



**Audio Engineering Society,  
Box F, Oceanside, N. Y.**

# AUDIO engineering society

Containing the Activities and Papers of the Society, and published monthly as a part of AUDIO ENGINEERING Magazine

## OFFICERS

Theodore Lindenberg, President

J. D. Colvin.....Executive Vice-Pres.    John G. Frayne.....Western Vice-Pres.  
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# CONVENTION PROGRAM

Presenting a total of twenty-two subjects in four sessions, the First Annual Convention of the Audio Engineering Society opens on Thursday, October 27, at the Hotel New Yorker. This is a greater number of audio papers than have ever been presented in any one calendar year heretofore by all other societies combined.

In addition to the technical sessions, the Society will hold its annual business meeting, the installation of officers, and the first banquet. The newly created John H. Potts Memorial Award and the Society's annual award will be bestowed at the banquet, together with a number of Honorary Memberships.

The Audio Fair, the first exhibit ever devoted entirely to audio equipment, will be held during the three days on the sixth floor of the hotel.

## Thursday, October 27, 1949

**11:00 a.m. Registration.**  
**Advance Sale of Banquet Tickets—**  
Sixth Floor

**Exhibits open.**

**1:30 to 2:30 p.m. Business Meeting—**Installation of Officers—Grand Ballroom

**2:30 to 5:00 p.m. Magnetic Recording Session—**Grand Ballroom

**Chairman.....C. J. Le Bel**  
Audio Instrument Company

1. Operating Problems & Experiences .....R. H. Barnaby—  
National Broadcasting Company
2. General Problem  
.....W. O. Summerlin  
Audio & Video Products Corp.
3. Standards—Present Status  
.....R. M. Morris—  
American Broadcasting Company
4. Improving Uniformity  
.....E. W. Franck—Consultant
5. Distortion Measurements  
.....G. L. Dimmick—  
Radio Corporation of America
6. Speed Regulation Problems  
.....P. Brubaker—Rangertone
7. Duplication by Contact Printing  
.....Robert Herr and  
J. E. Johnston—  
Minnesota Mining & Mfg. Corp.

## Friday, October 28, 1949

**9:30 a.m. Registration. Advance Sale of Banquet Tickets.** Sixth Floor

**Exhibits Open**

**9:30 a.m. to Noon**      **Papers**

—North Ballroom

**Chairman.....Theodore Lindenberg—**  
Fairchild Recording Equipment Corp.

1. "Automatic Audio Gain Controls" .....J. L. Hathaway—

National Broadcasting Company

The development and application of automatic audio gain controls at the National Broadcasting Company is reviewed from the simple filament type compressors of 1929 through the present day studio units.

General characteristics are described, such as attack and recovery times, gain reduction, and thump. Practical units are illustrated for various applications; for controlling or limiting in broadcast studios, transmitters, portable equipment, and recording system.

A complete description is given of the latest type of studio control unit incorporating an adjustable control characteristic, a double-time constant-gain recovery circuit, and a circuit which permits transmission of pistol shots at abnormally high peak levels in order to create realistic sound effects.

2. "A New Development in Directional Microphones" .....Dr. Harry F. Olson and John Preston — Radio Corporation of America Laboratories

The directional microphone is a second order gradient system exhibiting a uniform and narrow directivity pattern and a smooth response frequency characteristic over the frequency range of 50 to 15,000 cycles. The directional efficiency—that is, the energy response to random sounds—is one-tenth. This order of directivity makes it possible to use a pickup distance up to 12 feet with speech in conventional studios. The use of several of these microphones, fixed in position and each microphone covering a section of the total action, together with a monitoring console makes it possible to cover rapidly changing and larger areas of action with smaller variations in the output level than is possible with the conventional microphone and boom arrangement.

3. "Microphone Placement in AM & TV".....H. M. Gurin—  
National Broadcasting Company

The factors involved with sound in bringing intelligent information to the listener or viewer are analyzed, particularly with respect to the characteristics of the equipment, studio acoustics, and pickup techniques.

