

reicht werden. Funktionen wurden ermittelt, die die erwünschte Gleichmässigkeit des Vorlichts auf einer Reihe von Videokontrolllempfaengern bestimmen, sowie die nach der Helligkeit bestimmten Anteile von Spitzenleuchtdichte bzw. Grundleuchtdichte zum Vorlicht, wobei auch bei unterschiedlichem Grad des Vorlichts ein gleichartig erscheinender Bildeindruck entsteht. Die praktische Anwendung dieser Funktionen wurde untersucht und durch Umfragen nach den in der Praxis von vielen Fernsehtechnikern bevorzugten Verhältnissen sind vollgütige Richtlinien ermittelt worden. (Üb. Hugh Sumner)

Entwicklungs- und Präzisionsregistergeräte für Fernseh-Diapositive

K. B. BENSON und J. R. WHITTAKER [15]
Bei der Verwendung von 2 × 2-inch Diapositiven in Fernsehsendungen haben sich zwei ausserordentliche Hindernisse gezeigt: a. Es ist schwierig den gewünschten Teil eines Bildes mit dem abgetasteten Rahmen der Fernsehkamera in Einklang zu bringen; b. Es ist kompliziert schnell Diapositive herzustellen die von den verschiedenen gebräuchlichen Originalen stammen. Eine Beschreibung des Rahmens, der Entwicklungs- und Projektionsgeräte von 2 × 2-inch Diapositiven durch welche gleichwertige Methoden und die gewohnte Präzision, die bei 35mm Film erzielt wird, ist hier gegeben. Die Zeitspanne die nötig ist um ein Diapositiv herzustellen ist nur abhängig von der Entwicklungsgeschwindigkeit einer "Polaroid" Kamera. (Üb. Herren Alsberg und van Benthem)

Eine Versuchsanlage einer Bild-Kamera mit electrostatischem Speicherband

W. J. POCH [18]
Die Grundlagen und Vorteile der Registrierung und Aufspeicherung von optischen Bildern in der Form von entsprechenden elektrischen Ladungsmustern auf einer speziellen Art von flexiblem Band sind erörtert. Ein Versuchsmodell eines Bildkamera-Systems wird beschrieben das entworfen wurde um die Durchführbarkeit dieser Speichermethode zu demonstrieren. Die kennzeichnenden Daten der Kamera und ihre Wirkungsweise werden beschrieben. Die Verfahren des "Vorbereitens" oder "Löschens," des "Schreibens" oder "Registrierens" und des "Lesens" oder "Auswertens" werden erläutert. Die Ergebnisse von vorläufigen Versuchen, welche erwähnt sind, bestätigen die Gültigkeit der Grundsätze auf welchen diese Art von Video-Speicherung beruht.

Ein Kinospektrograph für die Messung von Neuauftragungen

BERNARD D. PLAKUN und WILLIAM C. SCHUPP [25]
Dieser Kinospektrograph verzeichnet eine Neuauftragung in Form aufeinanderfolgender Serien spektrographischer Aufzeichnungen. Wellenlänge und Zeitaufteilung sowie Reichweite der Wellenlängen und Laufzeit sind die hauptsächlichsten Leistungsfaktoren. Eine Bildgeschwindigkeit von 10 bis 30 Bildwechseln pro Sekunde und eine Leistungskapazität von 1800

Bildern bzw. Aufnahmen werden für die Beobachtung von Neuaufzeichnungen als ausreichend beurteilt. Die spektrale Leistung wird von der Grösse des Objekts und von der Genauigkeit der Objektverfolgung beeinflusst.

