



the MONITOR

News of the New York Section, IRE

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FEBRUARY, 1954

NUMBER 6

FM MULTIPLEXING—Wed., Feb. 3, 7:30 P. M.

Joint Meeting with Communication Division, AIEE

Engineering Societies Bldg., 33 W. 39th St., Main Auditorium.



William S. Halstead

WILLIAM S. HALSTEAD is President of Unitel, Inc., and Multiplex Development Corporation, both of New York City. He is a graduate of Haverford College, and a Senior Member of the Institute of Radio Engineers.

Mr. Halstead and his associates at Unitel are currently under contract to the Nippon Television Network Corporation as supervisory engineers in charge of construction of the network's anchor station at Tokyo, and the projected na-

(continued on page 2, column 1)

FM BROADCAST MULTIPLEX TECHNIQUES AND APPLICATIONS by William S. Halstead, President, Multiplex Development Corporation, New York City, and Unitel, Inc., New York City.

A review of the development of FM broadcast multiplex techniques, beginning with reference to the pioneering tests of wide-band multiplex systems by Armstrong in the early 1930's.

Results of post-war development of low-level broadcast multiplex techniques of relatively narrow bandwidth will be described. In these low-level techniques, additional program channels are multiplexed on the carrier of a conventional FM broadcast transmitter without interfering with normal reception of high fidelity programs on the main channel.

Various potential applications of these techniques in broadcast and other telecommunication services are discussed, including: stereophonic broadcasting; sub-

(continued on page 2, column 2)

PRE-MEETING DINNER—6:00 P. M., Midston Grill, 22 E. 38th St. Everyone welcome—no reservations necessary.

SOCIAL HOUR—7:00 P. M., just outside main auditorium. Light refreshments will be served.

FEBRUARY MEETINGS

9—Long Island Section (page 6)

11—Electron Devices Prof. Group (page 6)

17—Monmouth Subsection (page 3)

17—Northern New Jersey Subsection (page 3)

18—Mid-Hudson Subsection (page 7)

MARCH 3—Joint Meeting with AIEE Basic Science Div., "Solid State Amplifiers" by Ernst Weber

BIOGRAPHY

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tional television and telecommunications relay system for Japan.

In 1952, Mr. Halstead and associated members of a telecommunications advisory group were invited to Turkey by the government of that country in connection with the planning of a national telecommunication network system based on use of wide-band radio relay techniques.

Prior to this work, he was consultant to the Rural Radio Network, and was associated with Mr. Murray G. Crosby in planning this state-wide FM broadcast system.

During the war period from 1941 to 1945, Mr. Halstead was President of the Halstead Traffic Communications Corporation, an engineering and development company which took an active part in introducing FM radiotelephony on American railroads, and which also served as prime contractor on military projects.

FM MULTIPLEXING

(continued from page 1, column 2)

scription and other specialized radio services; network interconnection; and multiple-channel transmission of voice, facsimile, and teletype signals.

Mr. Halstead's paper will be illustrated by slides.

STUDENT ACTIVITIES

The New York Section is sponsoring a Prize Paper Contest and a Demonstration Contest to be held in conjunction with the annual Student Activities Day on April 3, 1954. Awards of \$50, \$25 and \$15 will be presented to the first three-place winners of each contest. In addition, a perpetuating plaque will be presented to the first-place school represented.

These contests are open to Student Members or prospective Student Members. Entries may be made through the 11 student branches in the New York Section.

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SUBSECTIONS

Northern New Jersey

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F. A. POLKINGHORN, Vice-Chairman
W. R. THURSTON, Secretary
H. R. TERHUNE, Treasurer

The February 10 meeting will be held as usual at the Hillside school, corner of Orange Rd. and Hillside Ave., Montclair, at 8:00 P. M. Pre-meeting dinner at 6:15, Three Crowns Restaurant. No reservations necessary.

Dr. John W. Mauchly, of Remington Rand, Inc., will speak on the subject of digital computers at this meeting.

Monmouth

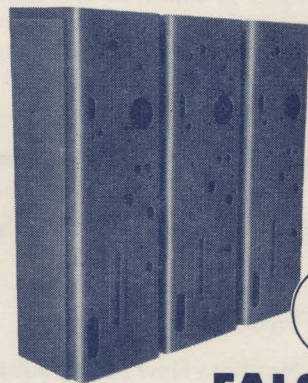
O. D. PERKINS, Chairman
W. M. GOODALL, Vice-Chairman
E. MASSELL, Secretary-Treasurer

The annual dinner meeting will be held on Wednesday, Feb. 17, at Gibbs Hall in Ft. Monmouth. Ladies and guests are invited, but advance reservations are necessary. Contact Carl A. Borgeson, 82 Garden Rd., Little Silver, N. J. The price is \$2.00 a plate. For the program, Mr. W. Crawford of RCA will discuss his recent trip to Europe, with color slides of scenic points of interest. Pre-dinner gathering at 7:00 P. M., dinner at 8:00 P. M.

