

NORTH JERSEY SECTION

Annual Students' Night



The IEEE

Newsletter

The Magazine of the North Jersey Section

Fairleigh Dickinson Gymnasium
1000 River Road, Teaneck, N. J.

Friday, December 11, 1964
7:30 P.M.

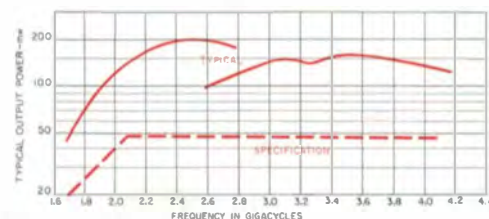
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LOCAL SERVICE AND REPAIR

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

This has been an enjoyable year for your Editor. We want to thank the members of the Executive Committee, the Groups and their Chairmen, and the members of the staff of "The Newsletter."

While all have worked and been helpful in producing "The Newsletter," especial thanks are due to: Howard L. Cook, who has constructively advised and collected information for us; the Program Chairmen: Roger McSweeney (63-64), and Joseph O'Grady (64-65) who provided material on time; Group Coordinator Raymond Kudisch who also helped to get the Group Material in on time; Dr. Irving F. Stacy who has proof-read copy every month; Mike Perugini, former Editor now Business Manager, who broke me in, and his associate A. J. LaRouche, who obtained the advertisements and organized the production and mailing of the publication so that you could receive it before the first of the month; and last, but not least, a recent member of the staff, Marcel Kozuch, who is going to attempt to expand his horizons by undertaking the editorship of "The Newsletter." For the present, he will only "get his pen wet," before he commits himself.

So it is with ambivalent feelings that we move from the position of Editor, and become a back-seat driver as Publications Chairman.

CALENDAR

Tuesday, December 8

Joint: Communications Technology & Computers

8:00 P.M. — "Defense Communications Agency Simulation Program"

Garden State Plaza Auditorium
Paramus, N. J.

6:00 P.M. — Pre-meeting Dinner

Cambridge Inn
Garden State Plaza
Paramus, N. J.

Make Reservations: See Page 8

Thursday, December 10

Aerospace & Navigational Electronics

8:00 P.M. — "Panorama of Flight Instrumentation"

Willkie Memorial
20 West 40th St., N. Y.

6:00 P.M. — Pre-meeting Dinner

Old Seidelberg Restaurant
626 3rd Ave., N. Y.

Thursday, December 10

Engineering Writing & Speech

8:00 P.M. — "Company Libraries & Modern Engineering Needs"

ITT Communications

South 60 Rte. 17
Paramus, N. J.

6:00 P.M. — Pre-meeting Dinner

Cambridge Inn
Garden State Plaza
Paramus, N. J.

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Nominations A. W. Parkes

Friday, December 11

North Jersey Section Annual Student Night

7:30 P.M. — Fairleigh Dickinson

Gymnasium
1000 River Rd.
Teaneck, N. J.

Tuesday, December 15

Electromagnetic Compatibility

8:00 P.M. — "McDonnell Phantom II
A Comprehensive Program for EMC"

Fairchild Camera
300 Robbins Lane
Syosset, L. I.

Tuesday, December 15

N. Y. Computer Group

8:00 P.M. — "The Control Data
Computer Line"

United Engineering Center
347 East 47th St., N. Y.

Tuesday, January 19

& February 23, 1965

N. Y. Communications & Electronics Division—Winter Series

1. Engineering Applications of
Computer Programming

2. Starting January 11 for
6 Mondays — Language
Written & Spoken — Electronic
Identification & Conversion

Thursday, January 28, 1965

N. Y. Basic Sciences Div.

"Developments in Microelectronics"

9:30 A.M. — Morning Session

1:30 P.M. — Afternoon Session

Stevens Institute of Technology,
Hoboken, N. J.

Program J. O'Grady
Publications Bernard Meyer
Student Affairs J. W. Earle

IEEE Group Chairmen

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Group Engineering Writing
& Speech (EWS) L. G. Lee
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Group Power (P) Herbert Blaicher

The IEEE Newsletter

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ABOUT ADDRESS CHANGES

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

**REPORT ALL ADDRESS CHANGES TO:
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Executive Committee Meetings

at Verona Public Library

December 2

January 6, 1965

February 3

March 3

IEEE Convention March 22-25

April 7

May 5

June 2

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ISA HONORS COLUMBIA PROFESSOR

Warren P. Mason, adjunct professor of Columbia University's School of Engineering and Applied Science, received the 1964 Arnold O. Beckman award from the Instrument Society of America in ceremonies held recently during the Annual ISA Conference and Exhibit.