A number of variations of microphone placement in regular broadcasts, for different types of programs, will be demonstrated with an explanation of the methods employed. The differences in these techniques have been carefully studied and basic general methods are recommended.

The problems in television sound will also be indicated and the methods of handling some of these difficulties suggested. The

differences between regular broadcasting or motion picture sound recording techniques will be discussed as well. The information of the type of program on the placement of microphones has been scrutinized and examples of current practices will be demonstrated.

## Employment Register

Positions open and available personnel may be listed here at no charge to industry, or to members of the Society. For insertion in this column, brief announcements should be in the hands of the AES Editor before the tenth of the month preceding the date of issue. Address replies to AES Editor, Audio Engineering, 342 Madison Ave., New York 17, N. Y.

• **Audio Technician.** 12 yrs laboratory, mfg, and field experience. 1st phone, competent trouble-shooter and constructor with design background. Pleasing, effective personality. Desire responsible position with BC station or equipment manufacturer. Box 101.

• **Research and Development Engineer.** Ph. D., specialized in electronics, circuit design, electro-mechanical devices, acoustics, precision mechanics, nuclear physics equipment. Would like to be your consultant or part-time adviser. Box 102.

• **Electrical Engineer,** over 20 yrs electronic, acoustic, dynamic audio devices, systems. Accomplishments in development, design, manufacture, for commercial, marine, govt equipment. Exp. supervision, planning, estimating. Early radio background. Residence NY area. Box 103.

• **RCA Institute** graduate wishes position with audio company or recording studio. Box 104.

• **Communications Engineer (MIT)** 22, single, with good theoretical background and some experience; interested in research, development, or teaching in audio, acoustics, electric circuits, and vacuum-tube circuits. Box 111.

• **Audio Engineer:** Three years experience in magnetic tape development including pigment research, coating formulation, coating techniques, pilot plant operation and manufacturing control equipment and techniques. Broad background in all phases of film and disc recording. Box 112.

• **Graduate Student** of radio and television desires Junior Engineering position in audio or recording industry. Age 23, married, child. Willing to travel occasionally. Prefer midwest or south. Box 113.

4. "Longitudinal Noise in Audio Circuits" .....H. W. Augustadt—

Bell Telephone Laboratories

This paper discusses the general effect of the presence of longitudinal noise on a circuit. The difference between metallic circuit noise and longitudinal noise is indicated both by definition of terms and representative circuit illustration. Test circuits for identification of type are described and discussed. Representative conditions by means of which longitudinal noise is introduced into a circuit are illustrated and discussed. Practical means and other limitations for reducing the disturbing effect of longitudinal noise on a circuit are described. The paper closes with an illustration of the application of the principles discussed to the design of a quiet AC-DC amplifier.

5. "Control of Sound in the Theater" .....Professor Harold Burris-Meyer—

Electronic control of sound for theatrical purposes was undertaken in the early Thirties as a continuing research project at Stevens Institute of Technology, supported by several organizations and individuals. When the war started, electronic sound control equipment had been completed and in use experimentally in the Metropolitan Opera House for two seasons. The control of sound for all theatrical purposes was substantially completed. Since the war, the project has been devoted to the development of a modular system of sound control equipment which should conform to theatrical operating practices and provide for varying demands. It includes basic equipment with which small tasks may be accomplished and provisions for adding standard items to other equipment as needs increase, without revision of design or the use of tools. The design of this system and its capabilities will be described.

6. "Logic in Relay Switching Circuits" .....William Keister—

Bell Telephone Laboratories

Four basic control paths for an electromagnetic relay are the operate, lock-up, shunt and lock-down paths. Contacts on switches or other relays are connected in one or more of these paths to control the actions of relays in automatic control circuits. These relays respond to particular combinations of control events and may "remember" certain events in order to influence later stages of the circuit action. The arrangement of contacts in a control path is determined by logical analysis of the combinations of events which must cause the relay to act. A concise statement of conditions for closing a path corresponds to a series parallel circuit configuration where the words and and or relating control events correspond respectively to series and parallel connection of electrical contacts representing these events. The circuit may be written in symbolic form and the configuration rearranged and simplified by elementary theorems of Boolean algebra.

