at Nutley, New Jersey, by the ITT Federal Laboratories. On Friday evening, June 14, 1963, the technical staff of ITT Federal Laboratories will present a short discussion on the medium capacity satellite communication ground terminal followed by a tour of the space research facilities which include a 40-foot fixed paraboidal antenna and a 30-foot transportable model both of which are actively operating as part of current satellite communication programs.



The equipments to be displayed are part of a continuing research and development program and have been active in communication experiments with the moon, the Relay communication satellite, and both Telstar communication satellites. The present activity includes experiments with both the Telstar II and Relay active communication satellite repeaters.

Communication Satellite Programs

The Project Relay program is being conducted under the sponsorship of the National Aeronautics and Space Administration. The equipment for this program includes a medium capacity communication terminal and the command and control facility for the satellite. From the Nutley facility, engineers of Space Technology Laboratories and ITT Federal Laboratories are performing experiments to determine the applicability of a 10 watt redundant communication repeater to the duplex transmission of telephony and the broadband transmission of television to correspondent stations in England, France, Italy, and Brazil. The Brazilian participant in the Relay program has been instrumented with a transportable space communication terminal originally designed and constructed at Nutley. A recent model of the same equipment exists on the grounds and will also be demonstrated.

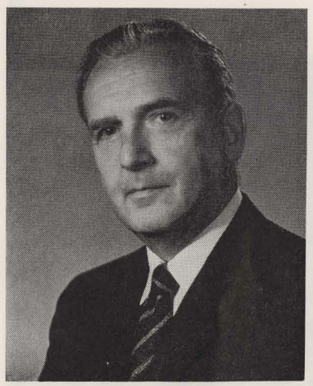
The Nutley facility is also active in transmissions via the Telstar satellite under contract to the Department of Defense. During the active period of the Telstar satellite, communication experiments were performed with a variety of military terminal equipments to determine the applicability of such communication satellites to the military communication problem.

It is anticipated that active communications with Relay I or Telstar II will take place during the evening, and that these can be demonstrated. The program for the evening will start at 8 P.M. with a brief technical presentation covering the nature and history of the equipment to be demonstrated and some of the results of early experiments. This will be followed by a tour of the three facilities namely the 40-foot Project Relay fixed station, the Relay command and control facility, and the 30-foot transportable Telstar station. Due to the limited facilities for accommodating visitors the attendance at the June field trip must be kept to a maximum of one hundred persons. It is, therefore, requested that those wishing to attend communicate their interest to Mr. D. Weiss (JE. 9-6111), or to Mr. W. Glomb (NO. 1-1100) Program Chairmen, no later than 10 June 1963, so that the program can be properly planned. Should the response exceed the one hundred limit, a second trip later in the summer may be planned.

Meeting at ITT Federal Laboratories Auditorium at 8 P.M.

Dinner at Copper Hood Restaurant at 6 P.M.

CHAIRMAN'S CORNER



A. W. PARKES

SECTION STARTS 1963-'64 SEASON WITH SINGLE GROUP OF OFFICERS. Complete merging of the N. J. Division of AIEE and the Northern New Jersey Section of IRE became effective on May 8, 1963 with the election of one set of officers. We wish to thank the joint nominating committee headed by William E. Rich (AIEE) and George M. Anderson (IRE) for working out a slate that was suitable to both groups. Considering that there are approximately 2000 AIEE and 4500 IRE members in this Section, the merging has proceeded with what I would consider a minimum of thorny problems. We thank Frank Polkinghorn, Chairman of the Liaison Committee for the IRE group, and John Schwanhausser, Chairman of the N. J. AIEE Division, for their work in removing the thorns.

SECTION MEETING LECTURES during the past year were selected to form a coherent series designed to update member's knowledge of "modern physics as of the 1960's" under the Program Chairmanship of Walter Glomb. His committee is one of the most important in its contribution to the intellectual growth of the membership, and I want to thank him for his excellent contribution.

