

ABSTRACTS OF PAPERS AT THE FALL CONVENTION

The following are abstracts of papers for the Fall Convention received too late for inclusion in the preceding issue of the Journal.

Starting Characteristics of Speech Sounds; R. O. Drew and E. W. Kellogg, *RCA Mfg. Co., Inc., Camden, N. J.*

In view of its bearing on the design of ground-noise-reduction systems, a study was undertaken to determine how sudden or how rapid are the increases in amplitude of the speech sounds that must be recorded in dialog. A large number of oscillograms were taken, a number of which are reproduced.

The most important observation is that the human voice can start several of the vowel sounds in such a way that the first wave is from 40 to 80 per cent of the final amplitude or, in other words, with a suddenness comparable to that of keying in an oscillator. This is rare, and is, for all practical purposes, confined to a few of the more open vowel sounds, when not preceded by any consonant, and is true only of certain individuals, depending on the manner of releasing the breath. Progressive build-up at rates which would carry the modulation from zero to 100 per cent in 0.05 second are frequent, while the great majority of syllables start more gradually than this.

Improvement in Sound and Picture Release through the Use of Fine-Grain Film; C. R. Daily, *Paramount Pictures, Inc., Hollywood, Calif.*

Many types of picture scenes are improved in quality when some of the new fine-grain films are used as a printing stock. More detail on the screen and less image "boiling" is observed due to the greater resolution of the fine-grain films. When such films are used for variable density sound recording, a material increase in volume range is obtained which permits greater latitude in the original and dubbing recording operations. The sound quality is improved due to the reduction in noise and modulated noise effects which partially mask the signal when the coarser-grained positive type of emulsions are used. Data are presented on some of the problems encountered in the use of fine-grain films for original sound negative, dubbing prints, release negative, and release prints.

Optical Control of Wave-Shape and Amplitude Characteristics in Variable-Density Recording; G. L. Dimmick, *RCA Mfg. Co., Inc., Camden, N. J.*

The use of the optical penumbra to obtain linear variable-intensity light-modulation has already been described. The present paper shows how to obtain non-linear penumbras having predetermined intensity-amplitude characteristics. By this means it is possible to compensate optically for non-linear relation between negative exposure and print transmission known to exist in the variable-density system.

Variable-density noise-reduction has been obtained by moving the penumbra

vane at right-angles to the optical axis in accordance with the volume of the original sound. If a fixed penumbra vane is placed close to the movable vane, it forms an optical end-stop which limits the deflection of the penumbra after it has reached a predetermined position. The optical characteristics of penumbras formed by two displaced vanes are also shown.

For a given amplitude of galvanometer-mirror vibration, the extent of the light-modulation is determined by the penumbra height at the recording slit. The penumbra height may be varied by moving the penumbra vane along the optical axis. Either compression or expansion of the sound volume obtained from a film record may be affected by causing the penumbra vane to move along the axis in accordance with the volume of the original sound. Such a system is described in detail.

A combined system is also described which permits both noise-reduction and compression to be obtained by the use of a single shutter and noise-reduction amplifier.

Large-Size Non-Rotating High-Intensity Carbons and Their Application to Motion Picture Projection; D. B. Joy, W. W. Lozier, and R. W. Simon, *National Carbon Co.*, Fostoria, Ohio.

The high-intensity, direct-current arc between small, copper-coated carbons operated in coaxial alignment without rotation with a reflector optical system has achieved a widespread and growing popularity over the past few years for theatrical projection of motion pictures. This type of light-source has now been extended to include larger carbons and higher currents. These larger carbons of this type with the proper optical system will give substantially higher light on the motion picture screen.

Fundamental facts about the arc behavior and the conditions necessary to obtain stable and steady operation with these larger carbons are described. The correlation of the luminous characteristics of the arc with the optical system is reviewed. The performance of a new arc with a suitable optical system is given from the standpoint of offering possibilities for projection. Carbon consumption rates, arc current and voltage, and light on the screen are discussed.

High-Speed Motion Pictures of the Human Vocal Cords; J. Crabtree and D. W. Farnsworth, *Bell Telephone Laboratories*, New York, N. Y.

Pictures taken at the rate of 4000 per second, by means of a special high-speed camera and lighting arrangement, show the vocal cord movements during phonation in ultra-slow motion. The experiments throw new light on the old question of the role of the cords in speech production.

The Importance of Cooperation between Story Construction and Sound to Achieve a New Personality in Pictures; Loren L. Ryder, *Paramount Studios*, Hollywood, Calif.

The information presented in this paper has been taken from a paper which the writer prepared at the request of the Paramount administration for presentation to the producers, directors, and writers of the company. The thought is that too large a gap exists between the creative and technical groups, and that much can be done to better production through a better understanding by our creative group of the technical possibilities and limitations of our various equipments.

The paper discusses our sound personnel as competent technical and analytical thinkers working in a business largely guided by the creative mind. Further, it points out that many improvements have been made toward technical perfection of our equipments, but that only small concern has been given toward taking full advantage of our technical knowledge in obtaining dramatic effectiveness in pictures.

Our objective in picture making is largely one of creating an illusion to the audience. The audience is either listening in on the intimate lives of our characters or are a part of the dramatic scene which is being portrayed before them. Our problem is one of making this illusion more effective even though we are limited by obstacles such as distance, reverberation, volume range, theater noise, and even the playing levels of our pictures.

The paper discusses the problem of determining wherein we miss our objectives as well as the problem of evaluating our successes. It gives a coverage of the music problem pointing out that there are 78 different systems of scoring music for pictures, now in use in the industry. It discusses audience reactions as observed at previews and the psychological effect of sounds on the audience. In this regard new sounds, backward sounds, and sounds which the audience have never heard before are pointed out as creating reactions which otherwise could not be obtained. Toward the end of the paper there is a discussion of the future possibilities of sound as a means of obtaining greater dramatic expression in our picture work.

The Development and Practical Application of the Triple-Head Background Projector; Byron Haskin, *Warner Bros. First National Studios*, Burbank, Calif.

Up to a recent date, background process work had been limited to the size of picture that could be successfully illuminated through a single projecting machine.

The origination of a combination of projectors superimposing identical prints of the same background on the screen simultaneously compounded the light delivery of a single machine and therefore greatly expanded the scope of background process photography for natural color and black-and-white.

Class B Push-Pull Recording for Original Negatives; D. J. Bloomberg and C. L. Lootens, *Republic Productions, Inc.*, Hollywood, Calif.

Progression from standard variable-area types of recording to Class A push-pull and finally from Class A to Class B push-pull was primarily motivated by an appreciation of the inherent advantages of the push-pull types of recording, and an ability to perfect processing and recording controls necessary to realize the finer qualities of the Class B push-pull recording. The adoption of Class B push-pull variable-area for original recording has eliminated distortion introduced by noise-reduction systems, and has reduced background noise by at least 6 db.