The

IEEE Newsletter

The Magazine of the Northern New Jersey Section

Volume 10 NOVEMBER, 1963 Number 3

A. G. BELL.

ELECTRIC TELEGRAPHY.

No. 186,787. Patented Jan. 30, 1877.

186,787. ELECTRIC TELEGRAPHY. A. G. Bell, Boston, Mass. (Filed Jan. 15, 1877.)

Brief.—A plate, A, forms the diaphragm to be thrown into vibration, and the armature for the permanent magnet F, which, with the coils G, forms, substantially, a magneto-electric apparatus. A being thrown into vibration, currents are caused to circulate on the line, corresponding, in number of vibrations and intensity, with the number and intensity of vibrations of A. These currents cause the like apparatus at other stations to be similarly affected, so that vocal sounds and speech are accurately reproduced without the use of any galvanic batteries.

1. The union upon, and by means of, an electric circuit of two or more instruments, constructed for operation substantially as herein shown and described, so that, if motion of any kind or form be produced in any way in the armature of any one of the said instruments, the armatures of all the other instruments upon the same circuit will be moved in like manner and form; and if such motion be produced in the former by sound, like sound will be produced by the motion of the latter.

2. In any system of electric telegraphy or telephony, consisting of transmitting and receiving instruments united upon an electric circuit, the production, in the armature of each receiving-instrument, of any given motion, by subjecting said armature to an attraction varying in intensity, however such variation may be produced in the magnet, and hence I claim the production of any given sound or sounds from the armature of the receiving instrument, by subjecting said armature to an attraction varying in intensity, in such manner as to throw the armature into that form of vibration that characterizes the given sound or sounds.

3. The combination, with an electro-magnet, of a plate of iron, or steel, or other material capable of inductive action, which can be thrown into vibration by the movement of surrounding air, or by the attraction of a magnet.

4. In combination with a plate and electro-magnet, as before claimed, the means herein described, or their mechanical equivalents, of adjusting the relative position of the two, so that, without touching, they may be set as closely together as possible.

5. The formation, in an electric telephone, such as herein shown and described, of a magnet with a coil upon one end or ends of the magnet nearest the plate.

6. The combination, with an electric telephone, such as described, of a sounding-box, substantially as herein shown and set forth.

7. In combination with an electric telephone, as herein described, the employment of a speaking or hearing tube, for conveying sounds to or from the telephone, substantially as set forth.

8. In a system of electric telephony, the combination of a permanent magnet with a plate of iron or steel, or other material capable of inductive action, with coils upon the end or ends of said magnet nearest the plate, substantially as set forth.

Fig. 1.

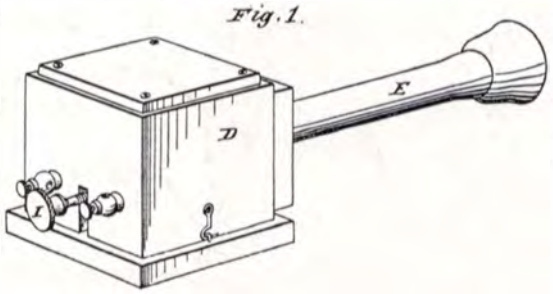


Fig. 2.

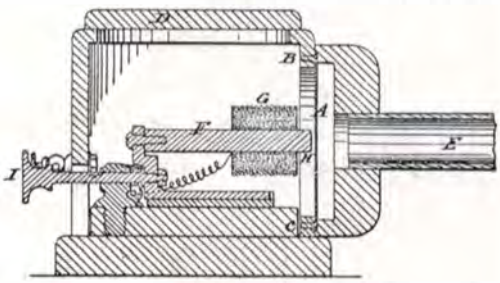
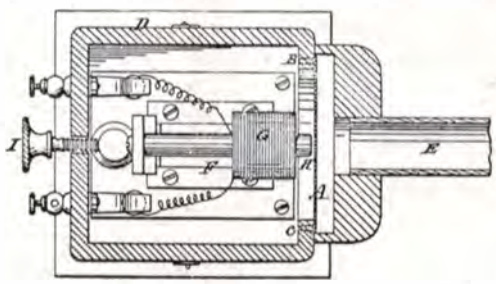


Fig. 3.



Attest

A. Pollok

Will A. Dick

Inventor:

Alexander Graham Bell

IEEE NEWSLETTER
North N. J. Section
P. O. Box 241, Morristown, N. J.

BULK RATE
U. S. POSTAGE
PAID
Morris Plains, N. J.
Permit No. 15

New DC to 1500 Mc Voltmeter

Voltage Accuracy: ±2% of reading above one-tenth of full scale. 0.005v minimum dc reading

Only one scale for all voltage measurements. Prevents reading wrong scale. Expanded scale for measurements below 1.5v ac.

Measures up to 1500 volts directly, ac or dc; no external multipliers required.

Wide-range ohmmeter — 0.2 ohm to 1000 megohms in four ranges.

Input Impedance: AC, 25 megohms, DC, 100 megohms or "open grid" (on all but 1500v range). Grid current is less than 10^{-10} ampere.

Built-in storage socket and reel for probe and its cable.

Handy storage compartment for accessories.

Calibration Stability is Excellent. The heart of the Voltmeter is a stable tube-and-transistor amplifier. There is so much feedback that changes in tube transconductance or transistor current gain have practically no effect.

Wide Frequency Range — within ±3 db up to 1500 Mc; resonant frequency of probe is above 3000 Mc.

Input Impedance: 25 megohms in parallel with 2 pf.

Wide variety of probe tips supplied.

Accessory Tee Connector available for uhf measurements in coaxial systems (Type 1806-P1, $35.00).

Type 1806-A Electronic Voltmeter . . . in convenient flip-tilt case for portability, doubles as an adjustable stand — also available in rack model. Price either model **$490** (in U.S.A.)

GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS

Sales Engineering Office in NEW YORK: Broad Avenue at Linden, Ridgefield, New Jersey
George G. Ross • J. P. Eadie • Peter Bishop • Richard K. Eskeland
Tel: N. Y. 212 964-2722 • N. J. 201 943-3140 • TWX: 201 943-8249

LOCAL SERVICE AND REPAIR

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.

EDITORIAL NOTES

GUIDANCE PROGRAMS IN ENGINEERING

The New Jersey Engineers' Committee for Student Guidance is a volunteer group of engineers that gives reliable information on the engineering profession to students and student-guidance groups. These groups include high and junior high school students, their parents, and educators.