10:00 to 4:30 p.m. Papers —East Room

1. "A New Coupling Circuit for Audio Amplifiers" .....F. M. McIntosh,

Consulting Engineer

After three years of laboratory work directed towards producing a sound amplifier which would fully meet the band width, waveform distortion, transient distortion, and phase shift requirement for completely realistic reproduction, it was found that such an amplifier probably cannot employ conventional push-pull circuits, (the desirability of the push-pull circuit being presumed to be self-evident). The core of the impending problem is the apparent impossibility of manufacturing a transformer having a ratio of leakage inductance referred from one-half of the primary to the second half, to open circuit inductance to one-half of the primary in excess of 80,000.

Leakage inductance in a push-pull transformer from one-half of the primary to the second half is primarily responsible in a Class AB or B amplifier for the production of a repetitive transient which occurs at the instant of current switching. The new circuit described herein offers a complete solution to the problem and, in addition, possesses many other excellent features. The design of an amplifier embodying this circuit will also be discussed.

2. "Standards—A General Discussion" .....Cyril Ainsworth—  
American Standards Association

3. "Audio Techniques in TV Broadcasting" .....S. R. Patremio—  
DuMont Television Network

The audio in television broadcasting is similar in many respects to the audio in AM or FM broadcasting. It deals with the pick-up of sound in the form of voice or music, both live and recorded. However, television differs slightly in the fact that the microphones must be out of view of the cameras. This alone is one of the most difficult problems to cope with.

Another problem is that the talent plays to the cameras and not the microphones. This makes it necessary to follow the talent with microphone booms to keep them within range of the microphones. In the case of an orchestra, the microphones must be concealed and still produce the desired balance. Therefore, new techniques must be used.

In order to fully cover the problems in television broadcasting, they will be separated into the following categories: studio and theatre, films, teletranscriptions, field transmitter, and master control, and will be discussed separately.

4. "Audio Consoles for TV" .....R. W. Byloff—  
National Broadcasting Company

The problems encountered in making good sound pickups for a television stage and controlling several sound channels satisfactorily have troubled sound engineers since the beginning of television broadcasting. In this talk the author will describe some of these problems, and compare them with the problems met in motion pictures, radio, and recording. Equipments now used in motion pictures and recording for original takes and re-recording, and equipment used for sound broadcasting and television will be described and compared. The features of a proposed audio console for television use will be described in detail.

5. "Sound Reinforcing System" .....A. W. Schneider—  
Commercial Radio-Sound Corp.

Basic principles for theoretically perfect results; relation of fidelity, loudness and illusion to practical problems and compromises required will be discussed. Several large basic sound reinforcing systems, illustrating applications of various types of apparatus and compromises that have to be effected, will be described. Discussion of sound reinforcing requirements for broadcast and television studios.

7:00 p.m. Audio Engineering Society  
Banquet —North Ballroom  
Norman C. Pickering, Toastmaster  
Presentation of Awards and  
Honorary Memberships  
Special Feature:

A comparison test, behind screens, of loudspeakers of leading manufacturers, with identification at close of Banquet.

Saturday, October 29, 1949

9:30 a.m. Registration. —Sixth Floor  
Exhibits Open

9:30 a.m. to 12 Noon. Audio Measurements Session—North Ballroom

Chairman .....W. L. Black—  
Bell Telephone Laboratories

1. The General Problem .....  
W. L. Black—Bell Telephone  
Laboratories
2. Intermodulation .....  
A. P. G. Peterson—General Radio  
H. E. Roys—Radio Corporation  
of America  
J. K. Hilliard—Altec-Lansing  
N. C. Pickering—Pickering &  
Company
3. Transient Methods .....  
M. S. Corrington  
Radio Corporation of America
4. Operating Problems.....J. D. Colvin—  
American Broadcasting Company

Exhibits open until 4:00 p.m.