

SMPTE – Exhibitor Conference on 3-D

Stereo, Cinerama, Cinemascope, wide-screen and stereophonic developments have added yeast to the motion picture cake and the dough is already rising. The practical application of these innovations raises serious questions of operating standards both in production and exhibition. The major producers, through the Motion Picture Research Council, are actively engaged at present in efforts to answer the production questions connected with 3-D. In an effort to clear the air for the exhibitors, the Society called and held a conference of the major exhibitor organizations (including two producer groups) on February 5, 1953. Invitations to attend the conference were sent to the organizations listed below, with but the latter three unable to send representatives:

Allied States Association of Motion Picture Exhibitors — Wilbur Snaper
Metropolitan Motion Picture Theaters Association — Emanuel Frisch
Motion Picture Association of America — John McCullough
Radio City Music Hall — Vincent Gilcher
RKO Theatres — Charles Horstman
Theater Owners of America — Samuel Pinanski
Warner Brothers — Frank Cahill
United Paramount Theaters—Harry Rubin
Independent Theater Owners Association — Harry Brandt
Society of Independent Motion Picture Producers — Ellis Arnall

Representing the SMPTE were: President, Herbert Barnett; Engineering Vice-President, Henry Hood; Chairman, Stereoscopic Motion Pictures Committee, John A. Norling; Executive Secretary, Boyce Nemeç; and Staff Engineer, Henry Kogel.

Herbert Barnett chaired the meeting. At the outset, Mr. Barnett clearly outlined the Society's position, "This meeting has been called by the SMPTE in an attempt to coordinate the engineering aspects of the development of systems utilizing third dimension and wide screen which have caught the imagination of the American public in recent

weeks." And to avoid any possible misunderstanding, he stated further, "It will be necessary to scrupulously avoid any attempts at comparative evaluations of competing systems, or the preference of one system or the individual features of one system over the others."

To lay the groundwork for the discussion, John Norling sketched briefly the chief characteristics of the new developments and the equipment changes, exhibitor-wise, required for each system.

Cinerama: This system is designed to create the illusion of reality through panoramic effects. To do this three cameras are used in the taking process and three projectors are used in the theater. The three projected images are interlaced as a mozaic on a wide, curved screen to provide extreme wide-angle pictures involving the use of both front and peripheral vision. In addition, 6 microphones are used for recording the sound from different action areas on separate sound tracks and 6 or more speakers are used in the theater to further aid the illusion of reality by having the sound come from the apparent source location. The sound tracks are recorded on a separate 35mm magnetic coated film. Installation of three projector booths, the special, wide curved screen, additional speakers and a magnetic sound reproducer are the required minimum equipment modifications.

Cinemascope: Previously known as anamorphoscope, this too is designed to create the illusion of reality through panoramic effects. Here special lenses are used on the camera and projector, the one to compress extreme wide-angle shots for standard 35mm negatives and the other to expand the compressed image for projection on a slightly curved screen roughly twice the present width. This requires, besides a wide screen and special lens, a higher projector light output.

3-D, Stereoscopic Motion Pictures: The design feature here is reality through the perception of depth. Present-day 3-D systems utilize two cameras, one for the left-eye image and the other for the right-eye image, simulating the process of normal vision. Two projectors, interlocked to run synchronously, are then used with polarizing filters to project two separate images, one for the left eye and the other for the right eye. Viewing filters permit each eye to receive its own image as viewed originally by the two cameras. The brain fuses the two images and the flat screen then provides images with apparent depth.

Mr. Norling then listed the requirements for 3-D showings:

1. A metallic coated screen,
2. Method of synchronizing the two projectors and their shutters,
3. Lenses matched for focal length and distortion,
4. Equal light output from each projector,
5. Light output increased from each projector by roughly a factor of 2,
6. Larger magazines and reels for acceptance of several intermissions.

Mr. Barnett then asked how the Society could best serve the interests of the exhibitors. The reply to this boiled down to three essentials:

1. Explain in laymen's language the new technical developments and future developments as they occur. This would, in itself, eliminate much confusion in the trade.
2. Supply unbiased answers to the questions facing the exhibitors.
3. Establish standards which will
 - a. aid interchangeability;
 - b. retain as much of present equipment as possible;
 - c. prevent newly purchased equipment from becoming obsolete; and
 - d. permit readily interchangeable projection of either 2-D or 3-D motion pictures.

In regard to the first item, Mr. Nemeec advised the group that the Society is in the process of preparing just such a story, which should be available in the near future.

As for standards, he stated that the closest cooperation and liaison is being

maintained between the SMPTE and the MPRC and that the above-mentioned standards goals would undoubtedly be used as a guide.