Programs are designed to show certain students that they are equipped to enter engineering and to encourage them to do so. On the other hand, the programs indicate to other students that a different field may be more suitable for their talents. Students choosing a career need basic information when making such an important decision. In addition, those wanting to become engineers must know and meet the scholastic standards and entrance requirements of engineering colleges.

During each of the past several years, over ninety schools with 10,000 students have heard speakers from the Committee discuss the engineering profession.

A panel of speakers or an individual speaker from the participating engineering societies discusses the engineering profession and answers questions about it. Programs are specially planned for:

Senior High School Guidance classes or groups
Junior High School Guidance classes or groups
Science and Mathematics clubs; clubs for Junior Engineers
Parent-Teacher groups
Other educational and counseling groups, Boy Scouts, Y groups, etc.

Participating speakers may include both men and women engineers. Groups specifically interested in engineering opportunities for women may request a woman panelist, panel, or speaker.

TOPICS COVERED

The program centers around six important points: (1) What engineering is, (2) What an engineer must know, (3) The fields of engineering, (4) The opportunities and rewards, (5) How an engineer is prepared and educated for his profession, and (6) How a prospective engineer's aptitudes are evaluated.

Differences and similarites between the engineer and scientist and between engineer and technician are also stressed.

Interested groups may apply for a guidance program by requesting the necessary forms from:

Meetings Coordinator
N. J. Engineers' Committee for Student Guidance
Newark College of Engineering
323 High Street
Newark 2, New Jersey

The
Newsletter

Published monthly by the North Jersey Section of the Institute of Electrical & Electronics Engineers, Inc.

Volume 10 **NOVEMBER, 1963** **No. 3**

Deadline for all material is the 25th of the second month preceding the month of publication.

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

Published monthly, except July and August by the North Jersey Section of the Institute of Electrical and Electronics Engineers, Inc. Subscription: 75¢ per year through dues for members; $1.50 per year for non-members.

ABOUT ADDRESS CHANGES

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section records of membership are changed when Headquarters notifies us of any change.

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

Reliability Group Meeting

A panel discussion on "The Role of Standards in Reliability" will be featured at a meeting of the Metropolitan Chapter of the Professional Technical Group on Reliability on November 18, 1963. This meeting will be held at the Burroughs Corporation, Fourth Floor, 215 Park Avenue (Corner 18th Street), New York City, beginning at 7:45 P.M.

The program for this occasion will be centered around a discussion by a panel consisting of Mr. Barney A. Diebold, Mr. Clayton Senneff and Mr. Harold R. Terhune. Mr. P. S. Darnell will serve as moderator. Each member of the panel will give a short summary of his views and opinions on the interrelation of standards and reliability. Mr. Diebold will emphasize the importance of military standards and specifications in advancing the reliability of military equipment. Mr. Senneff will consider the evolution and significance of standards from the viewpoint of a manufacturer of electronic parts. Mr. Terhune will speak for the equipment designer who is confronted with the selection of standardized parts and materials that must survive under the environmental and operational stresses to which his end product will be exposed.

Following the initial discussions by the panelists, the meeting will be opened to questions from the floor. In view of the extensive background and experience of the panel members, they can be expected to set forth some very stimulating and thought provoking opinions. This meeting is an outstanding opportunity for you to hear and interchange ideas in what promises to be a most interesting session on "The Role of Standards in Reliability." Plan to be there!

Meeting Notice

Subject: The Role of Standards in Reliability

Panelists: Messrs. B. A. Diebold
C. Senneff
H. R. Terhune

Moderator: Mr. P. S. Darnell

Place: Burroughs Corporation
(Fourth Floor)
215 Park Avenue
(Corner 18th Street)
New York City

Date: November 18, 1963
At 7:45 P.M.

GUESTS ARE WELCOME!

NOVEMBER JOINTLY SPONSORED NORTH JERSEY SECTION and PTGEWS

ELECTRONIC PATENTS

MEETING NOTICE

Date: November 13, 1963
Wednesday

Pre-Meeting Dinner: 6:00 P.M.
Cooper Hood Restaurant
1 Park Avenue
Lyndhurst, N. J.

Meeting: 8:00 P.M.
ITT Auditorium
ITT Laboratories, Inc.
500 Washington Avenue
Nutley, N. J.
NOrth 1-1100

Mr. Jean Chognard, Patent Counsel for Hewlett-Packard Co. of Palo Alto, Cal. will speak on Electronic Patents at the joint meeting of the Professional Technical Group on Engineering Writing and Speech and its parent North Jersey Section of the Institute of Electrical and Electronics Engineers, on Wednesday, November 13, 1963. The meeting will be held 8:00 P.M. at the ITT Auditorium of the ITT Laboratories, 500 Washington Ave., Nutley, N. J.

Mr. Chognard will speak about the evolution from classical to electronic patents and cross-licensing arrangements. Practical considerations for the electronics engineer such as the clear and proper keeping of a notebook and records . . . and the . . writing of the patent application will be discussed in detail. The cover of this issue shows one of the earlier electronic patents. These patents are different than other types of patents. The state of the art is esoteric and practiced by highly skilled and educated people.

The large amount of Research and Development Funds spent in the electronics field, makes it difficult for one company to emerge with a virtual patent monopoly. The use of licensing agreements is therefore, widespread in the industry. The use of cross-licensing has aided the growth of the electronics industry.

Bearing in mind that the engineer is an originator of the patent, he will gain an integrated understanding of electronic patents from Mr. Chognard.

Jean Chognard was born in France in 1924. He received his elementary and high school training in the French School System. In 1941 he came to the United States. Mr. Chognard is a graduate of Columbia College, Columbia School of Engineering and Columbia School of Law.

He was a member of the Patent Department of RCA in Princeton, N. J. from 1949 to 1952; Patent Counsel to Electronics Corporation of America in Cambridge, Mass. from 1952 to 1958; and has been Patent Counsel to the Hewlett-Packard Co. Palo Alto, California since 1958.

Mr. Chognard is a Member of the New York, Massachusetts and California Bars.

See Map

Page 14

PTGMTT ITTFL Space Station Visit

"Operations of the ITTFL Space Communications Research Center" will be discussed by Bernard Cooper, Director of Operations at ITTFL Space Communications and Tracking Station. The meeting is scheduled to begin at 8:00 P.M. in the Auditorium of ITTFL 500 Washington Avenue, Nutley, N. J.

The communications research station has been involved in a continuing R & D program covering experiments with the Moon, Relay Communication Satellite and Telstar I and II. The present activity included experiments with both Telstar II and Relay active communication satellite repeaters.