NEWSLETTER CIRCULATION now numbers over 6,000. M. M. Perugini, Editor, and H. S. Evans, our new Business Manager, are to be congratulated on the timely delivery of the May issue — I received mine on May 1. The format is being improved to make it easier for each reader to locate meeting information of special interest to him. Besides the section meetings, there are five Professional Technical Groups sponsored by our Section, plus an additional ten P.T. Groups sponsored jointly by our Section and one or more other sections in the Metropolitan Area.

Notice of all these meetings, plus information on at least four Lecture Series during the year, should be a great aid to engineers who want to choose the meetings that will be of maximum interest to them. There are no more than three other Sections in the country in which IEEE members have as wide a choice of technical sessions as in the North Jersey Section.

INDUSTRY SUPPORT OF LECTURE SERIES. We would like to call the attention of executives in the electronics industry to the desirability of using the IEEE lecture series as part of their company training program. This is being done by a number of companies who arrange to pay for the series for selected personnel. The cost per employee is $15 to $25, depending on the series.

THANKS FOR SUPPORT DURING THE PAST YEAR. In addition to the members mentioned above I would like to express my appreciation to other members of the Section Executive Committee who have been responsible for the operation of the Section during the past year of the merger and the changeover in Business Manager of the NEWSLETTER. In particular I want to thank C. W. Vadersen for "covering" for me on a number of occasions when I had to be away; and to A. E. Hirsch, Jr. as Secretary, and John P. Van Duyne as Treasurer, both of whom have been particularly effective. Hugh Wertz, Past Chairman, has served on the Merger Liaison Committee and has been helpful to me personally as I became Chairman. L. A. deRosa as Chairman of the Awards Committee, George Tanguay as Chairman of the Membership Committee, Bernard Meyer as Publicity Chairman, Alex Adler as Facilities Chairman, and John Flegal as Finance Chairman, all have served your Section well and this is to thank them on your behalf. I have purposely left the name of the Profession Group Co-ordinator, Gunther Karger, to last for a special commendation — Gus has had the job of obtaining information from, and giving information to all 15 of the Professional Technical Group Chapters with which the North Jersey Section IEEE is associated. He has had quite a problem as you can well imagine, and has done it very well. I was happy to see that he was elected chairman of the PTG on Communication Systems for the coming year.

WANTED: YOUR ADVERTISING OPINION

WE'D LIKE TO ask you to do us — and yourself — a favor . . .

For some time, we of the General Instrument Corporation have considered advertising in this, the journal of your local chapter of the IEEE . . .

Not, of course, *instead* of our regular, national advertising in national technical publications. But *in addition* to that advertising.

The reason is that we recognize your importance — and the importance of your associates — *at the decision-making level.*

But we recognize that the nature, dignity and special position of publications like this, dictates a somewhat special — perhaps more intimate — approach . . . not merely a "reprint" of our national advertising.

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News of new products, developed in our laboratories, or just off our production line — ? Application notes, on our existing and familiar products — ? Or more general advertisements, to help acquaint you with the breadth and scope of our overall activities — ?

Just what, in short, would *you* be most interested in reading in this space, in this publication — ?

If you'll drop us a note, as soon as possible, we'd be deeply appreciative. In doing so, you will also be assisting your own chapter in obtaining advertising revenue. And, finally — as a small token of our gratitude for your time and trouble, we'll send you a free copy of a most interesting book (which, incidentally, contains *no* advertising, for us or anyone else). It's called *"The Unwritten Laws of Engineering,"* by W. J. King, Professor of Engineering, U.C.L.A., published by the American Society of Mechanical Engineers — a booklet that a great many engineers, in a great many divergent fields, have found most instructive and most helpful in their daily work, and in guiding their future careers.

But — please — to make your advice of greatest value — let us hear from you, if at all possible, *within the coming week.* Please address your comments to Mr. W. Carlson, General Instrument Corporation, 65 Gouverneur St., Newark 4, New Jersey.

Thank you!