Professor Mason, who is associated with the Institute for the Study of Fatigue and Reliability of the Department of Civil Engineering and Engineering Mechanics at Columbia, was nominated for the award for his research in acoustical and ultrasonic wave propagation, electrical networks, and solid-state physics — and more specifically for his work on the highly sensitive, semiconductor Strain Gages resulting from those studies.

Early Ballantine Instruments Donated to Smithsonian Institution



A Ballantine Model 300 vacuum tube voltmeter, the first commercial type instrument of its kind, has become a part of the Smithsonian Institution's collection of national and international treasures which document the development of science and technology, it has been learned.

Upon receiving a request from the national museum for an early type electronic voltmeter, officials of the company, located at Boonton, N. J., contacted the Naval Research Laboratory in Washington, D.C., where it was discovered that one of Ballantine's first Model 300 units produced, serial number 14, had been in use since August, 1938. The Naval Research Laboratory presented the instrument to the museum in August of this year after attaching to it a special plate commemorating its length of service.

The Smithsonian Institution also expressed its interest in obtaining samples of Ballantine's "Artificial Ear," a throat microphone used by the Air Force during World War II, an electronic stethoscope, and a variable-mu tube developed by Ballantine. These products were also sent to the museum and are now a part of its scientific and technological collection.

To present day designers of electronic equipment, a brief description of these pioneering instruments may prove interesting in their contrast to modern day advances. Ballantine's "Artificial Ear," for example, was used to check the audio fidelity of items such as the output of headphones. The electronic stethoscope combined an amplifier and selective filter which checked the signal from a magnetic pickup stethoscope, amplified it, passed it through one or more filters, and measured the voltage output. Built-in filters allowed the operator to concentrate on certain portions of the audio frequency spectrum. The instrument was also entirely self-contained and battery-operated. Its bulky size, of course, was a handicap — in comparison to the small and compact transistor-type units possible today.

Ballantine's variable-mu tube was developed and sold to RCA, and was a great aid in the days when it was necessary to have an amplifier with variable gain and minimum distortion.

Ballantine's throat microphone was entirely new at the time it was introduced. It consisted of two magnetic pickups at the throat delivering a signal to an amplifier designed to amplify the higher frequency signals far greater than the lower frequency to make up for loss of high frequency responses from the throat. It made possible the use of a microphone in an airplane in which the pilot did not have to hold it up to his mouth. The idea of a throat microphone is quite old, it has been pointed out, but the practical approach including the highly compensated amplifier was what made the Ballantine unit so different and successful.

Annual North Jersey Section Student Night

Fairleigh Dickinson University will once again act as host for the Annual IEEE-North Jersey Section Student Night that is to be held this year on Friday, December 11, 1964, at 7:30 P.M., in the FDU Gymnasium, 1000 River Road, Teaneck, New Jersey.

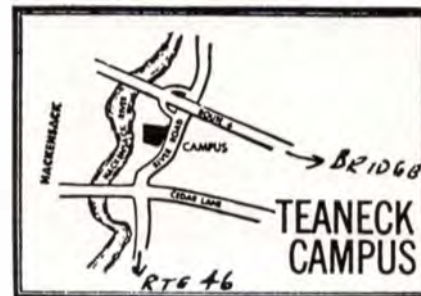
The Student Affairs Committee of the Section, under the leadership of Mr. James Earle of the staff of Newark College of Engineering, has arranged an interesting and enjoyable evening for the fledgling electrical and electronics engineers, and they are all invited, whether or not they are student members of IEEE. The program includes a guest speaker who will address the group, and a panel discussion by several engineers on their experiences since leaving college. This latter program should be of considerable interest to the students since the panel will consist entirely of young engineers from the several engineering disciplines, including communications, manufacturing, and power engineering.

Plans for the evening include a door prize for the students, and complimentary copies of a popular engineering manual will be furnished to them by the Radio Corporation of America.