After a brief presentation of the operations of the Research Station, a tour will be conducted by the personnel at the station.

Date: November 20, 1963
Wednesday

Meeting: 8:00 P.M.
ITTFL Auditorium
500 Washington Avenue
Nutley, N. J.

Pre-Meeting Dinner: 6:00 P.M.
Copper Hood Restaurant
1 Park Avenue
Lyndhurst, N. J.

Mr. Cooper is now director of operations at ITT Federal Laboratories Space Communications and Tracking Station. As a system analyst, he has devoted his efforts to a survivability analysis for a satellite communication system. Previously, he was a senior project engineer for a study program on analysis of a multiterminal communication system. He also supervised the development of printed delay lines for a phased array antenna system at 8 mc and 30 mc. Prior to this, Mr. Cooper was a project engineer on Project Speed Mail, involved with system analysis and design including the development of an automatic control and indication system. He has 14 published technical papers in his field.

Mr. Cooper received a BEE in 1950, and MEE in 1956, both from the Polytechnic Institute of Brooklyn.

EXECUTIVE COMMITTEE REPORT

John K. Redmon, Vice Chairman

As the Vice Chairman of the North Jersey Section for the year 1963-64, it is my hope that we can complete the merger which exists in the minds and actions of most of our membership and make the entire membership act and think as members of IEEE. Only if we can accomplish this goal, will our organization reach its ultimate success. It is the desire and intention of the Executive Committee to provide, in the North Jersey Section, the services required for all groups in our organization, either through PTG's solely in the North Jersey Section, or with combined PTG's among the other contiguous sections of New York, Long Island, etc.

A challenge that faces us for 1963-64 is one of awakening the interest of the inactive members, for only a few of the approximately 5500 members of this new section actually participate in its activities. A greater active participation by more members can only be accomplished if an all-out effort is made by each member now taking an active part in the society's activities

Try this for a starter. When you are going to a meeting that might interest a friend, invite him to go with you. If he isn't a member now, he may be stimulated to join and take an active part in other society activities. If he is already a member but inactive for some reason, he will be flattered that someone thought enough of him to invite him, and his interest may be kindled.

As an organization, we have a potential in many areas far in excess of any possibilities that were available to either organization that existed before the merger. Let's take advantage of this opportunity.

If there is no PTG covering your field of interest, and you have other contacts that are also interested in the same area, let the Executive Committee know of your needs and you can be advised as to how to proceed to form a PTG. The mechanics are rather simple to form a new local chapter of a PTG, or to start a new National PTG if one does not exist.

What is in the immediate future? Many things, but some of them include adoption of Section By-Laws and operating procedures, final organization of the PTG on Power, regular program meetings, educational courses, lecture series, and many other activities which will be included in the program for the first year of operation of the North Jersey Section.

Watch the Newsletter for details, and for the sake of your society, and for your own sake, support the activities during the year and BRING A FRIEND. We need and want you all.

NORTH JERSEY SECTION IEEE EXECUTIVE COMMITTEE

SECTION OFFICERS

Chairman ..... C. W. Vadersen
Vice Chairman ..... J. Redmon
Treasurer ..... J. P. Van Duyne
Secretary ..... S. A. Mallard
Member at Large ..... J. W. Gordon
Member at Large .... A. E. Hirsch, Jr.
Past Chairman ..... A. W. Parkes

STANDING COMMITTEE CHAIRMEN

Education ..... A. Paparozzi
Co-chairman ..... C. G. Gorss, Jr.
Facilities ..... R. Winterstein
History and Procedures ..... F. Polkinghorn
Membership ..... G. Tanguay
Co-chairman ..... M. Nuechterlein
Nominations ..... J. Schwanhausser
Program ..... R. McSweeny
Co-chairman ..... M. Glander
Publicity ..... J. Miller
Publications ..... F. I. Scott, Jr.
PTGAC ..... G. Marmar
PTGCS ..... G. Karger
PTGEWS ..... I. F. Stacy
PTGMTT ..... H. Engelman
PTGEC ..... D. Perry

NEWSLETTER STAFF

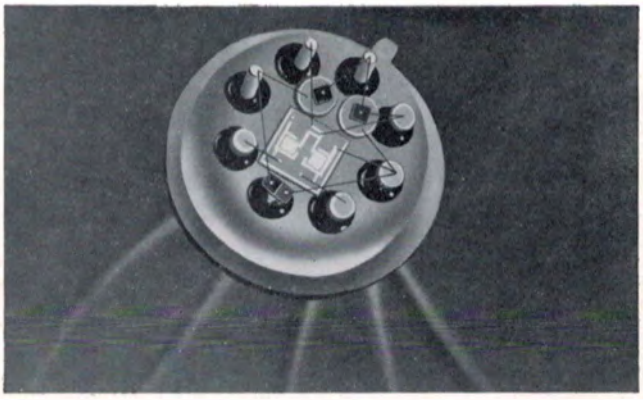
Business Manager ..... H. Evans
Editor ..... M. M. Perugini
Managing Editor ..... B. Meyer

Executive Committee Meetings

November 6
December 4
January — 1964
February 5
March 4
April 1
May 6
June 3

Microcircuitry...PLUS Isolation of Components

GI MULTICHIPS: The Advantages of Packaged Circuitry—with "Three-Dimensional Freedom" in the Location of Circuit Elements



Typical example of multichip circuits: General Instrument NC-8C Flip-Flop, Eccles-Jordan cross-coupled inverter circuit capable of operation up to 20 mc.

WHEN A HEAT-sensitive circuit component must be placed closely adjacent to another component that *generates* heat—and on the *same substrate*—it is rather obvious that circuit performance and reliability may be compromised...

IT IS EQUALLY obvious, of course, that this problem frequently cannot be evaded in the familiar, fully-integrated "monolithic" microcircuit in which various types of components *must* be mounted and interconnected on a single surface. By its very nature, a monolithic Integral Circuit Package, if it is to retain its highly desirable advantage of extreme miniaturization, cannot always permit ideal isolation of components—either physically, electrically or thermally.

The Advantages of GI Multichips

THERMAL TRANSFER—like intercoupling of components, especially between input and output circuits, and various other limitations of the monolithic, common-substrate ICP—can readily be avoided by utilizing General Instrument's highly advanced technology of *multichip* microcircuits.

