



Convention Program

THURSDAY, November 1, 1951

9:30 a.m. to 6:00 p.m.

Registration 5th and 6th Floor Foyers
Exhibits open 5th and 6th Floors
Advance Sale of Banquet Tickets . . Room 627

10:00 a.m. to 10:30 a.m. Business Meeting

Grand Ballroom
Installation of Officers
Committee Report

10:30 a.m. Technical Session

Grand Ballroom
C. G. MCPROUD, *Chairman*

TRANSIENT RECORDER FOR AUDIO FREQUENCIES

MARSHALL C. KIDD, *Radio Corporation of America, Camden, N. J.*

A tone burst of 4, 8, or 16 cycles, followed by an equal blank period is applied to the equipment under test. The resulting output transient from the equipment then has that portion corresponding to the original burst eliminated. The rectified average value of the remaining waveform is recorded as transient distortion. The steady-state and the transient distortion curves are drawn on the same sheet for comparison purposes. The transient distortion of networks and loudspeakers is measured directly while enclosures and microphones are measured indirectly since a loudspeaker must be used to test these units. Transient curves and oscillograms are shown for a number of different loudspeakers.

11:00 a.m.

EFFECT OF CATHODE CAPACITOR ON PUSH-PULL OUTPUT STAGE DISTORTION

ROBERT M. MITCHELL, *United Transformer Company, New York, N. Y.*

The influence of the cathode bypass capacitor in a push-pull output stage with a common cathode resistor is discussed. Results are given for total harmonic, individual harmonic, and intermodulation distortion with and without such a capacitor. The roles played by the individual tubes, the unbalanced current, and the operating points are shown.

11:30 a.m.

THE PROPAGATION OF HIGH-INTENSITY SOUNDS

SAUL J. WHITE, *University Loudspeakers, Inc., White Plains, N. Y.*

This paper summarizes various experimental studies on the transmission characteristics of high-intensity speech over distances of several miles. Transmission of amplified speech is subject to wide variations in observed effects due to the lack of homogeneity in the atmosphere. Since results vary from day to day, it is impractical to evolve a useful formula for computing range of audibility. This paper discusses early experiments with gunfire, explosives, foghorns, etc., and more recent tests with high-powered loudspeakers. The author uncovers explanations for the severe refraction and dissipation of the sound, the reasons for skip distances, abnormal audibility regions, and the persistence of sub-audible frequencies.

12:00 noon to 2:00 p.m. . . Lunch Recess

2:00 p.m. Technical Session

Grand Ballroom

INSTRUMENTATION

HERMAN H. SCOTT, *Chairman*

PROBLEMS OF NEW ULTRA-SPEED RECORDING TECHNIQUE

C. J. LABEL, *Audio Instrument Company, New York, N. Y.*

Need for ten-fold improvement in pen speed of high-speed level recorder is emphasized,

and prior efforts are reviewed. New ultra-speed technique is shown, giving pen speed of 10,000 db per second. Factors controlling stability, linearity, and transient response are discussed, and need for coordination of design of parts of system is pointed out. Results of measurement of transient performance of commercial high-fidelity amplifiers are shown, with suggestion that this factor may explain unpleasant sound of some systems.

2:30 p.m.

ROOM REVERBERATION BY ULTRA-SPEED RECORDING

JAMES Y. DUNBAR, *Wm. J. Scully Acoustic Corporation, New York, N. Y.*

Studies of reverberation decay characteristics of certain rooms involving use of ultra-speed recording equipment developed by C. J. LeBel indicate that acoustic aberrations may be detectable by this means. These studies make use of standard sound sources as well as multiple tone groups.

3:00 p.m.

MAGNETIC TAPE RECORDING FOR INSTRUMENTATION AND DATA STORAGE

KENNETH B. BOOTHE, *Audio & Video Products Corporation, New York, N. Y.*

The purpose of this paper is to show how improvements in the technique of magnetic tape recording have opened up new applications in the field of recording and reproducing scientific data. Particular emphasis will be placed upon the successful and proven applications of magnetic tape in recording FM-FM intelligence for aircraft and other mobile testing. Since this is a basic system which can be and has been readily adapted for other uses, several modifications will be discussed which permit the recording of digital pulse code, PWM systems, transient data, and other types of information which may be required for a wide variety of instrumentation work.

3:30 p.m.

SOME PROPERTIES OF n-p-n TRANSISTORS.