On Saturday, March 13, there will be a field trip consisting of a visit and

(continued on page 7, column 1)

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SPRING LECTURE SERIES COLOR TELEVISION

7:00 to 9:00 P. M. (Dates given below)

Auditorium, WESTERN UNION BUILDING

60 Hudson St., New York City

(two blocks north of Chambers St.)

With interest in Color Television at an all-time high, the New York Sections of the IRE and AIEE are combining their efforts to provide a comprehensive coverage of the basic field in this subject. A broad cross section of the industry is represented by authoritative speakers who will give the following series of lectures:

Lecture 1—March 8

Basic Principles of Color by D. L. MacAdam, Eastman Kodak.

Color space, additive primaries, CIE diagram, spectrum locus, receiver triangle.

Analysis of NTSC Signal Specifications by D. C. Livingston, Sylvania.

Historical sketch, monochrome system, video spectrum, bandsharing, chrominance signal, block diagrams.

Lecture 2—March 15

Camera Equipment by J. H. Roe, RCA, and P. C. Goldmark, CBS.

Simultaneous color TV signal from three orthicons; techniques for registration, aperture compensation and gamma correction. Chromacoder single-orthicon field-sequential pickup with translation to simultaneous presentation.

(No lecture on March 22)
(IRE National Convention)

Lecture 3—March 29

Preparation of Signal for Transmission by J. W. Wentworth, RCA.

Encoding circuits for production of complete NTSC signals from simultaneous camera signals.

The Broadcast Transmitter by W. C. Morrison, RCA Labs.

How NTSC signal requirements affect the TV transmitter. Operational problems encountered and test equipment developed to solve them.

Lecture 4—April 5

Intercity Transmission by J. M. Barstow, BTL.

Characteristics of signal to be transmitted and transmission objectives. Wire and radio transmission systems. Effects of distortion.

Color Test Equipment by J. R. Popkin-Clurman, Telechrome.

NTSC signal-certification equipment, multifrequency burst generators, stair-step generators, measurement of differential amplitude and phase, envelope delay.

Lecture 5—April 12

Color Signal Reproduction—Kinescopes by H. B. Law, RCA Labs., N. F. Fyler, CBS-Hytron, and Robt. Dressler, Chromatic TV Labs.

Underlying principles of color kinescopes. Design parameters and performance of three-gun and single-gun tubes.

Lecture 6—April 19

Color Signal Reproduction—Circuits I by D. H. Pritchard, RCA Labs., and B. D. Loughlin, Hazeltine Corp.

Design and development of demodulators for simultaneous subcarrier color receivers using three-gun tubes. Circuitry of receivers for sequential displays with single-gun tubes.

Lecture 7—April 26

Color Signal Reproduction—Circuits II by W. E. Good, G. E. Co., and K. R. Wendt, Sylvania.

Color synchronization accuracy requirements, synchronizing circuits. Power supplies, regulation, deflection circuits and other color-receiver circuitry.

Registration Information

Because of the expectation of large response, admission will be by ADVANCE REGISTRATION ONLY. Requests for registration will be accepted, in order of receipt, up to the capacity of the auditorium.

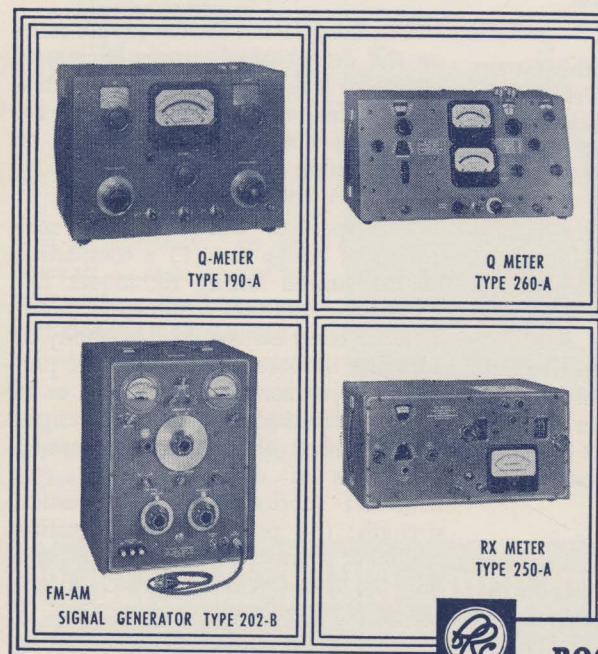
Fees: \$4.00 for IRE, AIEE, AIME, ASCE and ASME members
\$6.00 for all others

Please send requests for registration, accompanied by appropriate check or M.O., payable to N. Y. Section, IRE, and a self-addressed return envelope, to:

O. J. Murphy
Bell Telephone Labs., Inc.
463 West Street
New York 14, N. Y.

No admissions will be sold or registrations accepted at the door.

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PROFESSIONAL GROUPS

The Professional Groups Chairman is Sidney Moskowitz, Federal Telecommunication Labs., Nutley, N. J. (Phone: Nutley 2-3600). If you are interested in forming a new Group, he will be glad to help you.