Plastische Spiegeloptik hoher Präzisionsqualität

HERBERT MEYER [28]

Optische Elemente, vor allem Spiegelkomponenten, können auf verschiedene Weise hergestellt werden. Eine besonders versprechende Methode wird hier beschrieben, die es ermöglicht unter Verwendung plastischer Materialien und entsprechender Verarbeitungsverfahren die Oberfläche und Krümmung irgend eines konventionell verfertigten Originals mit ueberraschender Treue zu reproduzieren. Obgleich die hier beschriebenen Versuche sich auf die Duplizierung von Spiegeloptik beschränken, erscheint einer Erweiterung des Verfahrens auf die Herstellung von lichtbrechenden optischen Elementen generell nichts im Wege zu stehen. Die Ergebnisse eingehender klimatischer Beständigkeits- und optischer Qualitätsprüfungen, ausgeführt an typischen Produktionsmustern dieser Art, werden ebenfalls dargestellt und erläutert. Abschliessend wird die Frage der praktischen Bedeutung des Verfahrens behandelt, wobei auch die Verwendbarkeit im Interesse der Lichtbild- und Fernsehtechnik im Betracht gezogen wird. (Üb. Dr. Herbert Meyer)

standards and recommended practices

The SMPTE Universal Leader for Release Prints

By N. R. OLDING, *Subcommittee Chairman*

A NEWLY DESIGNED film leader, called "The SMPTE Universal Leader," is described. A brief history of past leaders and the major differences between the Academy Leader, The Society Leader and the SMPTE Universal Leader are discussed.

History

For many years the "Academy Leader"* was in general use. In this leader the count-down was based on 16 frames or 1 foot of 35mm film, a holdover from the silent films in which the 16-frame spacing was equated in terms representing feet of film or seconds in running or projection time.

In 1950, the growing use of film in television production made it evident

that some changes were highly desirable. An SMPTE Subcommittee under the chairmanship of C. L. Townsend† was set up to revise the Academy Leader to fulfill the new requirements. This subcommittee, in cooperation with producers, laboratories, projectionists and broadcasters, developed a new All-Purpose Leader,‡ commonly called the Society Leader; it was accepted for trial and has since served the industry. That Subcommittee considered 24-frame spacing for threading cues, but the change in spacing was dropped to avoid confusion.

Since 1951, private and commercial use of 16mm and the use of 35mm and 16mm film by television broadcasters has increased rapidly. In 1958, the require-

ment for 24-frame, 1-second, spacing of threading cues, to fit in with projection and TV cuing practices, was again brought to the attention of officers of the SMPTE and was passed by them to the Television Committee Chairman, W. T. Wintringham,§ for action.

A small Subcommittee was set up by SMPTE in 1959 and it has since been attempting to correlate the many requirements of the various groups concerned. In the initial stages of discussion the Subcommittee members, in cooperation with the Society's Laboratory Practice Committee, decided to eliminate any definite framing and standard density patterns from the leader since these were extremely uneconomical and difficult to maintain at the required standards.

An introduction submitted on October 8, 1964, by N. R. Olding, Canadian Broadcasting Corp., 7925 Cote St. Luc Rd., Montreal 29, Que.

American Standard Specifications for 35mm Sound Motion-Picture Release Prints in Standard 2000-Foot Lengths, Z22.55-1947.

† Formerly Manager, Film & Kinescope Operations, National Broadcasting Co., New York; presently, Director of Product Planning, Telepro Industries Inc.

‡ C. L. Townsend, Subcommittee Chairman; "New All-Purpose Film Leader," *Jour. SMPTE*, 56: 562-567, May 1951.

§ Television Research, Bell Telephone Laboratories, and former Chairman of the SMPTE Television Committee; the present Chairman is Dr. H. N. Kozanowski, Manager, TV Camera Advance Development, Radio Corp. of America, Camden, N.J.

SMPTE Universal Leader

While the Universal Leader includes a number of new features, the Subcommittee considered and included the majority of the features of the Society Leader required to permit well-established laboratory and theater projection practices to be followed and at the same time meet the requirements of television film projection.