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Low noise figure—2N2415 IF input stage

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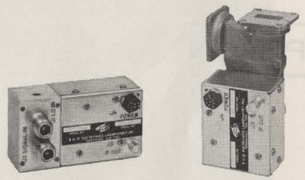
7.5-8.0 db noise figure



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Model	Frequency	Model	Frequency
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25 db gain from RF to IF
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Specify 30 or 60 mc IF
Price: All units $575.00

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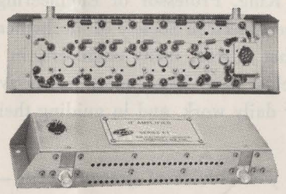

Model	Center Freq.	Band-width	Risetime	Gain
ET 3002	30 mc	2 mc	0.5 μsec	90 db
ET 3010	30 mc	10 mc	0.1 μsec	80 db
ET 6010	60 mc	10 mc	0.1 μsec	80 db

These amplifiers also available at 20 and 42 mc center frequencies. **Price:** All units $325.00

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PAPERS CALL

COMMUNICATIONS SYMPOSIUM

Papers for presentation at the Ninth National Communications Symposium, sponsored by the IEEE Professional Technical Group on Communications Systems, are solicited covering all new, novel or timely phases of communications. Under the theme "Communications — Catylists of Progress", this year's symposium will include communications related in the areas of systems, equipments, techniques and associated fields. Typical areas are:

Space & Satellite Communications
Tropospheric Scatter
Hardened Communications
Data Processing & Transmission
Communication Theory
Communications Antennas
Infra Red and Light Communications
Civil and Military Communications

In addition, papers may cover communication considerations of propagation, microelectronics, computers, interference, economics, security, reliability, spectrum utilization, limitations and interfaces with other disciplines.

Five copies of 100 word abstracts and five copies of 500 word summaries, together with authors' name, position title, company affiliation, and brief biography, should be submitted before 17 June 1963 to: Mr. Joseph L. Ryerson, Technical Program Chairman, Director of Communications (RAU), Rome Air Development Center, Griffiss Air Force Base, N. Y. Authors of papers which are related to work performed under a government contract are reminded that it is the author's responsibility to receive appropriate DOD clearance for presentation through the cognizant government agency.

Concurrent with the three-day Communications Symposium; classified sessions, under the auspices of the Directorate of Communications, Rome Air Development Center, are planned. Papers limited to CONFIDENTIAL are solicited, each author being responsible for obtaining written authority from the sponsoring or cognizant agency to present the paper. Five copies of UNCLASSIFIED 150 word abstracts of the Confidential papers in the above areas, together with authors' name, position title, company affiliation, and brief biography, should be submitted to: Mr. Charles A. Strom, Jr. (RAUO), Rome Air Development Center, Griffiss Air Force Base, N. Y. (If an UNCLASSIFIED abstract of the classified paper cannot be prepared, a classified abstract will be accepted).

1963 ELECTRON DEVICES MEETING

The Annual Technical Meeting of the Electron Devices Group will be held at the Sheraton-Park Hotel in Washington, D. C. on Thursday and Friday, October 31st and November 1st.

It is expected that papers will be given on such device topics as:

Microwave tubes for high power, millimeter wave, low noise.
Storage and display devices.
New diode and transistor structures.
Very high-power solid-state devices.
Thin-film active devices.
Integrated circuits.
Optical devices, lasers, diode lasers, optical transistors.
Transducers.
New electron device principles.

Papers will deal primarily with the devices themselves or important new device technology, rather than with applications or external circuitry.

Before August 1st, 1963 prospective authors must submit an informative abstract, approximately 200 words long, without figures. The abstract should be written exactly as it may appear in the program of the meeting; complete with title, author(s), company affiliation, city and state of company location; on one side of the double-spaced typewritten page. An original and four copies should be sent to the address below. Abstracts which clearly and ambiguously state the purpose, content, and technical contribution are required by the review committees.

Mason A. Clark
Technical Program Chairman
1963 Electron Devices Meeting
—hp associates—
2900 Park Boulevard
Palo Alto, California

MIL-E-CON SET

The seventh National Convention on Military Electronics known as Mil-E-Con 7, will draw an attendance greatly exceeding that of last year, according to convention president Trevor Clark. He based this estimate on early interest and the recent consolidation of the Institute of Radio Engineers and the American Institute of Electrical Engineers.