The Educational Committee Chairman, Charles Gorss, and the Group Coordinator, Raymond Kudish, have jointly arranged to provide several sets of manuals on Systems Engineering in Communications. These manuals, which were prepared especially for a systems engineering training course sponsored by the Education Committee of the North Jersey

Section, will be donated on this night to the student chapter chairmen from Stevens Institute of Technology, Fairleigh Dickinson, and Newark College of Engineering.

The Student Affairs Committee of the North Jersey Section consists of Mr. James Earle, Chairman, Professor W. Clements, Newark College of Engineering, Professor H. W. Phair, Stevens Institute, and Mr. T. Haffy and Professor J. E. Lawlor of Fairleigh Dickinson University.



NOTE TO ALL MEMBERS NORTH JERSEY SECTION, IEEE

The membership is invited to attend this Student Night meeting; as a matter of fact, you are encouraged to do so. You can make no better contribution to these young men than coming to this meeting, mingling and talking with them, thereby indicating your interest in their future. So come on out!

NOTE TO EVERYONE Refreshments will be served

STUDENT OFFICERS

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385-0237

Executive Committee Report

WHAT IS IEEE?

To properly operate within an organization, the analytical individual must identify that organization, its structure and its purpose. For the member engineer or scientist, the IEEE is defined as an organization whose purpose is "the advancement of the theory and practice of electrical engineering, electronics, radio, allied branches of engineering, and the related arts and sciences". The instruments of this policy are the publications, the meetings, and the sections of the IEEE.

However, without introducing the relationship between members, this definition is as sterile as an organization chart without names. It is people who write the papers, run the meetings, and administer the sections so that other people, presumably the total membership, can benefit from the resultant advancement in theory and practice; and yet if a random sample of engineers were polled, one might find that, for the vast majority, their contact with the Institute is quite impersonal. The Proceedings and Transactions arrive automatically (apparently the result of a mysterious process devoid of human intervention), and are scanned and systematically filed. Perhaps one article in each issue stimulates interest or curiosity, and perhaps generates the germ of a helpful or controversial comment. However, the author is not present, and the thought dies. Most likely the only articles read are those specifically related to the reader's current technical assignment.

This hypothetical member is operating as a very narrow-band amplifier without feed-back. This technical introversion is dangerous, both for the organization and the individual, for like the amplifier, he can accept only a very narrow band of inputs and deliver a specific output. If the output requirement changes either in spectrum or amplitude, he does not feed this information back to the profession for appraisal and revision of theory and practice. Neither is his spectrum broad enough to draw upon the neighboring art to accommodate the problem.

Yet the opportunity for all of this exists. Within a half hour's drive on a dozen or more evenings of the month, there is an opportunity for direct contact with the authors of many papers and talks. After-meeting discussions and social contact at the Fellows Banquet provide a communication link to the sources of much of the advancement of current technology. Furthermore, the opportunity exists for modifying, if necessary, the scope of these functions either by suggestions to the various section committees or by direct participation in them.

Despite these opportunities, the total participation of section membership in meetings, committees, and other functions of the section remains small. This year, as in the past, the section and its affiliated groups have planned an excellent program. Let us collectively benefit from it by participating. Remember, it's your profession; help it and yourself grow!"

WALTER GLOMB
Vice-Chairman

NY Communications & Electronics Division

Engineering Applications of Computer Programming

January 19, 1965—February 23, 1965

Part II: DESIGN APPLICATIONS

Within a manufacturing business, computers have been successfully applied to a wide variety of functional work: accounting (payroll, receivables, billing), manufacturing (production scheduling, inventory control, material ordering), and marketing (forecasting, order processing, distribution). Engineering, where the computer gained its initial recognition and acceptance, has not been overlooked, but broad-scale applications are relatively few and far between and are concentrated mainly in peripheral or highly specialized areas.

Recent announcements are opening up the area. During this series of lectures

several of these new developments will be used to highlight the ever-increasing use of computers for various types of engineering design. This is a three-phase program including prototype, non-prototype, and the analysis of electronic currents.