THIS FREEDOM of layout gives you the opportunity not only to separate temperature-sensitive elements from heat-producing elements but also to isolate input and output components of a circuit and any other elements whose parasitic intercoupling, electrically, electromagnetically or electrostatically might be undesirable. Component isolation, in fact, can closely approach that of conventional, discrete elements on a conventional circuit board—with only a fraction of the bulk and weight. And there are other advantages, as well...

The Ideal Substrate for EACH Component

MONOLITHIC ICP's, naturally enough, must be produced on a single substrate material which is a reasonable *compromise* between the *ideal* characteristics for each resistor, capacitor, diode, transistor or other component comprising the finished circuitry. No such compromise is necessary in GI multichip technology. Since we batch-manufacture a number of *identical* components on each silicon wafer (which are later diced apart and assembled to produce your finished circuit) the base material for each type of component can be selected to have the optimum parameters for *that* particular component and no other.

...YOUR Design, at Low Cost!

EVEN WHERE the foregoing considerations do not apply, many design engineers have welcomed the opportunities inherent in the GI multichip technology because it permits them to make minor (or, for that matter, *major*) modifications in design without entailing excessive tooling-up costs. The multichip technique allows you to specify virtually any arrangement of virtually any practical micro-components at a total tooling-up cost of no more, usually, than a few hundred dollars. A fully integrated monolith created to your own specs—even if the modifications represented only relatively slight changes from a standard, "off-the-shelf" circuit—would run to many thousands...

Get BOTH Sides of the WHOLE Story

PLEASE DON'T get us wrong. This advertisement happens to touch on a few of the advantages of GI multichip ICP's. But we also manufacture fully integrated *monolithic* microcircuits for the many standardized applications where a standardized monolith is eminently suited. We have no especial axe to grind in favoring *either* type—and will be happy to give you experienced and completely unbiased advice, without obligation, whenever you may be in doubt about which type to choose.

MEANWHILE, if you'd like to know more about the specific advantage of GI multichips—and there *is* a great deal more to the story—a word from you will bring interesting, useful, complete data and literature. For promptness, please write to Jerry Fishel at the address below.

GENERAL INSTRUMENT CORPORATION
SEMICONDUCTOR PRODUCTS GROUP
65 Gouverneur Street, Newark 4, New Jersey

To Discuss Relay Failure Mechanism

MEETING NOTICE

Date: Tuesday, November 12, 1963

Time: 7:30 P.M. (Refreshments will be served)

Place: Garden State Plaza Auditorium
Garden State Plaza
Junction of Route No. 17 and Route No. 4
Paramus, New Jersey

Subject: The Physics of Failure Regarding the Mechanism of Relays

Speaker: Mr. Everett Taylor, Director of Reliability and Product Engineering
Filtors, Incorporated
East Northport, New York

Program

During the course of the evening, Mr. Taylor will discuss the various production implementations to remove the causes of failure, effectively collected failure data on various parts of the relay. Mr. Taylor will state some of the primary causes of failure under various environmental conditions and what cures would be satisfactory. Ample time will be allowed for a question and answer session.

Biography

Mr. Everett Taylor has specialized in Reliability Engineering and Quality Control functions for the past fifteen years. At present, as Director of Reliability and Product Engineering, Mr. Taylor is responsible for designing reliability and analyzing failure modes into Filtors products. Mr. Taylor earned his BA in Mathematics and Physics at Bucknell University and Adelphi University. He has lectured and written a number of papers and reports on reliability and quality control problems. Mr. Taylor is directly responsible for designing the Filtors Blue Ribbon Relay Series, first approved reliability-rated relay for the industry. He is an active member on the Executive and Program Committees of the American Society for Quality Control.

PTGEC

CODES FOR INFORMATION INTERCHANGE

Planners of large information handling systems are aware of the impact of code standards on computer design. The CCITT #2 (Baudot), CCIR #242 (ARQ) and versions of Fieldata are in current use. In marrying computers with communications there have been several attempts to produce standards that would meet the needs of the widest community of users. In planning information systems, the designer must consider the requirements of communications language as well as the language of input/output equipment. The new American Standard Code for Information Interchange is a recent development to this end.

Development of the new American Standard Code has called for compromise of many conflicting requirements. The panel will discuss the history of the developments leading to the present standards, the conflicting requirements and ways in which codes may be applied.

Audience participation is invited to discuss ways in which conflicts in requirements might be resolved.

The program has been developed to serve the interests of both engineers and computer programmers. All members of the Section and guests are welcome.

Biographies

Mr. R. M. Gryb received a BSEE from the University of Illinois. He is the Private Line and TWX Engineer at AT&T. Mr. Gryb's past and present work has been concentrated on telegraph and data transmission. In his talk he will present the highlights of the evolution and application of international code standards.

Mr. E. Lieblein holds a BSEE (1955) and MSEE (1963), both from New York University. He is leader of Computers Area, Data Division, Communications Department, USASRDL. Mr. Lieblein's experience has been concentrated in the design and development of the series of FIELDATA computers. He is a member of the EIA sub-committee on standardization of punched and magnetic tape codes. He is presently responsible for R&D of advanced computer systems for the U. S. Army command control. He will present the salient features of the evolution and system application of the FIELDATA code.

Mr. A. Whitman earned an AB in Engineering Sciences (1918), and a BSEE from Harvard University. He is one of a group of retired specialists (Bell Labs, 1962) at ITT Communication Systems, Inc. His major engineering specialties have been inductive coordination, noise cross-talk, and TTY and data system engineering. He has been an active member of the ASA X3.2 committee on code standardization since 1960. Mr. Whitman will present the major features of the evolution and some potential applications of the ASCII code.

Mr. C. A. Deutschle holds a BSEE and an MS in Physics from the Pennsylvania State University. He is a member of the Technical Staff of ITT Communication Systems, Paramus, New Jersey. Mr Deutschle's major activities have been in quantized communications and digital computer systems.