R. L. WALLACE, JR., *Member of the Technical Staff, Bell Telephone Laboratories*

Recently developed n-p-n transistors have shown a number of properties which make them very interesting, particularly for audio applications. Among them are: relatively low noise, high efficiency, high gain, and the ability to work with exceedingly low power consumption. These properties will be described, and some of them will be demonstrated.

4:00 p.m.

MAGNETIC AUDIO FREQUENCY FUNDAMENTALS

A. M. VINCENT, *Lt. Cdr., BuShips, U. S. Navy*

A brief history of magnetic amplifier development is given, with a preliminary description of the operating principles. Comparisons between electron-tube amplifiers and magnetic amplifiers are made, and a number of basic circuits are shown. The advantages and disadvantages with respect to conventional tube amplifiers are listed, with indications of future advances in the art.

7:00 p.m. . . THIRD ANNUAL BANQUET

Grand Ballroom

Presentations of the Society's Annual Award and of the John H. Potts Memorial Award.
Entertainment

FRIDAY, November 2, 1951

9:30 a.m. to 9:00 p.m.

Registration 5th and 6th Floor Foyers
Exhibits open 5th and 6th Floors

10:00 a.m. Technical Session

Grand Ballroom

INDUSTRIAL SOUND

JOHN D. COLVIN, *Chairman*

"NO CODED SIGNALS—"

H. S. MORRIS, *Altec Lansing Corp., New York*

The requirement "No Coded Signals" is beginning to appear in important bid specifications. It announces recognition of the fact that only voice sound systems can

- (a) cope with the increased variety of emergency situations which hazard modern life, and
- (b) deliver the organizing directions necessary to efficient industrial operation.

The shortcomings of simple signalling devices such as sirens, gongs, whistles, and howlers are discussed, and the requirements are outlined which the audio engineer must meet if voice sound systems are to take over these important emergency, security, and organizational responsibilities.

10:30 a.m.

EQUIPMENT FOR SURVIVAL SOUND SYSTEMS

JOHN K. HILLIARD, *Altec Lansing Corp., Beverly Hills, Calif.*

This paper discusses the vital components such as amplifiers and loudspeakers. The initial and maintenance cost of a large number of medium-powered amplifiers is compared with that of a smaller number of high-powered amplifiers which give an equivalent amount of total power output.

Projection and general quality of sound of various types of loudspeakers is analyzed, along with recommended frequency characteristics to be used in the presence of noise. A new Altec driver unit having increased efficiency and power output, and designed for multicellular horns, is discussed.

11:00 a.m.

LOUDSPEAKERS FOR SPECIAL INDUSTRIAL APPLICATIONS

ROBERT S. REISS, *University Loudspeakers, Inc., White Plains, N. Y.*

The problems of providing public address and intercommunicating facilities in industrial applications are often complicated by unusual physical and acoustical requirements. These might involve submergence-proofing, explosion-proofing, etc. Loudspeakers have been developed to resist severe physical impacts, to resist the application of live steam and acid spray, to operate in dust laden and rarefied atmosphere, and to provide unusually high sound levels, etc. How these and other conditions are met with specialized equipment will be discussed.

11:30 a.m.

CIVIL DEFENSE ELECTRONIC WARNING AND COMMUNICATION SYSTEM

R. C. C. DuBois, *Radio Corporation of America, Camden, N. J.*

A discussion of the EWACS system developed by the Radio Corporation for the District of Columbia, including design features, costs, and installation data.

The system uses vhf radio to turn on and to transmit various warnings to the public, and includes the feature of a city-wide public-address system. The talk will be illustrated by slides of typical installations and equipment as used in this Federally approved civil defense warning system.

12:00 noon to 2:00 p.m. . . . Lunch Recess

2:00 p.m. Technical Session

Grand Ballroom

RECORDING

THEODORE LINDENBERG, *Chairman*

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CONVENTION PROGRAM

[from page 32]

PARAMOUNT PICTURES LIGHT-WEIGHT MAGNETIC FILM RECORDING MACHINE

BRUCE H. DENNEY, *Paramount Pictures Corporation, Hollywood, California*

A light-weight magnetic film recording system having some revolutionary and unique features will be described. It contains all the facilities necessary for high-quality motion picture production recording, and still is compact, portable, and easy to maintain.

2:30 p.m.

SYNTHETIC REVERBERATION TECHNIQUES

LEWIS S. GOODFRIEND, *Audio Instrument Company, Inc., New York, N. Y.*

Several systems for generating synthetic reverberation have been proposed during the past fifteen years, but few of them are used in commercial installations. Only two types of instruments, meeting the basic design criteria, are being marketed on any scale. The criteria developed here are that the frequency range be at least half as wide as the usual program channel, and that the time delay be no longer than fifty milliseconds. The merits and faults of the various systems as applied to broadcast standards of life, maintenance, and reliability of service are also discussed.