Section 1

Non-prototype design, sometimes referred to as design, application, or production engineering, is an important function in business where (1) the product encompasses a broad range of expected requirements and (2) modifications are introduced to customize the product to specific customer requirements. The use of computers in these areas will be discussed in terms of Automated Design Engineering, a new computer application in which customer design and functional requirements for a product are converted automatically into parts lists, assembly instructions, and other information for manufacture of a finished product. A case example of an Automated Design Engineering System employed in transformer design will be used to illustrate the computer's utility in non-prototype design.

Aerospace & Navigational Electronics

Panorama of Flight Instrumentation

Meeting Notice

The December 1964 meeting of the New York Metropolitan Chapter of the Group on Aerospace and Navigational Electronics (GANE) will be held as follows:

Date: Thursday,
December 10, 1964
Time: 8:00 P.M.
Place: Willkie Memorial
Auditorium
20 West 40th Street
New York City
Subject: Panorama of
Flight Instrumentation
Speaker: Mr. Kenneth S. Lester
Aircraft Radio Corporation
Boonton, New Jersey
**Pre-meeting
Dinner:** 6:00 P.M.
Old Seidelberg Restaurant
626 Third Avenue
New York City

Mr. Lester received his A.B. degree from Drew University. He joined Aircraft Radio Corporation in 1961 as Eastern Regional Representative for dealers in airframe manufacture and is presently Airborne Sales Manager of the Corporation.

Section 2

Prototype design, particularly when it involves large, complex systems, is continually being subjected to more complex technologies, more minute and detailed packaging requirements, and an accelerated rate of technological change. These factors have highlighted the need for better communication and dissemination of information at all levels of design from before-the-fact research to after-the-fact production reporting. IBM's Design Automation System which is used in the design, manufacturing, testing, and servicing of IBM products will be discussed as a case study of the use of computers for prototype design. During the lecture six major areas will be discussed:

- ... Packaging Standards
- ... Engineering Sketches and Transcription
- ... Logic Diagram Printing and Checking
- ... Back Panel Wiring
- ... Impact on Manufacturing
- ... Output Documentation of Engineering Records

Section 3

Electronic circuit performance requirements vary between industries and products. In some instances the design objective is extremely high reliability; in others, it is a balance between cost and reliability, and consumer acceptability. The design effort includes determining the tolerance required of each individual component in order to obtain an overall circuit performance within tolerance. Since the relationship between component tolerance and circuit tolerance is not a direct one, the analysis of the possible combinations of components is a time-consuming task.

(Continued on Page 7)

Electromagnetic Compatibility

PHANTOM II COMPATIBILITY



The New York Metropolitan Area Group on Electromagnetic Compatibility will hold the second meeting of the 1964-1965 series on December 15.

The meeting is tentatively scheduled to be held at Fairchild Camera and Instrument Corporation, 300 Robbins Lane, Syosset, Long Island, New York and will begin at 8 P.M. Guest speaker will be Mr. W. D. McKerchar of McDonnell Aircraft Corporation, St. Louis, Missouri. Mr. McKerchar will discuss the "McDonnell Phantom II — a Comprehensive Program for Electromagnetic Compatibility." He will also present two movies, "The McDonnell Compact Wire Harness," which describes the development of an improved shielded harness, and "The Free World's Phantom," which reviews the development of the RF-4C Phantom Aircraft.

The Electromagnetic Compatibility (EMC) program, implemented as part of the basic design of the RF-4C being produced by McDonnell Aircraft Corporation for the United States Air Force, provides a wide variety of interference problems for the Electromagnetic Compatibility Manager. The RF-4C aircraft involves a high density installation of electronic, electrical, and electro-optical subsystems, integrated to perform tactical reconnaissance missions.

The Speaker:

Mr. McKerchar, presently with the Aircraft Systems Engineering Division of McDonnell Aircraft Corporation is the Supervisor of the Electromagnetic Compatibility Control Group. In this capacity he is responsible for electromagnetic compatibility programs on aircraft, advanced design, and interference research studies.

He is a member of the IEEE Groups on Electromagnetic Compatibility, Military Electronics, Engineering Management, and Aerospace and Navigational Electronics. Mr. McKerchar is the Secretary of the Electromagnetic Compatibility Committee (AE-4) of SAE, and a member of the AIA EMC panel.