Chapter News — Election Results

At a meeting of the Chapter an election of officers was held with the following results:

Chairman
David P. Perry
ITT Communication Systems, Inc.
Paramus, New Jersey

Vice Chairman
Thomas H. Crowley
Bell Telephone Laboratories
Murray Hill, New Jersey

Secretary
Harry Clark
ITT Federal Laboratories
Nutley, New Jersey

MEETING NOTICE

Subject: Codes for Information Interchange
Panelists: Messrs. R. M. Gryb, AT&T; E. Lieblein, USASRDL; A. Whitman, ITTCS
Moderator: Mr. C. A. Deutschle—ITTCS
Place: ITT Communication Systems, Inc., S. 60 Route 17, Paramus, New Jersey
Date: 14 November 1963
Time: 8:00 P.M.
Pre-Meeting 6:00 P.M.
Dinner: THE CAMBRIDGE INN, Garden State Plaza, Paramus, New Jersey

FOR DINNER RESERVATIONS CALL:
Mr. Lewis Small — HUbbard 9-7400

Information Processing in Nervous Systems

Leon D. Harmon of Bell Telephone Laboratories will speak at the December North Jersey Section meeting sponsored by the Professional Technical Group on Automatic Control. The topic is Information Processing in Nervous Systems. The meeting will be held at the Arnold Auditorium, Bell Telephone Laboratories, Inc., Murray Hill.

Recent advances in neurophysiology will be reviewed, with principal emphasis placed on information-processing properties of single cells and on visual and auditory signal encoding. Models of the nervous system and the relationships between biological systems and automata will be discussed.

THE SPEAKER

Leon D. Harmon was born in 1922. He received the BSEE degree from New York University in 1956. From 1950 to 1956 he was on the engineering research staff of the Electronic Computer Project at the Institute for Advanced Study in Princeton, New Jersey.

Since 1956 he has been a member of the technical staff in the Visual and Acoustics Research Department at Bell Telephone Laboratories, Inc., Murray Hill, New Jersey. His work has included studies in visual pattern recognition and automata. At present he is working on automatic recognition of handwriting and on neural analogs to study information processing in the nervous system.

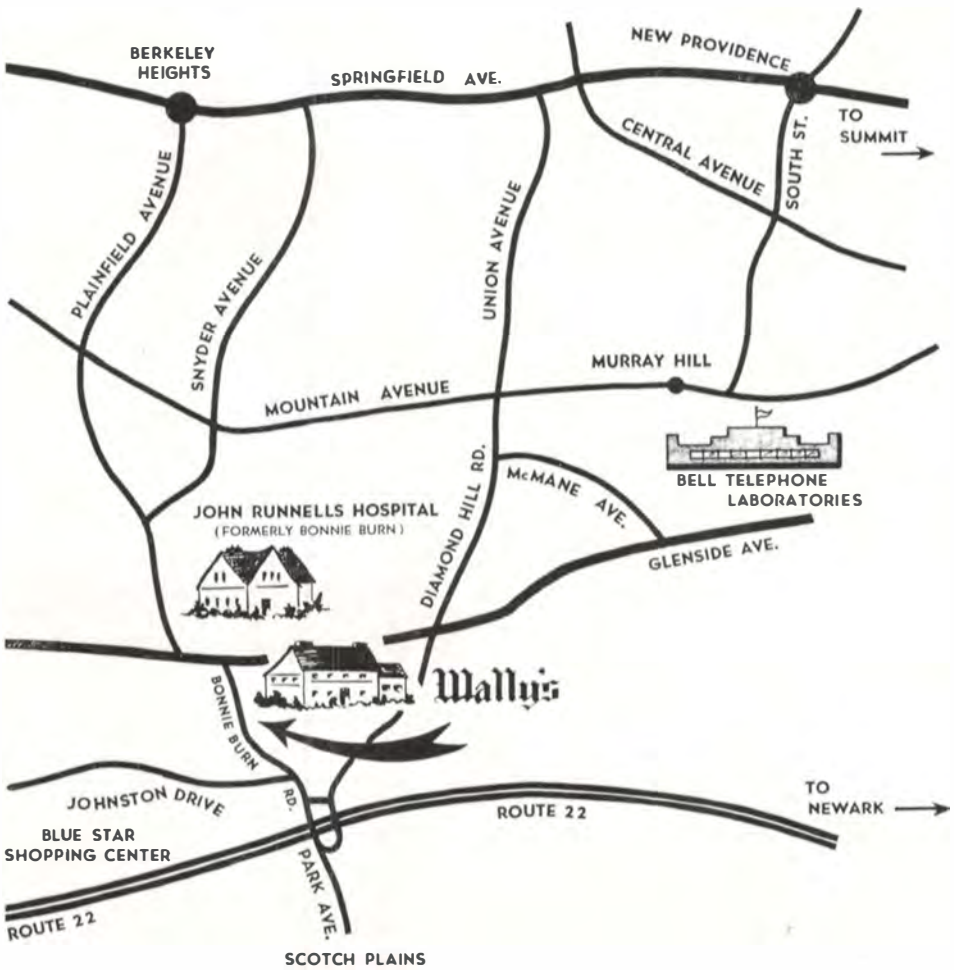
Mr. Harmon is a member of the American Association for the Advancement of Science, the Psychonomic Society, and the Biophysical Society.

MEETING NOTICE

Subject:	Information Processing in Nervous Systems
Speaker:	Leon D. Harmon Bell Telephone Laboratories, Inc.
Place:	Arnold Auditorium Bell Telephone Laboratories, Inc. Murray Hill, N. J.
Date:	Wednesday, December 11, 1963 at 8:00 P.M.
Pre-Meeting Dinner:	6:00 P.M. at Wally's Tavern On-The-Hill

ALL ARE WELCOME

All PTGAC members are invited to monthly executive committee meetings. If interested, please contact Mr. Robert Sokalski at CA 6-4000.



Servo-Mechanisms

On Thursday, November 21, 1963, Mr. Joel Feiner of Airborne Instrument Labs will address the ASME Fluid Dynamics Division in New York on Automated Numerical Control of Production Machinery. Plans have been made to have representative personnel from associated fields in attendance.

Anyone interested in machine design, instrument controls, electromechanisms, electronics, and fluid dynamics in industry or the government—from the designer to the user — should find the topic on automation a stimulating one.

Mr. Feiner, Manager, Ind. Applications Engr., AIL, will supplement his talk with slides and will conduct a question and answer period.

His talk will be given at the Consolidated Edison Building, 4 Irving Pl., N. Y. C., starting at 7 P.M. For further information about this meeting, contact W. J. Mitchell, 3379 Route 46, Parsippany, New Jersey.

Microwave Lectures Set

The New York Chapter of the PTGMTT (Microwave Theory and Techniques) will hold a lecture series on microwave impedance matching. The lectures will be held on five consecutive Tuesday nights, at 8:00 P.M. November 19 through December 17 at the General Telephone Laboratories (Sylvania) in Bayside, Queens. The speakers and topics are as follows:

Tickets for the lecture series are priced at $6.00 (PTGMTT Members), $7.00 (IEEE Members), $8.00 (Non-Members) and $3.00 (Students). Single admission is $1.50 (IEEE Members) and $2.00 (Non-Members).