"Another reason I am looking forward confidently to an increased attendance this year," Mr. Clark said, "is the increased concern that is being expressed on a national scale with technical 'obsolescence.' Mil-E-Con 7 provides a unique medium for electrical and electronics engineers to up-date their knowledge of the latest developments in the fast-breaking areas of military electronics."

Besides providing a display of the latest defense electronic equipment, Mil-E-Con 7 will feature an expanded program of technical papers. They will cover such subjects as evaluation of data transmission systems, distribution and exchange of technical intelligence, and problems in communications links and tracking data exchange.

Papers and programs will be presented by representatives of the three branches of the Armed Forces, NASA, and Industry and will be based on the general theme: "National Information and Command Systems."

Sponsored by the Professional Technical Group on Military Electronics of the Institute of Electrical and Electronics Engineers, Mil-E-Con 7 will be held in Washington's Shoreham Hotel, September 9-11. This is a departure from past conventions, which have been held in June.

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MODEL 311
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The Model 311 Variable Electronic Band Pass Filter provides two independent constant percentage bandwidth sections. Each section can operate at narrow (approx. ½ octave) or broad (1 octave) half-power bandwidths. The center frequency in either mode is continuously variable from 0.2 to 20,000 cycles/second. Sections may be operated separately or in cascade.

Applications of the Model 311 are virtually unlimited. The 311 is ideal for noise and vibration analyses, determination of energy distributions in speech and underwater sounds, seismological, physiological, and electro-medical investigations and the design of audio and sub-audio equipment.

Insertion gain at center frequency is adjustable from zero to 6 db, while maximum attenuation exceeds 70 db outside the passband. Input impedance is 200 K ohms, output 680 ohms. Hum level is better than 100 db below full output. The 311 is readily rack mounted and contains its own regulated power supply for operation from 105-125 VAC line at 48 to 62 cycles.

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PTGRFI MEETING

Date:
Wednesday, 12 June 1963

Time:
7:45 P.M.

Place:
Willkie Memorial Building
20 West 40th Street
New York City, New York

Subject:
Panel Discussion on
"RADIO NOISE METERS OF PRESENT & FUTURE"

Speakers:
Representatives of:
POLARAD ELECTRONICS INSTRUMENTS
EMPIRE DEVICES, INC.
STODDART AIRCRAFT RADIO, CO.

Pre-Meeting Dinner:
Brass Rail Restaurant
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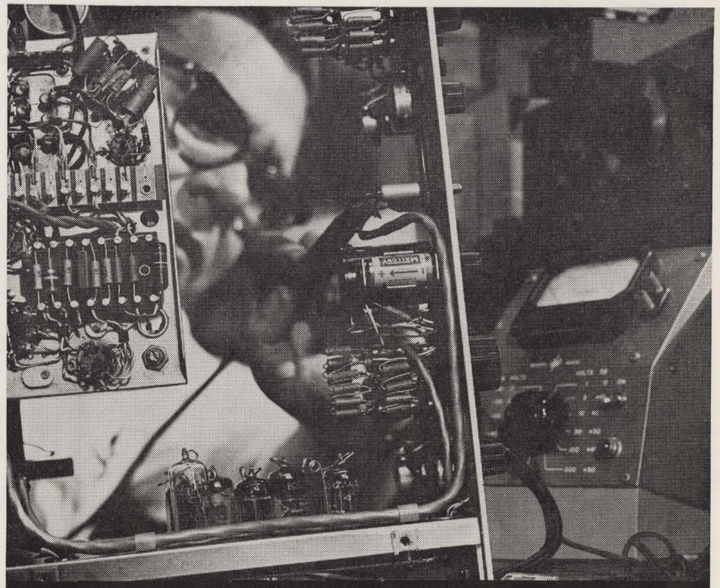
Joins Airtron As Chief Engineer

Dean C. Mitchell has joined Airtron, a division of Litton Industries, as chief engineer. Mitchell will supervise mechanical and electrical design, drafting, estimating and support engineering at Airtron's plant in Morris Plains, N. J.

Mitchell spent three years as principal engineer with Maxson Electronics Corporation. He was also a microwave group leader at the Norden division of United Aircraft Corporation, and an engineer with the surface armament division of Sperry Gyroscope Corporation.