3:00 p.m.

A MODERN RECORDING INSTALLATION THAT EMPHASIZES TAPE

W. OLIVER SUMMERLIN, *Audio-Video Recording Co., Inc., New York, N. Y.*

A detailed and illustrated description of the Audio-Video Recording Company's facilities which were recently designed and constructed by the author. The objectives of this particular installation are shown, as are the means taken to overcome the technical problems involved. The paper includes a description of the five diversified studios, control rooms with special consoles, private tape editing rooms, tape and disc mastering rooms, the unique multiple tape duplication equipment, and the facilities for film sound track recording.

3:30 p.m.

INJECTION MOLDING OF RECORDS

JAMES S. WILSON, *Bestway Products, Inc.*

The development of the injection molding process for phonograph records was first conceived to reduce the cost of manufacturing 6-inch children's discs. With the aid of the Bakelite Corporation, a special styrene has been formulated so it is now possible to mold microgroove discs which compare more than favorably with conventional compression-molded records. The advantages—aside from cost—are discussed, and a description of the molding operation is presented.

9:15 p.m. WABF BROADCAST

Grand Ballroom
(Doors close at 9:05 p.m.)

AUDIO IN THE HOME

One of the series on this popular subject now being carried on FM station WABF on Friday nights, this half-hour broadcast offers the program's listeners an opportunity to discuss audio problems on the air.

SATURDAY, November 3, 1951

9:30 a.m. to 4:00 p.m.

Registration 5th and 6th Floor Foyers
Exhibits open 5th and 6th Floors

10:00 a.m. Technical Session

HOME MUSIC SYSTEM EQUIPMENT

MELVIN C. SPRINKLE, *Chairman*

PERFORMANCE OF LOUDSPEAKER ENCLOSURES

DANIEL J. PLACH, *Jensen Manufacturing Company, Chicago, Illinois*

The low-frequency performance of a loudspeaker is shown to be critically dependent upon its acoustic load, and therefore, its acoustic environment. Factors that must be considered in the evaluation of performance at low frequencies are distortion, damping and frequency response. The use of a flat baffle or a total enclosure of adequate size makes possible good sound pressure response down to the resonant frequency of the loudspeaker. The use of the bass reflex principle makes possible improved performance with respect to distortion and response, since the port has no non-linear elements associated with it. The horn-loading enclosure is shown to be the logical choice where high efficiency combined with low distortion is important. Transient response also is greatly improved.

10:30 a.m.

THE R-J LOUDSPEAKER ENCLOSURE

FRANK ROBBINS and WILLIAM JOSEPH, *The R-J Company, New York*

Hardly larger than the fifteen-inch "woofer" it contains, this enclosure produces fundamental bass down to 20 cps. The back of the speaker is completely enclosed within a small stiff cavity. The front operates through an acoustic loading arrangement so that the speaker is loaded on both sides. Excellent damping and transient characteristics result. Modified Helmholtz theory is employed in design.

11:00 a.m.

CABINET DESIGN FOR RESIDENTIAL HIGH-FIDELITY SYSTEMS

JEFF MARKELL, *"New Horizons" Furniture, Inc., New York, N. Y.*

A discussion of cabinet-type enclosures as distinguished from built-in enclosures for high-fidelity systems. On the basis of a survey of existent components, a set of suggested minimum space allowances is offered which will be generally applicable. Placement of components is discussed from the point of view of both function and visual effect of the finished cabinet. Materials, construction, styling, and finish are considered in addition.

11:30 a.m.

SOUND DEMONSTRATION TECHNIQUES

R. D. DARRELL, *Chairman, AES Committee on Test and Demonstration Records*

The ultimate goal of audio-equipment design and construction is actual performance to listeners' satisfaction. Yet "display" operation is notoriously unable to command any degree of audience unanimity. The present paper is a "primer" approach to this complex problem and an attempt to develop more effective practical procedures. Limitations and potentialities of various specific types of demonstrations are discussed. The significant factors involved are tabulated and means suggested for coping with such non-engineering elements as psychology, musical aesthetics, environmental effects, and listeners' previous aural conditioning. Stress is laid on the importance of "first" impressions and of factors under some control by the demonstrator—either indirectly (as in the selection of program materials and their presentation sequence), or directly (as in manipulation of loudness levels, acoustic balances, and frequency-response characteristics).