Further information about the lectures and tickets may be obtained from Mr. Adrian C. Gately or Mr. Leonard J. Kaplan, New York University, Electrical Engineering Department, Bronx, New York 10453, (Ludlow 4-0700).

November 19	Professor Don J. R. Stock New York University	Introductory Lecture, Smith Chart and Circle Diagrams
November 26	Dr. Henry J. Riblet Microwave Development Laboratories	Non Uniform Transmission Lines and Quarter Wave Transformers
December 3	Dr. Richard LaRosa Hazeltine Corporation	"Fano Type" Matching and Extensions
December 10	Professor Walter K. Kahn Polytechnic Institute of Brooklyn	Waveguide Junctions
December 17	Professor Lowell I. Smilen Polytechnic Institute of Brooklyn	Active Networks in Impedance Matching

New York Section–IEEE Power and Industrial Division

INSPECTION TRIP
Thursday, November 21, 1963

Triangle Conduit & Cable Co. — Wire Plant
New Brunswick, New Jersey

The tour will follow the manufacture of wire from the drawing of hot-rolled rods to the application of insulating materials.

The trip will take from two to three hours and will be limited to **50** persons, with advance registration required.

A chartered bus will leave New York from in front of the Hotel Holland — 321 W. 42nd Street (between 8th & 9th Avenues) — at 12:30 P.M. and should return by 6:00 P.M. Round trip fare is $1.75

Private passenger cars will be allowed at the plant. A map showing the location of the plant and the suggested parking area has been prepared and will be sent on request.

Make checks payable to Power & Industrial Division, New York Section IEEE. No request will be considered after November 18, 1963.

J. A. Floren
Long Island Lighting Company
175 East Old Country Road
Hicksville, Long Island, New York

Please send me ..... ticket (s) for the inspection trip to the Triangle Conduit & Cable Company.

- ☐ I will take the chartered bus from the Hotel Holland, New York, and have enclosed a check ( ) money order ( ) in the amount of $ ..... (Price — $1.75 per ticket).
- ☐ I will provide my own transportation and would like a map showing the location of the plant and the suggested parking area.
- ☐ I have enclosed a stamped, self-addressed envelope, as required.

Name .....

Address .....

WHICH OSCILLOSCOPE?

Choosing the *right* oscilloscope to help solve a measurement problem is sometimes confusing. The choice seems so large. For example, Tektronix offers over fifty different types.

The choice of an oscilloscope narrows considerably, however, once the application is known. Determining the *type* which best suits the application then becomes a matter of understanding the various features of the oscilloscope.

To help you better understand oscilloscope features, Tektronix offers you a free booklet. The booklet, FUNDAMENTALS OF SELECTING AND USING OSCILLOSCOPES, can be an invaluable aid in furthering your knowledge of oscilloscopes and in learning more about how these precision tools might help you in your studies of changing phenomena. Also, in addition to explaining oscilloscope features, this informative 16-page booklet designates differences in oscilloscope types and describes factors affecting validity of waveform displays.

For your copy of the booklet, please write to Tektronix or use the coupon below.

Tektronix, Inc. P. O. Box 500, Station 96750X, Beaverton, Oregon

Please send me the free booklet "Fundamentals of Selecting and Using Oscilloscopes."

Name _____ Title _____

Company or Organization _____

Address _____

City _____ Zone ____ State _____

Shock and Vibration Instrumentation November Seminar

As unavoidable for manufactured goods as death and taxes are for people, shock and vibration affect most products either in shipment or in use, or both. And many prosaic industrial environments are as severe in this respect as aerospace.

To explore this field of widespread interest, the Instrumentation Division of the IEEE New York Section has scheduled a one-day seminar on "Shock and Vibration Instrumentation" for Tuesday, November 12, at Room 1251B, United Engineering Center, 345 E. 47th St., New York. The meeting will run from 8:30 A.M. to 4:15 P.M., and will include both theory and applications information for shock and vibration studies.

The program is as follows:

"Techniques for Vibration Generation", Mr. Galt B. Booth, Technical Director, MB Mfg. Co., a Division of Textron, Inc., New Haven, Conn.

"Accelerometers and Associated Equipment", Mr. Daniel Abrams, Chief Engineer, Gulton Instrumentation Div., Gulton Industries, Inc., Metuchen, N. J.

"High Frequency Vibration Applications, Measurement and Calibration", Mr. Thomas L. Greenwood, Supervisor, Electrical Section, Instrument Development Branch Test Laboratory, George C. Marshall Space Flight Center, Huntsville, Ala.

"Ordinance Shock Environments", Mr. Leo Adelson, Supervisory Electronic Engineer, Electrical Equipment Section, Quality Assurance Directorate, Picatinny Arsenal, Dover, N. J.

A question and answer period will follow the talks. Preprinted lecture notes will be distributed at the seminar. Registration fee is $8.00 ($1.00 for engineering society student members), and attendees may register at the door from 8:30 to 9:00 A.M. Luncheon arrangements are not included in the program. To register in advance, checks payable to Instrumentation Division, New York Section, IEEE, should be sent to John J. Dietz, Instrument Division, McGraw-Edison Co., 51 Lakeside Ave., West Orange, N. J.

SCHEDULE FOR ROUND TABLE MEETINGS IN N. Y.

Title: "Underground Distribution for New Residential Areas"

Location: 19th Floor Cafeteria, Consolidated Edison Company 4 Irving Place, New York 3, New York

Time: 6:30 P.M., Wednesday, November 20, 1963

Speakers:

R. F. Lawrence, Electric Utility Systems Engineering, Westinghouse Electric Company, Pittsburgh, Pennsylvania

L. Gurney, Apparatus and Applications Engineer, Line Material Industries, New York City

F. C. Van Wormer, Underground System Distribution Engineer, General Electric Company, Schenectady, New York

R. Moravek and J. Shimshock, Electrical Distribution Engineering, Underground, Public Service Electric and Gas Company, New Jersey

Moderator: J. Paetz, Republic Aviation Corporation, Farmingdale, Long Island, New York

Title: "Functions of Process Computer Systems in Steam — Electric Generating Stations"

Location: 19th Floor Cafeteria, Consolidated Edison Company 4 Irving Place, New York 3, New York

Time: 6:30 P.M., Wednesday, November 20, 1963

Speakers: To be announced

Moderator: Mr. J. I. Martone, Long Island Lighting Company, Hicksville, Long Island, New York