Mitchell was graduated from the College of the City of New York in 1951 (B.E.E.), and is taking graduate studies at Brooklyn Polytechnic Institute. He is a member of IEEE and Eta Kappa Nu.



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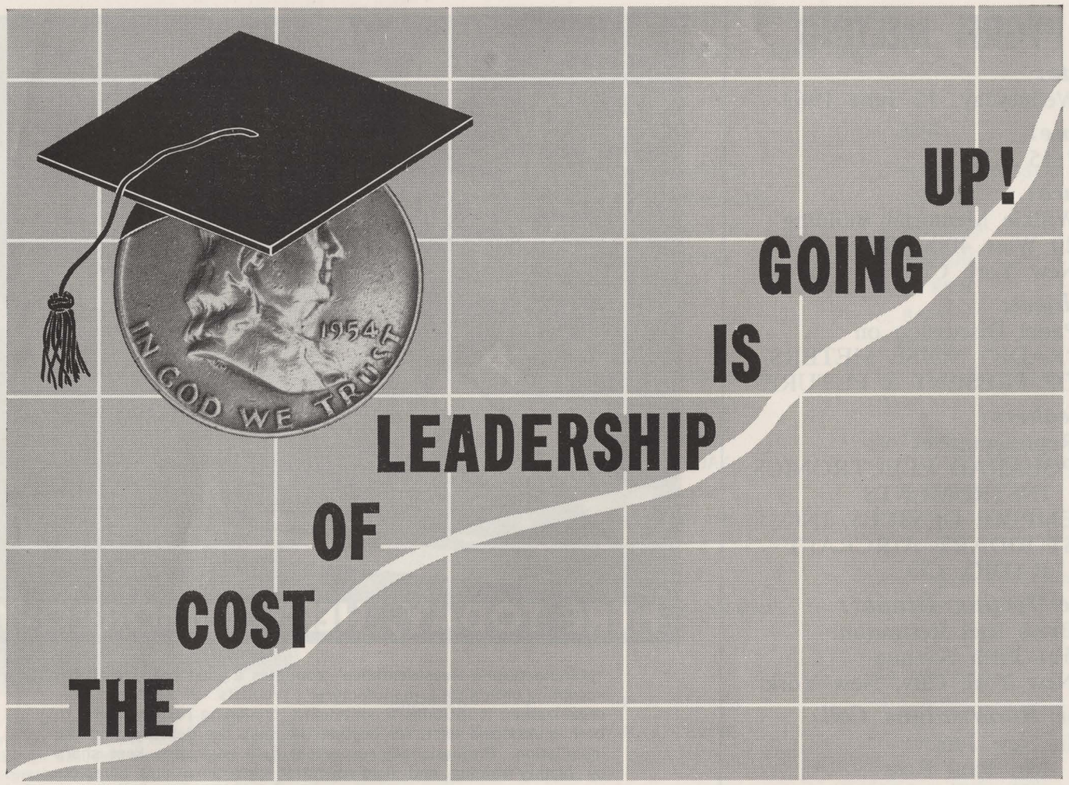

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College graduates are penetrating more and more into industry. Now 58% of the graduates of men's colleges land jobs directly on the corporate payroll.

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Business always will need the college-trained mind for the *brainpower* that management requires and the *brainwork* that research and development demand. Competition by business for the ablest graduates grows sharper every year.

But the cost of leadership is going up. The upward surge in our birthrate, plus a rapid rise in the percentage of high school students going on to college, has caught colleges in a financial squeeze. Some face serious shortages in classrooms, laboratories, libraries and, above all, in competent teachers.

Corporate support of higher education in ten years has risen substantially to more than $200 million for 1962. By 1970 this investment in educated manpower will need to reach $500 million annually if business wishes to insure the continued effective operation of the sources of supply.

College is business' best friend, certainly. But business recognizes that it must *give* as well as *get*. Higher education needs financial help and needs it now. Business should re-examine its needs and plan its support accordingly.

If you would like factual data on what the college crisis means to you, to business and to the nation, write for the free booklet: "COLLEGE IS AMERICA'S BEST FRIEND", c/o Higher Education, Box 36, Times Square Station, New York 36, N. Y.