Reservations:

To assure adequate meeting facilities, it is requested that members planning to attend phone A. L. Albin at 516-WE 1-4500, X 323 (Syosset, L.I., N. Y.) or O. P. Schreiber, 201 — BR 2-5500 (Cranford, N. J.). Reservations for the Pre-meeting dinner can also be made at that time.

(Continued from Page 6)

This section will discuss how computers are now being applied to this area of engineering and analysis. Specific examples of how computer programs can be used to complete DC, AC, and transient analysis of

electrical networks will be discussed during the lectures. Live computer demonstrations will also be used in conjunction with the lectures.

R. A. Bragg
Program Administrator
Engineering Application Development
IBM Data Processing Div.
425 Park Avenue
New York, New York 10022

Lectures on Language: Written and Spoken-Electronic Identification and Conversion To Start January 11 in N. Y.

A Winter Lecture Series on "Language: Written and Spoken-Electronic Identification and Conversion" will be held in January and February by the New York Section, IEEE and its Communications and Electronics Division.

The course will be given at the Western Union Auditorium, 160 West Broadway, Manhattan, on six consecutive Mondays commencing January 11, 1965, from 7 to 9 P.M. Adequate street parking is available after 6 P.M. The building is easily reached by IRT Seventh Avenue Subway (Franklin Street Station).

Facets of the work presently being pursued, such as character and speaker identification, writing and language conversion, including present and future trends, will be discussed.

The chosen speakers are specialists in the field and are actively engaged in the work in industrial and educational institutions.

This is one of the first occasions where such a group has been brought together to present a unified and comprehensive discussion of this most interesting topic.

Lectures and lecturers are as follows:

- 1 — January 11
"Introduction — What has been and what is being done", Dr. Vincent Gulliano, Arthur D. Little Associates.
- 2 — January 18
"Character Identification", Dr. Robert J. Potter, Thomas J. Watson Research Center, IBM.
- 3 — January 25
"Speaker Recognition", Dr. Lawrence G. Kersta, Bell Telephone Laboratories.
- 4 — February 1
"Writing Conversion", Mr. Warren Strohm and Mr. Robert V. Mazza, IBM.
- 5 — February 8
"Language Conversion", Dr. Susumma Kuno, Harvard University.
- 6 — February 15
"Summary — What the future holds", Dr. Vincent Gulliano, Arthur D. Little Associates.

Registration Information

Fee for the series is \$5 for members of the IEEE; \$8 for non-members; and \$1 for full-time students.

Registrations must be made in advance. To register, send check payable to "Communications & Electronics Division, New York Section, IEEE" to R. E. Sanner, General Telephone & Electronics, 730 Third Ave., New York, N. Y. 10017. A stamped self-addressed envelope must be included.

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Engineering Writing & Speech

COMPANY LIBRARIES AND MODERN ENGINEERING NEEDS

a panel discussion sponsored by

The North Jersey Section of IEEE and the North Jersey Chapter of the Group on Engineering Writing and Speech

The multi-fold increase in engineering information and the need for ready accessibility pose problems of increasing magnitude for libraries that support engineering effort. In this panel discussion, the approach of several companies will be presented. The librarians from several companies will outline the needs that their libraries must satisfy and the manner in which they satisfy those needs. Answers

Joint Meeting:

Communications Technology & Computers

Defense Communications Agency Simulation Program

Mr. Edward H. Cooper will be the speaker at the December joint meeting of the Communications Technology and Computer Groups. He will discuss the application of digital simulation techniques to defense communications network design and operation.

In addition to the history of the DCA simulation development program, application of the developed models to practical problems will be discussed. Emphasis will be placed on "Lessons Learned," cost, and technical support required to staff the DCA simulation program. Models have been developed to simulate between voice and teletype traffic.

The paper will conclude with a discussion of the philosophy of simulation, future plans for simulation of the DCA, and a short discussion of the role of simulation languages.

The meeting will be held at 8:00 P.M. on Tuesday, December 8 at the Garden State Plaza Auditorium. The pre-meeting dinner begins at 6:00 P.M. at the Cambridge Inn, Garden State Plaza.



MEETING NOTICE

Subject: The Defense Communications Agency Simulation Program
Speaker: Edward H. Cooper
Place: Garden State Plaza Auditorium
Date: Tuesday, December 8, 1964
Time: 8:00 P.M.
Pre-meeting Dinner: Cambridge Inn, Garden State Plaza, 6:00 P.M.