To Cover Random Access System

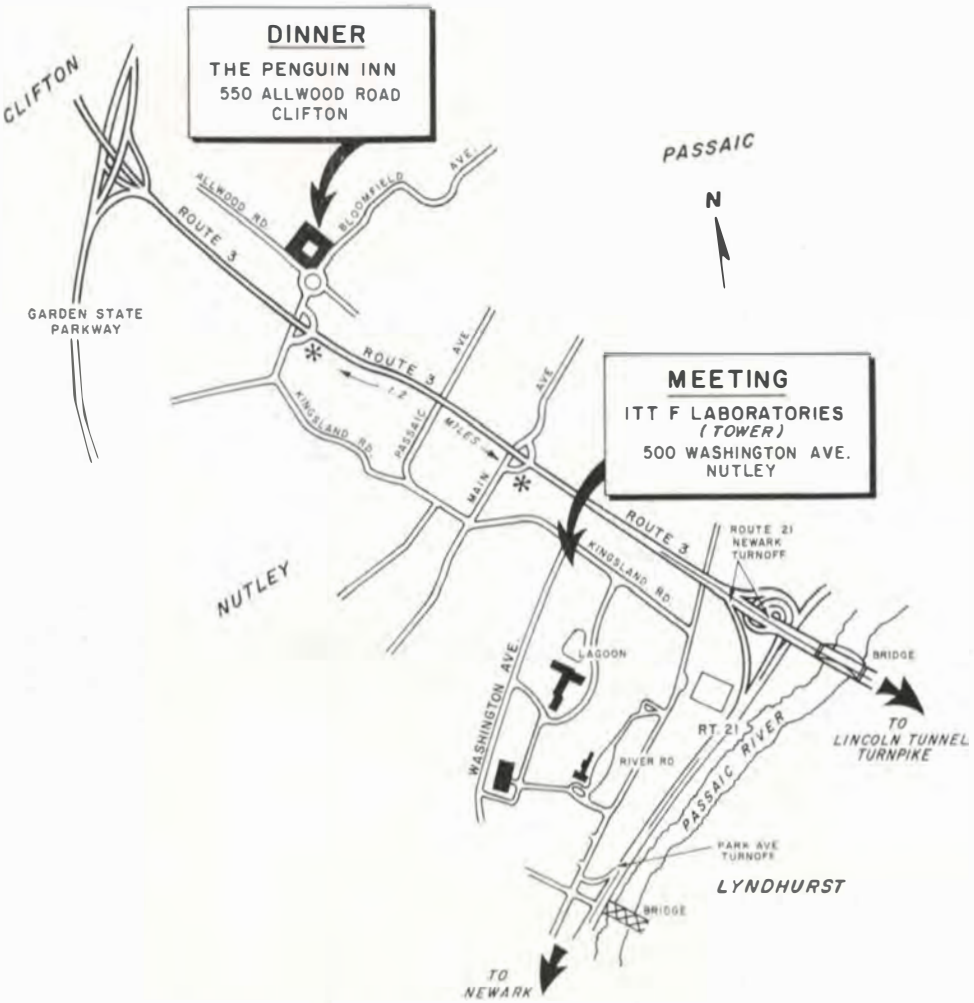
Benjamin V. Blom, a member of the Technical Staff, ITT Communication Systems, Inc., Paramus, N. J., will be the principal speaker at a meeting of the North Jersey PTGC's to be held November 19, 1963, in the auditorium of the ITT Federal Laboratories, Nutley, N. J. Mr. Blom will discuss the "Basic Principles and Operational Characteristics of a RADA (Random Access Discrete Address) System."

A recognized expert in the field of survivable airborne communications, Mr. Blom has an extensive background in the design of military communications systems, having served as technical director of the Signal Communication Department, U. S. Electronic Proving Ground, Fort Huachuca, Arizona, and Chief of the Aircraft Systems Engineering Staff of the U. S. Signal Corps Engineering Laboratories at Fort Monmouth, N. J.

Mr. Blom received his BEE degree from the Polytechnic Institute of Brooklyn and has been a frequent contributor to professional engineering publications. A senior member of the IEEE, he is chairman of the IEEE's Monmouth Sub-Section and a former chairman of the Ft. Huachuca Section.

A New Communication Tool

The Random Access Discrete Address (RADA) technique, an outgrowth of work done by the Bell Telephone Laboratories on asynchronous multiplexing, is an interesting new tool for communication system engineers. It is a system in which all subscribers within the net have immediate and unscheduled access to every other subscriber in the net without the use of central switching equipment. The basic technique will be described and various system parameters will be presented from the operational viewpoint. Addressing capabilities and limitations, error sources and effects, system traffic capacity, bandwidth requirements and interface problems are among the parameters to be discussed. The transmission of both voice and data will be considered.



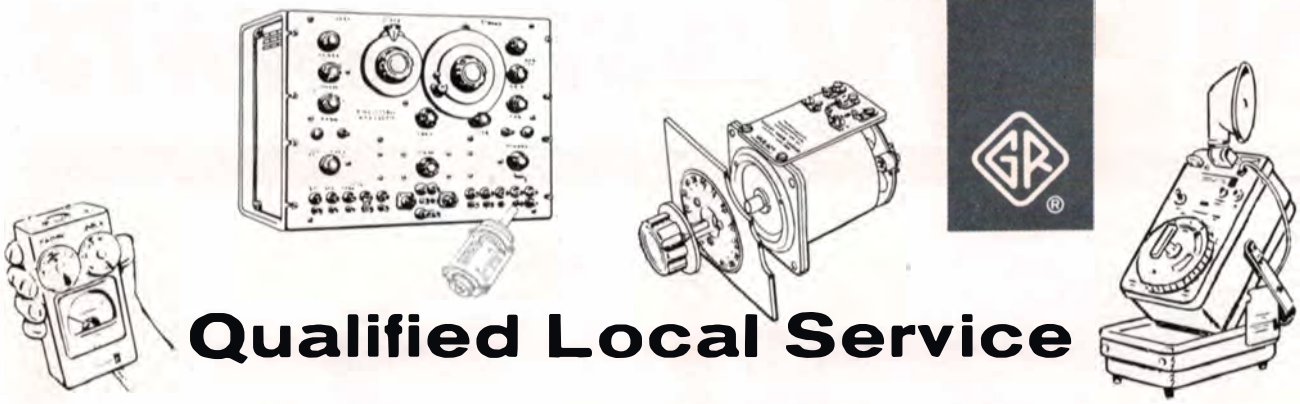
MEETING FACTS

Title:	RADA, A New Communications Tool
Place:	ITT Federal Labs Auditorium 500 Washington Ave. Nutley, N. J.
Date:	Tuesday, Nov. 19, 1963
Time:	8:00 P.M.
Pre-Meeting Dinner:	Penguin Restaurant Allwood Rd. Clifton, N. J. 6:00 P.M.