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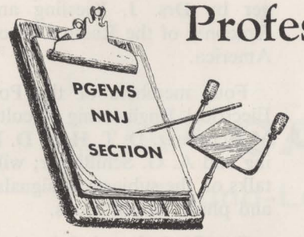

Professional Group on Engineering Writing and Speech

JUNE 13th DINNER MEETING FEATURES SATELLITE DISCUSSION

The June meeting of the Northern New Jersey Chapter of PTGEWS will be a Dinner Meeting with a special invitation to the ladies. Mr. Samuel Goldfarb of RCA Astro-Electronics Division will describe with the aid of slides various spacecraft developed at RCA. His non-technical talk will discuss Key Events in the Design, Construction, Testing and Launch of a Typical Non-Military Satellite.

The dinner meeting will be held at the POMPTONIAN Restaurant, 1041 Pompton Avenue (Route 23, opposite the Meadowbrook), Cedar Grove, New Jersey at 7:00 P.M., Thursday, June 13, 1963. Cost of the dinner is $4.00 including a cocktail and all gratuities. For reservations please call Miss Ann Hathaway, R.C.A., Harrison, HU. 5-3900, Ext. 2119, by Monday, June 10. The dinner includes a London broil entree and a surprise dessert.

Satellite Demonstration

Some of the satellite projects to be discussed are the TIROS weather satellite, the Ranger satellite SERT and the National Aeronautics and Space Administration's communication satellite RELAY. Mr. Goldfarb's talk includes a demonstration of a model satellite and some of the ways it is affected by the space environment.

Speaker Has Degrees

Mr. Goldfarb is a Senior Engineer in the Systems Design Group at the Radio Corporation of America, Astro-Electronics Division. He has coordinated the spacecraft engineering effort for several satellites including NASA's RELAY. In performing his function, he has dealt with problems involving compatibility among structural, attitude controls, thermal, power supply and communication sub-systems.

He has received the Bachelor of Science degree in both Mechanical and Electrical Engineering from Rutgers University and the M.S. degree in Electrical Engineering from Newark College of Engineering. Mr. Goldfarb is a registered Professional Engineer in the State of New Jersey.

DINNER MEETING NOTICE

Place:	THE POMPTONIAN RESTAURANT 1041 POMPTON AVE. CEDAR GROVE, N. J. (ROUTE 23, OPPOSITE THE MEADOWBROOK)
Subject:	KEY EVENTS IN THE DESIGN AND LAUNCH OF A NON-MILITARY SATELLITE
Speaker:	MR. SAMUEL GOLDFARB
Date:	JUNE 13, 1963
Time:	7:00 P.M.
Reservations:	MISS ANN HATHAWAY RCA HARRISON HU 5-3900 EXT 2119

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"Space Communication" Course

A short course on "Space Communication" for practicing engineers will be presented at the Long Island Graduate Center of the Polytechnic Institute of Brooklyn between June 17 and June 21, 1963. The Seminar is sponsored by the Institute's Electrical Engineering Department.

Specific topics of Communication Theory to be presented include: problems arising in the design of space communication systems, channel characterization, propagation and antennas, characterization of noise, low noise receivers using Masers and parametric amplifiers, tracking behavior of phase-locked loops, theory of analog and digital modulation and detection, coding and decoding of signals, communication systems and problems found in the Telstar, Relay, and Ranger experiments.

Speaker Varied

Drs. M. Ferguson and W. Wright of Sylvania Electric Products will cover the topics of channel characterization and propagation antennas.

The subject of low noise receivers will include coverage of masers by Dr. W. J. Tabor, parametric amplifiers by Dr. D. C. Hanson, and diplexers, filters and system considerations of low noise receivers by Dr. A. J. Giger. These three lecturers are from the Bell Telephone Laboratories.

An extensive coverage of satellite communications systems is planned. Included here are Telstar, the Andover satellite ground station, and parameters of the Telstar system and results. Drs. E. G. Jaasma, R. C. Chapman, Jr., and S. B. Benett of Bell Telephone Laboratories will lecture on this area.