Aeronautical Electronics

This Group will hold an organizational meeting on March 11 in the General Electric auditorium, 570 Lexington Ave., at 7:30 P. M. The purpose of this meeting is to elect officers, discuss the constitution, and to transact any other business which may come up. All those interested in this Group are urged to attend.

Electron Devices

Officers of this Group are as follows: C. E. FAY, Chairman
SIMEON WESTON, Vice-Chairman
K. D. SMITH, Secretary
WARREN D. McBEE, Treasurer
T. J. MARCHESE, Program
B. CARLAT, Membership

The quarterly meeting of this Group will be held on Thursday, Feb. 11, at the General Electric Auditorium, 570 Lexington Ave., at 7:30 P. M. A paper will be presented by Dr. Rudolph G. E. Hutter, of Sylvania Electric Products Inc., entitled "The Relationship Among Traveling Wave Tubes." Dr. Hutter will discuss the relationship between traveling wave tubes of the helix type, the backward wave oscillator and amplifier, the electron wave tube, the resistive wall tube, and the loaded line tube. There will be a pre-meeting dinner at 6:00 P. M. at the Midston Grill, 22 East 38th Street. No advance reservations are required.

Component Parts

There has been some interest in the formation of a chapter of this Group in the New York Section. Mr. Leon Podolsky, Chairman of the Section Activities of this Group, has offered whatever assistance he can. If you are interested in such a Group, get in touch with our

New York Section Professional Groups Chairman, Sidney Moskowitz.

Engineering Management

Those interested in the formation of a New York Chapter of the Professional Group on Engineering Management are invited to write to F. R. Arams, Radio Corporation of America, Building 55, Harrison, N. J. Chapters of PGEM have been or are being organized in such cities as Los Angeles, Chicago, Washington, Boston, Dayton and Philadelphia.

LONG ISLAND SECTION

Time and place for the February 9 meeting are the same as usual, Stewart Ave. school at 8:00 P. M. Mr. William H. Forster, Research Division, Philco Corporation, will speak on the "Surface Barrier Transistor." The pre-meeting dinner will be held at Felice's, Post Ave. & Old Country Rd., Westbury, at 6:00 P. M. No reservations are necessary.

Lecture Series

The Long Island Section lecture series on the design of electronic equipment got under way on January 21. Information on this series is being repeated for those who would still like to get in on the remaining lectures: Jan. 28, Feb. 11, 18, and 25, and March 4.

The speakers will deal with such aspects of design as: (1) a comparison of mechanized wiring techniques like "Tinkertoy" with conventional methods; (2) the effect on cost and reliability of adhering to close tolerances, or of providing adjustments and trimmers, or of using a statistical basis for the design; (3) the effect of drift during warmup and ways of dissipating heat; (4) structural fabrication and mechanical strength; (5) packaging, impregnating and other environmental protection; and (6) the man-machine approach to the design of controls and displays.

For further information on this series, contact Frank Rockett, Airborne Instruments Lab., 160 Old Country Rd., Mineola, N. Y.; phone: Garden City 3-0600.

SUBSECTIONS

(continued from page 3, column 2)
inspection of the Long Lines Dept. of AT&T at 32 Avenue of the Americas, N. Y. C. Attendance will be limited to citizens of the U. S. and others who have been cleared for access to classified information. The tour will start at 9:30 A. M. with lunch at the AT&T cafeteria.

Mid-Hudson

D. SALING, Chairman
J. HICKERSON, Vice-Chairman
E. A. KELLER, Secretary-Treasurer

The February 18 meeting will be held at the Nelson House, Poughkeepsie, at 8:00 P. M. Mr. David Peck of Sprague Electric Co. will speak.

TRANSISTOR CIRCUIT CONFERENCE

The Philadelphia Section of the IRE

has announced in its Bulletin that a Transistor Circuit Conference will be held on February 18 and 19 in Philadelphia. This Conference is sponsored jointly by the IRE Professional Group on Circuit Theory and the AIEE, both on a national level.

Included will be papers discussing the representation of transistors for circuit design purposes, problems peculiar to the design of transistor circuits, and current trends in transistor circuit designs for both linear and pulse applications. The Conference is designed to appeal primarily to engineers working actively with transistor circuits.

Advance registration for the Conference is encouraged. For further information and registration forms, contact Mr. H. L. Good, RCA Victor, Bldg. 10-5, Camden, N. J. Advance registration fee is \$2.00.

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- ★ U-H-F MEASURING EQUIPMENT
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- ★ V-T VOLTMETERS
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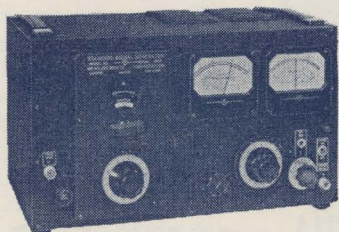
FIRST CLASS

MEETING ANNOUNCEMENTS

We have received several complaints to the effect that occasionally The Monitor is not delivered until after the meeting has been held. Since the primary purpose of The Monitor is to tell you

about the meetings, we have decided to mail it first class to make certain that *everyone* receives his meeting notice *before* the meeting. We would appreciate it if you would let us know of any delays now that we are using first class service.

Laboratory Standards



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