Dinner Reservations:

M. Westheimer

ITT Communications Systems

Paramus, New Jersey

843-2400, X201

by December 4, 1964

(IEEE M-1946, SM-1952) Mr. Cooper was born in Huntington, W. Va. He received a BSEE in 1942 from Purdue University, W. Lafayette, Ind.

In 1946 he joined the Wright Air Development Center (now Aeronautical Systems Division) as a Project Engineer in the Aircraft Reconnaissance Laboratory. He conducted development work on aeronautical systems on the staff of ASD until February 1963 at which time he joined the Defense Communications Agency. He is currently in charge of the DCA simulation project.

Mr. Cooper is a member of the American Association for the Advancement of Science, The American Institute of Aeronautics and Astronautics, and The Group on Engineering Management.

Meeting Notice

Date: 10 December 1964
Pre-meeting Dinner: 6:00 P.M.
The Cambridge Inn
Garden State Plaza
Paramus, New Jersey
Meeting: 8:00 P.M.
ITT Communications Systems, Inc.
South 60, Route 17
Paramus, New Jersey
(across Route 17 from the Garden State Plaza)

Mr. Morton W. Wasserman
Head, Library/Information Center
ITT Communication Systems, Inc.
Paramus, New Jersey
Miss Fern Cloak
Librarian, David Sarnoff Research Center
RCA Laboratories
Princeton, New Jersey

The panel moderator will be LaVern G. Lee, Chairman, North Jersey Chapter of IEEE Group on Engineering Writing and Speech.

Letters

Gentlemen:

Re: October 1964 Newsletter Cover

The drawing which you used on the cover of this month's Newsletter is not as far-fetched as it may seem. The individual shown in the wheelchair on the enclosed photographs is a totally paralyzed quadriplegic residing at Goldwater Hospital on Welfare Island. With the equipment, which was designed and built by myself, the boy attends college, signals



College sophomore almost totally paralyzed by polio 10 years ago, reviews textbook at Goldwater Memorial Hospital residence. Note microphone on left lapel and signal light on hat. Student operates tape recorder (under book) and signal and drives the wheelchair by nodding his head. Control mechanism is completely concealed within the hat and requires no adjustment or installation. Student uses mouth stick to turn pages; this head movement has no effect upon wheelchair.

with a light instead of raising his hand, and takes notes with a tape recorder. He performs all of these operations selectively, without the use of his arms, legs or body. He can drive the chair forward, backward, forward-left, forward-right, backward-left, or backward-right, all by himself.

The wheelchair control system is operated by sensors built into the hat. It is capable of yielding up to 16 selective outputs — all under voluntary control. At the present time, I am refining the design so that the equipment can be made even smaller and lighter in weight, and so that it can be used for operating limb orthoses and other prosthetic devices. As you can see, there are no microswitches or other gadgets in the hat and the device is not mechanical. The only alterations visible on the headpiece is the cable which exits at the rear, and the indicator light on the front which lights when the boy wishes to



Note wire leading from rear of hat to logic box mounted on wheelchair. Book has been removed from tape recorder, and horn can be seen mounted on wheelchair under left arm-rest.

raise his hand in class — a feat which he cannot actually perform. All equipment is potted within the headpiece and is virtually indestructible. The hat has an adjustable headband and can be used by anybody, once it is adjusted to fit the user's head.

I thought this information would be of interest to you. I much prefer to apply the technological skills which I possess to the betterment of humanity than to its destruction 1984 style.

Yours very truly,
DONALD SEI-WYN



Note wire leading from the control hat to the logic box mounted on the wheelchair. Batteries at rear are supplied with the wheelchair and power all of the equipment for one day, from an overnight charge. The hat has an adjustable headband and fits anyone. Other hat styles can be provided for women, and for men not desiring the outdoor protection afforded by the hat shown.

NY Basic Sciences Division

1965 Integrated Circuits Seminar Thursday, January 28, 1965 Stevens Institute of Technology Hoboken, New Jersey

Schedule of Invited Papers:

Morning Session — 9:30 A.M.