Satellite communications will also include discussions of Relay and Ranger by Drs. J. Kiesling and J. C. Graebner of the Radio Corporation of America.

Four members of the Polytechnic Electrical Engineering Faculty; Profs. M. Schwartz, D. T. Hess, D. L. Schilling and A. G. Schillinger; will present talks on the subjects of signals in noise and phase locked loops.

Dr. S. Stein of Sylvania Electric Products will lecture on digital communications.

Attendance will be limited to 40 persons. A set of notes on the course will be issued.

Further information may be obtained from Professors M. Schwartz, or D. L. Schilling. Correspondence should be addressed to either at:

Electrical Engineering Department
Polytechnic Institute of Brooklyn
333 Jay Street
Brooklyn 1, New York

NATIONAL ENGINEERING ACADEMY SET

A National Academy of Engineering will be formed affiliated with the National Academy of Sciences, reported Dr. Eric A. Walker, President of Engineers Joint Council, in a statement released last month. Dr. Walker stated "The Academy will offer a singular opportunity to the engineering profession to participate actively and directly in communicating objective advice to government on engineering considerations related to national policy and, incidentally thereto, to identify and recognize individuals distinguished for their major engineering achievements."

The statement followed a communication from Dr. Frederick Seitz, President of the National Academy of Sciences, advising Dr. Walker as Chairman of the EJC Exploratory Committee to Establish a National Academy of Engineering, that the NAS has approved in principle the establishment of the affiliate engineering organization. The action was taken at the annual meeting of the Academy concluded April 21 in Washington D. C. This approach was recommended by a committee chaired by Dr. J. A. Stratton, President of Massachusetts Institute of Technology, appointed in 1961 to consider the problem of engineering representation in the NAS in cooperation with the EJC Committee.

Need Seen

Dr. Walker, on behalf of Engineers Joint Council — the federation of 29 engineering societies with a half million aggregate membership — expressed gratification at the position taken by the National Academy of Sciences, which followed negotiations between the EJC and NAS committees. The discussion of the groups had led to a consensus that:

1. existing organization and conditions preclude effective participation of engineers in matters related to national technological problems and policies;

2. the National Academy of Sciences has to a large extent neglected its membership in the areas concerned with application of science;

3. a mechanism must be provided for broader representation of the engineering community, to provide for participation of engineers in the advisory functions in partnership with scientists and that the organization should be evolved in cooperation with and be closely associated with the National Academy of Science.

Dr. Walker feels that while many and significant problems remain to be resolved before an effective organization is operating, the understanding and cooperation which has characterized the negotiations will greatly facilitate achieving the objective. He views the engineering community as being fortunate that the projected organization will be developed in cooperation with and as an affiliate of the National Academy of Sciences. This assures that engineers will work closely with scientists as partners in considering broad technological problems and that any cleavage between "pure" and "applied" science will be effectively avoided.

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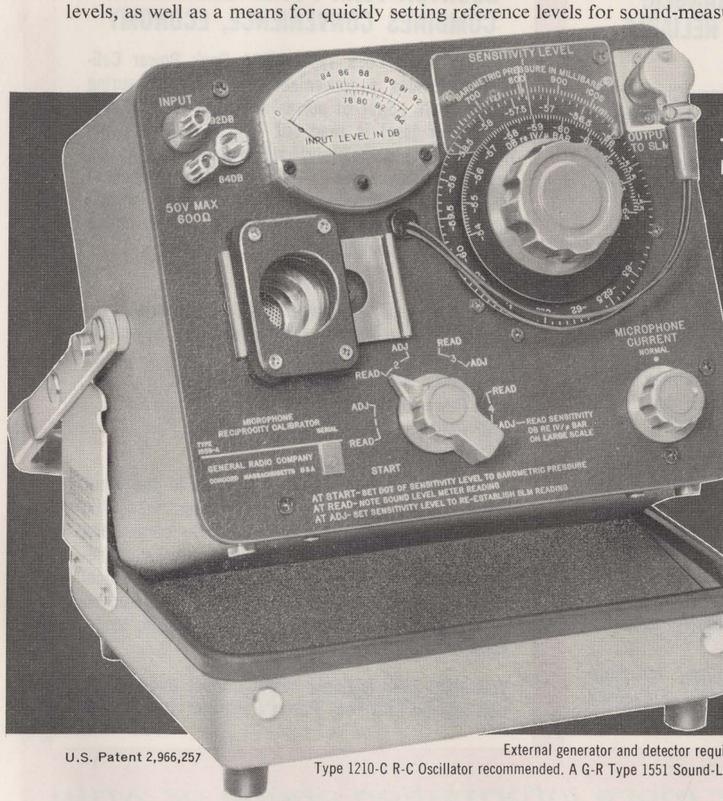
Easy to use and portable, the 1559-A Microphone Reciprocity Calibrator now makes it possible to make precise microphone calibrations routinely. Procedure is a simple sequence of alternately reading a meter and adjusting a knob. The adjustments operate a unique built-in analog computer which performs all necessary calculations. At the end of the measurement, the instrument's direct-reading dial gives the absolute microphone sensitivity in db re 1v/μbar. The complete operation takes less than a minute.