Major changes, incorporated in the Universal Leader are as follows:

(1) timing or count-down in seconds at 24-frame/sec running speed vs. the present 16-frame, $\frac{2}{3}$ -sec spacing;

(2) introduction of a continuously moving wedge to denote the passage of time;

(3) reduction of the flash at each second, leaving enough to satisfy the projectionist yet reduced to prevent instability in telecine projection;

(4) a reduction in the count-down from the existing 11 to 3 to the proposed new 8 to 2, the latter representing seconds at sound speed running time — the new numbering, by deleting the numeral 9, eliminating the necessity of spelling out nine and six;

(5) use of slightly redesigned 35mm and 16mm sound cues that are more likely to receive international acceptance;

(6) provision of space in the synchronizing section (*C F frames 141 to 146 inclusive*), which may be removed, if required, and replaced by a similar number of Control Frames to provide accurate framing information, technical checking frames or duplicated test frames of the black-and-white or color frames to follow in the "Picture" section;

(7) inclusion of 35mm and 70mm magnetic cue positions;

(8) provision of three successive frames, marked Head, O, and Picture, to guide the printing machine operator when threading up in the darkroom; (The

DOT (O) is his printer start sync mark. Using this as his cue he punches his raw stock and threads on the DOT (O). Later when tracking the sound, he uses the DOT (O) on the sound leader to sync on the same punched hole in the raw stock. The word *Head* before the DOT (O) and the word *Picture* after the DOT (O) provide immediate recognition that he is printing the picture negative from the head end. A similar cue, marked Picture, O, Foot, is provided in the identification section of the trailer.)

(9) retention of the former Small Switching Cue as an indication to a cutter when a particular leader has been used too often, resulting in excessive loss of frames due to splicing; and

(10) addition of a series of X's and O's on separate frames and on opposite sides of the film to provide print-through cues for sound.

Other Considerations

Although it was not to become a part of the leader, in order to standardize on the seconds basis, the spacing of the motor and changeover cues has been reduced from the present 172 frames to 168 frames or 7-sec running time. The Subcommittee had hoped to reduce the changeover cue to 5 sec but yielded to pleas for more time to permit older machines to reach stable operating speeds.

The new Leader should not be difficult to print since the densities of the various sections will prove satisfactory if they approximate those suggested in the standard. No attempt has been made to include accurate framing information as this can be spliced into the control-frame section.

Consideration was given to the difference between American and European television film standards. The one-frame difference in projection speed, 24 frames/sec vs. 25 frames/sec, was not

resolved and it does not appear to be too important.

The length of the new leader has been kept the same as the old one to avoid errors in printing and sound cuing and to permit operators to continue to use well-established practices. The requirements of TV projection alone would have permitted the use of a considerably shorter leader and the immediate development of a short leader for short television commercial spots is recommended.

Acknowledgments

Special thanks are due to C. L. Townsend for his helpful comments on the development of the Society Leader in 1951, and to Edward H. Reichard of Consolidated Film Industries. Mr. Reichard, as the representative of the Laboratory Practice Committee, worked very closely with our Subcommittee and, in cooperation with CFI, produced a number of prototypes of the leader for the Subcommittee and field evaluation. Appreciation is extended also to the Chairman and representatives of the Film-Projection Practice, Laboratory Practice, Television and Standards Committees. Many modifications in the new leader are based on suggestions offered by the Television Film Association and its president, John Ballinger, and the late George Lewin of the Army Pictorial Center.

Subcommittee

*Norman R. Olding, <i>Chairman</i>	
*John Ballinger	*Ralph J. Manteuffel
George W. Bartlett	*Lawrence A. Ruddell
*Vernon J. Duke	*Arthur F. Schoenfuss
R. Heinbach	*Dan W. Shields
*Peter Keane	*John R. Whittaker
(Alternate)	(Alternate)

* Members or alternates of the original Subcommittee.

Proposed American Standard

Proposed American Standard Specifications for Leaders and Cue Marks for 35mm and 16mm Sound Motion-Picture Release Prints, PH22.55, is published here for a trial period and public review. Comments should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters prior to March 1. If no adverse criticism is received by that date, the proposed standard will be submitted to ASA Sectional Committee PH22 for further processing.

This proposal is a complete revision of the 1947 issue, which described the Academy Leader. The Universal Leader specified represents the culmination of many years of diligent effort to design a leader which would satisfy both television and motion-picture requirements. Unanimous approval by four SMPTE Engineering Committees, Film-Projection Practice, Laboratory Practice, Television, and Standards, attests to the successful accomplishment of the task.—A.E.A.