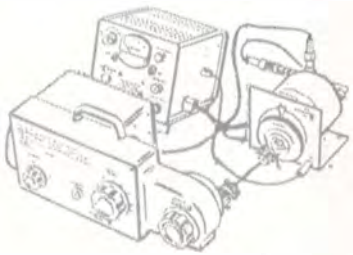
FDU STUDENTS ELECT

The names of the new officers of the Student Branch at Fairleigh Dickinson University are;

Chairman ..... Barry Soloway
Vice Chairman .... William Flynn
Secretary ..... Paul Christianson
Treasurer ..... Stanley LaBruna

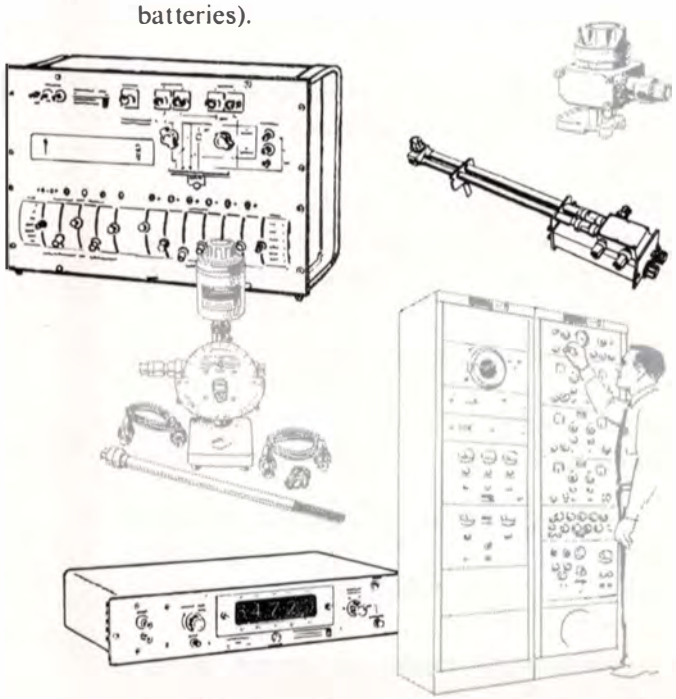


Qualified Local Service for General Radio Products



To insure an absolute minimum of downtime, General Radio builds into its products its own brand of quality and backs it with a two-year warranty. A District Service Laboratory is situated near you to maintain that quality, and to provide the periodic reconditioning and recalibration that even the finest electronic instruments require.

Staffed by factory-trained engineers and technicians, this G-R District Service Laboratory can take care of your needs with the same high standards as the factory Service Department in West Concord and save you precious hours in transportation time. The services provided by this office are covered by a one-year warranty (excluding tubes, transistors and batteries).



These Services Include:

- ✓ Correction of defects within the original two-year warranty at no charge.
- ✓ Reconditioning, recalibration, and certification to original specifications. Certifications are referred to NBS Standards.
- ✓ Modifications of older instruments to incorporate latest recommended design features which improve original performance.
- ✓ At specified intervals, recertification of calibrations to meet military-accuracy requirements.
- ✓ Sale of replacement components.
- ✓ Supplying of test specifications and service information.
- ✓ Provision of certain instruments on a rental basis during reconditioning of your equipment.
- ✓ Quotations on estimated time and cost will be provided, if requested.

The District Service Office nearest you . . .

GENERAL RADIO COMPANY

Broad Avenue at Linden, Ridgefield, New Jersey
George G. Ross • J. P. Eadie • Peter Bishop • Richard K. Eskeland
Tel: N. Y. 212 964-2722 • N. J. 201 943-3140 • TWX: 201 943-8249

NEW INSTRUMENTS

MODEL 5223L
ELECTRONIC COUNTER

NEW: MULTI-FUNCTION ELECTRONIC COUNTER

Hewlett-Packard's Model 5223L Electronic Counter features superior trigger level controls which are usable in all functions.

Basically, Model 5223L is a 300 kc device capable of making frequency, period, multiple period average, time interval, ratio, and multiples of ratio measurements.

The refined trigger circuits make it possible to set trigger points at almost any level or slope of —100 to +100 volt input signals . . . Because input signals must meet the conditions selected by the trigger controls, noise and unwanted signals do not cause erroneous counts.

Output pulses are available to indicate the exact moment an input signal corresponds to the trigger point selected by the controls — a most valuable feature for triggering auxiliary equipment or intensity-modulating an oscilloscope trace.

Stability of the internal 100 kc time base is ±2 parts in 10^6 per week. Model 5223L Electronic Counter has closely spaced digital display tubes for ease in reading . . . And like all other solid-state Hewlett-Packard counters, has display storage for a non-blinking display.

Why not call your RMC Field Engineer for full specs and application data on Model 5223L?

SANBORN MODEL 24 LVDT
DISPLACEMENT TRANSDUCER

SANBORN MODEL 24 LVDT DISPLACEMENT TRANSDUCERS

Sanborn announces availability of a family of new DC-excited, DC-output Displacement Transducers. Series 24 DCDT transducers (LVDT's) operate on 24 VDC excitation and deliver high DC outputs for stroke ranges from ±0.050" to ±3.000". For example, a 0.050" displacement produces a 5 volt output.

Operating temperature range for these new Sanborn miniature transducers is —50°F to +250°F.

The design utilizes a Sanborn differential transformer of unlimited resolution and high accuracy and incorporates a built-in carrier system.

Their size, durability, and hermetically sealed construction make Model 24 LVDT Transducers very useful in applications where operation under adverse conditions is required.

Your RMC Field Engineer can give you application data and specs on these new Displacement Transducers made by the Transducer Division of Sanborn Co.

rmc

for more information phone or write

SALES DIVISION, HEWLETT · PACKARD COMPANY

FIELD ENGINEERS · ELECTRONIC INSTRUMENTATION

236 EAST 75th STREET, NEW YORK, NEW YORK · TRafalgar 9-2023
391 GRAND AVENUE, ENGLEWOOD, NEW JERSEY · LOwell 7-3933