The Calibrator can also be used as a precision acoustic source for generating accurately known sound-pressure levels, as well as a means for quickly setting reference levels for sound-measuring systems.

*1551-B, 1551-C, 1558-A, 1558-AP, 1564-A



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Microphone Reciprocity Calibrator
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AS A MICROPHONE CALIBRATOR:

Range: —55 db to —65 db re 1 volt/μbar.

Frequency Range: 20 to 8,000 cps.

Accuracy: 20 to 2500 cps: ± [0.2 db + (0.1 db x freq. in kc)] 2.5 kc to 7 kc: ± 0.7 db

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AS A PRECISION ACOUSTIC SOURCE:

Frequency Range: 20 to 8,000 cps.

Output: 92 db for excitation of 50 volts behind 600 ohms.

Accuracy at 92 db: ±(0.1 db + error in determining microphone sensitivity).

AS A SOUND-LEVEL CALIBRATOR:

Frequency Range: 20 to 2500 cps.

Output: 92 db for excitation of 50 volts behind 600 ohms.

Accuracy: ±0.7 db at standard atmospheric pressure.

U.S. Patent 2,966,257

External generator and detector required. G-R Type 1304-B Beat-Frequency Generator or Type 1210-C R-C Oscillator recommended. A G-R Type 1551 Sound-Level Meter is recommended for use as the detector.

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- ✓ Output Power ..... 250 va.
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- ✓ Load Power Factor Range..... 1.0 to 0.7 lead or lag.
- ✓ Harmonic Distortion
  - Resistive Load ..... Less than 1.5%.
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- ✓ Price $1350.00

Applications: Uses for 4301 Frequency Changer are unlimited... Some of the more common are as a stable power source for testing filters, magnetic amplifiers, servo systems, and all types of instrumentation. The Model 4301 operating over a 50 to 60 cps range at either 115 or 230 volts (±10%) input can be used to supply a critical instrument which requires one frequency with good regulation and pure waveform.

Why not call your RMC Field Engineer for more technical data or a demo of 4301 Frequency Changer?

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Boonton Radio Co.'s Type 8900A Peak Power Calibrator provides a convenient means for measuring the peak RF power of pulses from 150 to 1500 MC. The power level is read out directly on the panel meter and is completely independent of repetition rate and pulse width (>0.25 sec). The instrument consists of a precision terminated input circuit, diode detector, dc reference supply, meter, and a chopped video output system.

Some specs:

- Measures true peak power ±0.6 db absolute.
- Readily standardized against external bolometer or calorimeter.
- RF Power Range: 200 mw peak full scale.
- RF Power Precision: ±0.1 db.
- RF Repetition Rate: 1.5 MC maximum.
- Price: $485.

In operation, the RF signal is applied to the input circuit, which, through a power splitter, feeds the diode detector. The demodulated diode output and the output of the dc reference supply are simultaneously fed to the video output through a mechanical chopper... This chopped signal is then compared on an oscilloscope similar to the Hewlett-Packard Model 120B.

Your RMC Field Engineer has full specs and application info on BRC Peak Power Calibrator Type 8900A.

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for more information phone or write

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