

must sustain the basic concept that our Society speaks for our industries, and we must continue to be the strong leader in the technological world that we have been for so many years. As individual engineers, we have a definite responsibility to our profession.

It is very disturbing to see the degree of lack of understanding of the significance of standardization in relation to the marketplace. The company executive, to be successful, must know what is happening and how it affects his operations, and more important, his engineers must be urged to help in the preparation of the standards that his company may be compelled to follow. These two responsibilities can only be accomplished through strong liaison with our associates around the world. Without this effort, developing technology turns into a mad race to the marketplace in an

effort to ensure a short-term gain, although it is well known that under such conditions long-term economic stability is not possible.

The Society of Motion Picture and Television Engineers fulfills its responsibilities to our industries by maintaining a constant vigilance over their technical activities, through a large group of volunteer specialists working in a structure of Technology Committees, Working Groups, and Study Groups. These, some 800 members, devote a great deal of time to the preparation of proposed new standards and to the updating of existing standards. The hand of industry should be extended in gratitude to this group of engineers, whose voice and opinion the SMPTE reflects through its standardization program, as well as to the parent organizations that fund their participation.

A Short History of Standardization in the SMPTE

By Gordon A. Chambers

In the October 1933 issue of the Journal, Dr. Loyd A. Jones published "A Historical Summary of Standardization in the Society of Motion Picture Engineers." This paper gave a review in considerable detail of the standardization activities of the Society since its founding in 1916.

At the incorporation meeting in Washington, D.C. on July 24, 1916, Henry D. Hubbard of the National Bureau of Standards spoke on the desirability of standards in the industry. The dimensions he proposed for what we now call 35mm film were exceedingly close to what is used today.

Frame-Line Location

One of the important problems in the early days was the lack of uniformity in frame-line location. This was early specified as coinciding with the center line of the perfora-

tions. Cameras of many different makes were in use, which resulted in various locations for the frame line. Even cameras of the same make gave negatives with different frame-line locations. It was not until the late

1920s that this problem was solved—when the studios rather than individual cameramen began to own and maintain the cameras. Conformance to standards in the United States is voluntary rather than a legal requirement as it is in many countries abroad.

Dr. Jones pointed out the association of the Society in the matter of standards with the American Engineering Standards Committee and its successor, the American Standards Association (ASA), currently the American National Standards Institute (ANSI). The standards adopted in early 1930 were published in May and reprinted in a booklet dated 20 September 1930, which carried the cachet of the ASA on its cover. It was not until 1941 that separate numbers were assigned to individual standards under the Sectional Committee Z22 designation. Z22 was changed to the designation PH22 in 1951.

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American War Standards/JAN

On 24 September 1943, the Army Pictorial Service requested the Society to assist in the preparation of Performance Specifications for motion-picture equipment, accessories and processes. A series of committees was set up to deal with the various subjects. A large number of Society members became engaged in this work on a voluntary basis. The documents prepared were designated American War Standards, which bore individual Z22 numbers. They were clearly designated "War Standards" and the Z22 numbers bore no relationship to those prepared earlier. These War Standards were intended to be used as purchase specifications. After the war many of them were converted to Joint Army-Navy (JAN) specifications. In September 1957, Dr. E. K. Carver published a valuable paper in the *Journal*, in which he discussed the need for explanatory information to avoid misinterpretation of standards. Since that time many standards have included an Appendix to include the explanatory information.

Pitch

When triacetate safety film was introduced circa 1950, a major change in film dimension standards was required. The nitrate film used previously had shown a shrinkage of about 0.3% within 90 days after processing. The Bell & Howell continuous printers widely used in the United States used a 64-tooth sprocket for 35mm film. With the positive film on the outside of the sprocket and the negative film next to the sprocket a difference in pitch of the two films was required in order to prevent slippage. Since triacetate film showed only 0.1% shrinkage after processing, it was necessary to shorten the pitch of negative films by 0.2%. Overall width was reduced by 0.001 in. so that processed film would have the same width at the time of use as had the nitrate film at the time of use.

Television

The Society appointed a Television Committee in 1938, but it was not until 1954 that the first television standards were issued. These dealt with the dimensional characteris-

tics of and slides and opaques and the picture areas of 16 and 35mm films for television use.

Video Magnetic Recording

As a related activity, a Video Magnetic Recording Committee was appointed in June 1958. This committee dealt with usage characteristics and equipment performance. A new Sectional Committee C98 was established to deal with Combined Visual-Aural Magnetic Recording for Television. The first two standards were issued in 1963, C98.1-1963, for tape reels (for two inch magnetic tape), and C98.2-1963 on leader specifications.

International Standardization

The Society has also been active in the field of international standardization. International standardization of film dimensions was first mentioned at the VIth International Congress of Photography at Paris in 1925. Formal steps were taken when Technical Committee TC36 (Cinematography) was established by the International Standards Organization in 1952.

The United States holds the Secretariat for ISO/TC36. The American National Standards Institute represents the United States. As ANSI does not have the facilities for carrying the detail work of the Secretariat, this work has been contracted to the Society.

Meetings of ISO/TC36 have been held at New York (1952), Stockholm (1955), Harrogate (1958), Garmisch-Partenkirchen (1961), Milan (1965), Moscow (1967), London (1971), Williamsburg (1974) and Paris (1976).

Standards and Recommended Practices

The Society publishes annually a list of its Standards. In addition, related material not considered as meeting the criteria for standards is prepared and published by the Society as "Recommended Practices" and Engineering Guidelines. Copies of the latter are available at the headquarters of the Society in White Plains, New York. Copies of American National Standards and ISO Standards can be purchased from the American National Standards Institute at 25 West 43rd St., New York, N.Y. 10036. An index of American and ISO standards is published by ANSI.