"State of the Art of Monolithic and Thin Film Integrated Circuits"

Jay Lathrop, Texas Instruments, Dallas, Texas

"Fabrication and Design of Integrated Circuits Utilizing the EPIC Process"

Mike Callahan and George Averkiou, Motorola, Phoenix, Arizona

"Techniques for Frequency Discrimination in Microcircuits"

Manfred Kahn, Sprague, North Adams, Mass.

Moderator: Dr. R. W. Wyndrum, Jr., Bell Labs., Whippany, N. J.

Lunch — included in Registration Fee

Afternoon Session — 1:30 P.M.

"Considerations in High Speed Integrated Logic"

Dr. Richard Sirrine, Sylvania, Woburn, Mass.

"Integrated Memory Considerations"

Tudor Finch, Bell Labs., Murray Hill, N. J.

"Micropower Microelectronic Systems"

Dr. Wolfgang Gartner, CBS Labs., Stamford, Conn.

Moderator: Dr. R. C. Levine, Bell Labs., Whippany, N. J.

PROCEEDINGS of the Seminar will be sent to each registrant, cost included in registration fee.

Send fee with this coupon or facsimile to Dr. R. W. Wyndrum, Jr., Bell Telephone Laboratories, Room 3B272, Whippany, N. J. 07981.

Dr. R. W. Wyndrum, Jr.
Bell Telephone Laboratories
Room 3B272
Whippany, N. J. 07981

- ☐ IEEE member Registration Fee, \$12
☐ NOT IEEE member, \$13
☐ Sent after Dec. 30, 1964, add \$3 for late registration

Fee includes luncheon and copy of PROCEEDINGS of Seminar. Make checks payable to IEEE Basic Sciences Division.

Name

Address

City

State Zip



Left to right:

Messrs. W. G. Shepherd (*Chairman, Awards Board*), H. T. Friis (*Recipient M. J. Kelly Award*), C. H. Lindner (*President IEEE*), J. G. Ferguson (*Recipient Morris E. Leeds Award*), H. H. Buttner (*Accepted David Sarnoff Award for H. G. Busignies*).

Friis, Ferguson, Busignies to Receive IEEE Awards During National Electronics Conference

The Institute of Electrical and Electronics Engineers (IEEE) gave field awards to three top engineers during a special luncheon in their honor on Wednesday, October 21. The luncheon was held in conjunction with the National Electronics Conference (Oct. 19-21) — a three-day meeting held each year in Chicago and sponsored by IEEE. Clarence Linder (IEEE President and retired GE Vice-President) was on hand to present the awards as follows:

Mervin J. Kelly Award (in the field of telecommunication) to:

Harald Trap Friis (Consultant, Hewlett-Packard Co.)

"For his many contributions to the development of radio systems from high frequency to microwaves, particularly in the fields of radio measurements and antennas."

Morris E. Leeds Award (in the field of electrical measurement) to:

John Gilbert Ferguson (Engineering Consultant, Lockheed Electronics Co.)

"For his contribution in expanding the knowledge of the measurement of fundamental electrical units."

David Sarnoff Award (in the field of electronics) to:

Henri Busignies (Vice-President and General Technical Director, International Telephone and Telegraph Co.)

"For outstanding contributions to electronic systems, especially in the fields of direction finding and air navigation."

Harald Trap Friis was born in Naestved, Denmark, February 22, 1893. He attended the Royal Technical College, Copenhagen, where he received the degree of Electrical Engineer in 1916 and Doctor of Science in 1938.

He began his engineering career in Denmark in 1916 as assistant to Professor P. O. Pedersen. Moving to the United States in 1919, he then joined the Western Electric Company's research department which was later to become Bell Laboratories.

During his career with the Bell System, Harald Friis contributed substantially to almost every aspect of the radio art. In

the early twenties he built the first field measuring set for the 300 to 400 Meter range. Work in the field of propagation and antennas culminated in the design of the multiple unit steerable antenna (MUSA).

Entering the field of microwaves in 1938, Friis established accurate measurement techniques which proved invaluable both in the Bell Laboratories' wartime microwave work and in the work of the Radiation Laboratory at MIT. In the field of antennas, his invention of the simple rocking-horse scanning antenna is noteworthy, as is the "bill-board" antenna which was installed in large numbers in the Arctic for the White Alice tropospheric scatter system. The antennas used in the "Telstar" experiment are direct descendants of the horn-reflector antenna which was invented by Friis and Beck.