The remainder of the conference was devoted primarily to expressing the most pressing questions before the exhibitors. These were listed as follows:

Pertaining to 3-D

On Screens

1. Can an all-purpose screen be developed for 2-D, 3-D and panorama pictures?
2. Can existing screens, in good condition, be sprayed with a metallic paint to provide a satisfactory surface for 3-D use?

On Lenses

3. What is the required accuracy of lens matching?

On Filters

4. Is there a nonfading type of polarizing projector filter?
5. Has the projector filter been standardized?
6. Has the viewing filter been standardized?
7. Must the projector filters be artificially cooled?

On Projection Lamps

8. What portion of filters' light loss must be compensated for by increased lamp output?
9. What light output differences between projectors can be tolerated?

On Projectors

10. What is the probable size of future magazines and reels?
11. Are special arc supplies required for continuous projection?

General Questions

12. What are the chances of 3-D without viewing glasses or with a single projector?
13. What are splicing instructions for 3-D films?
14. Are special rewinds and synchronizers needed?
15. Explain apparent decrease in picture size.
16. Explain in simple terms the fundamental characteristics of the new developments in motion pictures.
17. Explain stereophonic and binaural sound.
18. What can an exhibitor safely (to preclude rapid and expensive obsolescence) do now to prepare for scheduled 3-D showings?

Pertaining to 2-D and Wide-Screen Processes

19. Exhibitors recommended change of aspect ratio for 2-D pictures to give panorama effect with present equipment, shorter lenses and wider screens. What are possibilities of achieving this in the near future?

The exhibitors were advised that these questions would be submitted to the Society's appropriate engineering committees and the MPRC and that the answers would be forwarded to the exhibitors as soon as they became available. (Several answers have since been made known and are listed at the end of this report.)

At this point, the Society's committee structure was outlined and invitations were extended to the exhibitors to join and be represented through their technically qualified people.

In addition to asking questions, the exhibitors proposed that several of their recommendations be submitted to those concerned in the new developments:

1. Any 3-D screen to be designed as an all-purpose screen capable of also being used for normal and wide-screen motion pictures.
2. Immediate consideration be given to increasing the present 4:3 aspect ratio to a picture width to height ratio more closely approximating 2:1. Here, it was felt that with a minimum of expense, panoramic projection could be immediately achieved to supply renewed interest to large numbers of patrons.
3. Immediate standardization of technical terms to eliminate misunderstanding. Specific example was made of the term "3-D" which has been sorely misused.

One of the questions posed previously was isolated for direct reply: What can an exhibitor safely do now to prepare for scheduled 3-D showings? Mr. Nemeck stated that in his opinion 3-D is here to stay. The prospects are such as to insure relatively long term use of two-strip stereo equipment installed at this time. In connection with this, type of screen and reel

size were discussed at some length. The reel size is dependent on the number of intermissions which are considered acceptable and upon mechanical limitations of present-day projection equipment. In a two- or three-projector theater, a minimum of one intermission will be unavoidable and a 24-in. magazine and 23-in. reel will cover all such cases. (The SMPTE was subsequently informed that the MPRC had agreed on 25-in. magazines and 24-in. reels.) If two or more intermissions are acceptable then of course smaller magazines and reels can be used.

Metallized screens will be required and will work equally well for all 3-D polarizing filter systems. They can also be used for regular 2-D projection, although a certain loss of brightness from side seats would result.

Answers to several of the other questions listed have now become known:

Q 2. Painting of existing screens may be satisfactory if carefully done so that perforations are not filled.

Q 5, 6. Polarizing filters for projection and viewing have been standardized. V-type filters, i.e., having planes of polarization of 45° with the vertical, must be used.

Q 10. In order to allow a show of 10,000 ft with only one intermission, 25-in. magazines to accommodate 24-in. reels are recommended. These reels will hold up to 5000 ft of color positive film or approximately 5500 ft of black-and-white. Because of their size and weight, such reels must have free-wheeling flanges to minimize strain on the film when the machine is started. Otherwise perforations will be pulled and the pictures will be out of synchronism. The MPRC believes that the spindle diameter may have to be increased.

Q 13. The MPRC is preparing written instructions for theater projectionists which include splicing instructions.

Q 14. The rewinds will have to be raised so that the larger reels will clear the rewind table, and the theaters will now require synchronizers.

Q 18. Answered above.

In addition to activities and reports forecast above, plans now are made to publish an excellent background and review article in the *March Journal*. It is John Norling's "The Stereoscopic Art," reprinted from the *PSA Journal* for November and December 1951, and January and February 1952.—Henry Kogel, Staff Engineer.