Friis was made Director of Radio Research at Bell Laboratories in 1945 and in 1952 became Director of Research in High Frequency and Electronics. His many honors include the Valdemar Poulsen Gold Medal, presented by the Danish Academy of Technical Sciences in 1954, and the IRE Medal of Honor for 1955.

A Fellow of the IEEE, Friis is also a member of the American Association for the Advancement of Science, the Danish Engineering Society, the American Section of the International Scientific Radio Union, and the Danish Academy of Technical Sciences.

John Gilbert Ferguson was born on June 5, 1892 in Brewarrena, Australia. He received the Bachelor of Science degree in Electrical Engineering from the University of California in 1915, and after spending the following year there as Research Assistant, received the Master of Science degree in Physics in 1916. He immediately joined the engineering department of the Western Electric Company, later incorporated as Bell Telephone Laboratories. In 1922 he was appointed supervisor of electrical measurements and advanced to the position of Transmission Measurement Engineer in 1948. Upon his retirement from the Laboratories in 1957, he joined Lockheed Electronics Company and served as engineering consultant until 1963.

Mr. Ferguson pioneered in the development of precise measurement of frequency, capacitance, inductance, attenuation, and phase as required for developing new communication systems that included coaxial cable, microwave relay, and ocean telephone cable projects. In 1923, he devised a method of tuning fork control which made it possible

to gain two orders of accuracy over conventional tuning fork standards. At the same time he introduced the use of the cathode ray tube for making precise frequency comparisons. His further work in frequency measurements led to the completion of the new Bell System Primary Standard of Frequency in 1951 with one part in a billion accuracy. The world's most accurate public clock was controlled by this standard.

During World War II, he contributed inventions in the Magnetic Gradiometer used for exploring the earth's magnetic field. Later he directed and guided development of "sweep" and "rapid comparison" methods of measuring attenuation, phase, and delay at frequencies up to 20 megacycles.

Mr. Ferguson's contributions to the field of electrical measurement are documented in many published articles which include his classic papers on shielding and classification of bridge methods of measuring impedance. He is a Fellow of IEEE, and a member of Sigma Xi and the American Association for the Advancement of Science.

Henri Busignies was born on December 29, 1905, in Paris, France. He received the Electrical Engineering degree in 1926 from the Institut Normal Electrotechnique, Paris, France, and an honorary degree of Doctor of Science was conferred upon him in 1958 by the Newark College of Engineering, Newark, New Jersey. He joined the International Telephone and Telegraph Corporation in 1928 as an engineer with its Paris Laboratories, and for the next twelve years carried on research and development in direction finders, instrument landing systems, and early radar devices. His automatic direction finder, first tested in a dramatic flight from Paris to the Isle of Reunion off Madagascar, was successfully demonstrated in the United States in 1937.

Since 1941, when he participated in the founding of ITT Laboratories, Nutley, New Jersey, Mr. Busignies played a major role in the growth of the corporation's activities in the United States. He became a technical director of the Laboratories in 1949, vice-president and member of the management advisory board in 1953, executive vice-president in 1954, and president in 1956. Currently Mr. Busignies is vice-president and general technical director of the worldwide International Telephone and Telegraph System.

Inventor, scientist, and a leading authority on radio navigation and direction finders, Mr. Busignies holds approximately 130 patents in the air navigation, radar, and communication fields.

He is known as the inventor of the world's first automatic direction finder for aircraft, the Aeronautical and Navigational Elecf for which he received the Pioneer Award of tronics Group of the Institute of Radio Engineers in 1959. His contributions to the Allied World War II effort include the development of a direction finding system known as "huff-duff", which proved a vital factor in the war on enemy submarines. In recognition of these contributions, he was awarded the U. S. Navy Certificate of Commendation for "outstanding service" to the Navy, and the Presidential Certificate of Merit for his activities with the National Defense Research Council.

Mr. Busignies is a Fellow of the IEEE.

yours

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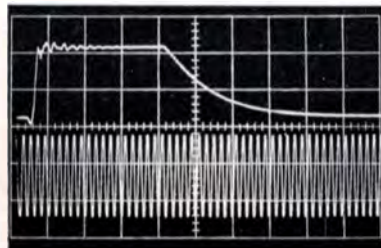


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