



**ABSTRACTS OF PAPERS
FROM OTHER JOURNALS**

Abstracts of papers appearing in other journals chosen for their importance and possible value to researchers as well as those of timely interest, are published in the *Journal* from time to time. Many translations of abstracts from foreign journals, chiefly those of the USSR, are made available to the *Journal* by the Research Laboratories of the Eastman Kodak Company. As a rule, translations are made of the abstracts and not of the papers. The journals in which the papers appear can be consulted at some libraries. Current issues of *Tekhnika Kino i Televideniya* can be consulted at, or borrowed from, the Society's Headquarters Office.

Those requiring definitive and thorough searches of current literature and patents are referred to *Abstracts of Photographic Science & Engineering Literature (APSE)*, produced by the Engineering Index, Inc., 345 E. 47 St., New York, N.Y. 10017, with the editorial cooperation of the Society of Photographic Scientists & Engineers.

The subject areas are grouped below:

Photographic Theory and Materials
Projectors and Projection

Sound Recording and Reproduction
Special Applications
Television

PHOTOGRAPHIC THEORY AND MATERIALS

The relative efficiency of latent-image formation and destruction at 77 k, T. H. James and W. Vanselow, *Photo. Sci. Eng.*, 11: 15-21, No. 1, Jan./Feb. 1967.

The energy threshold of latent-image formation by 0.40-0.42 μ radiation was compared with that for latent-image destruction by radiation in the 0.565-0.735 μ region for exposures at 77 K. In terms of incident radiation, the number of quanta needed to destroy latent image in silver bromide and iodobromide emulsions was 10^3 - 10^4 times the number of quanta required to form latent image. In terms of absorbed quanta, the relative efficiency of destruction of latent image is greater by at least an order of magnitude than that indicated by the comparison of incident quanta. The efficiency of a

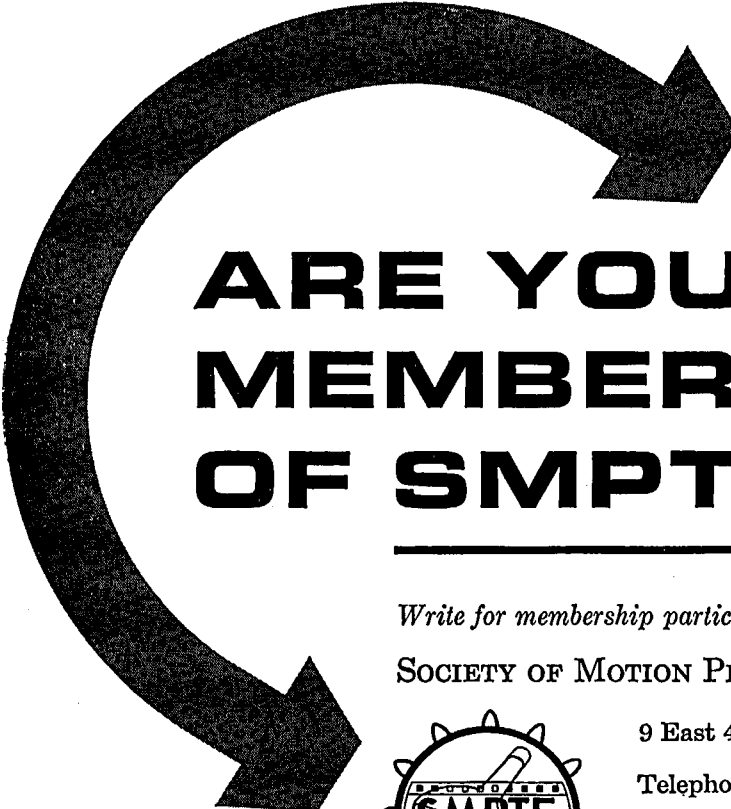
laser beam for producing the Herschel effect may be somewhat less than that of broader-band radiation, but the difference, if real, is considerably less than an order of magnitude.

PROJECTORS AND PROJECTION

Apparatus for testing micro-optics (In Polish), W. Dybczynski. *Kinotechnik (Poland)*, 19: 9, No. 213, 1966; *Ref. Zh. Fotokinetika*, Abstract No. 10.46.192, 1966.

Apparatus is described for testing the geometrical dimensions and the uniformity of illumination of the mechanical aperture of the micro-optics of motion-picture projectors. The micro-optics are placed in the apparatus, and an image of the mechanical aperture is thrown by the objective of the apparatus on a matte glass with a cross and is inspected through an ocular. The length of the aperture is determined by moving the micro-optics, and its width by moving the matte glass. The displacement is carried out with a micrometer screw, from which the dimensions of the aperture are also calculated. The uniformity of illumination is measured with a silicon photocell which is pressed against the matte glass and moved over the image of the aperture.—S.C.G. (Translated from *Ref. Zh., Fotokinetika*.)

Contemporary 16-mm transportable motion-picture projectors (In Russian), A. Ya. Kuperman and L. G. Tarasenko, *Tekh. Kino i Televideniya*, 11: 68-79, Jan. 1967.



**ARE YOU A
MEMBER
OF SMPTE?**

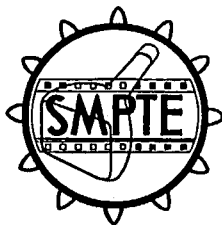
If you are not now regularly receiving the SMPTE JOURNAL, participating in the Society's local Section meetings and semiannual Technical Conferences, or being informed about the technological studies of our industry made by the Society's engineering committees . . .

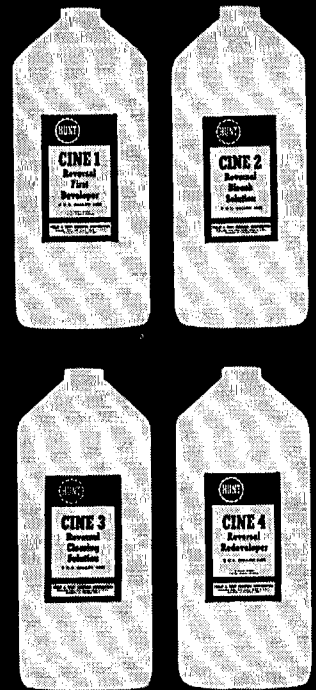
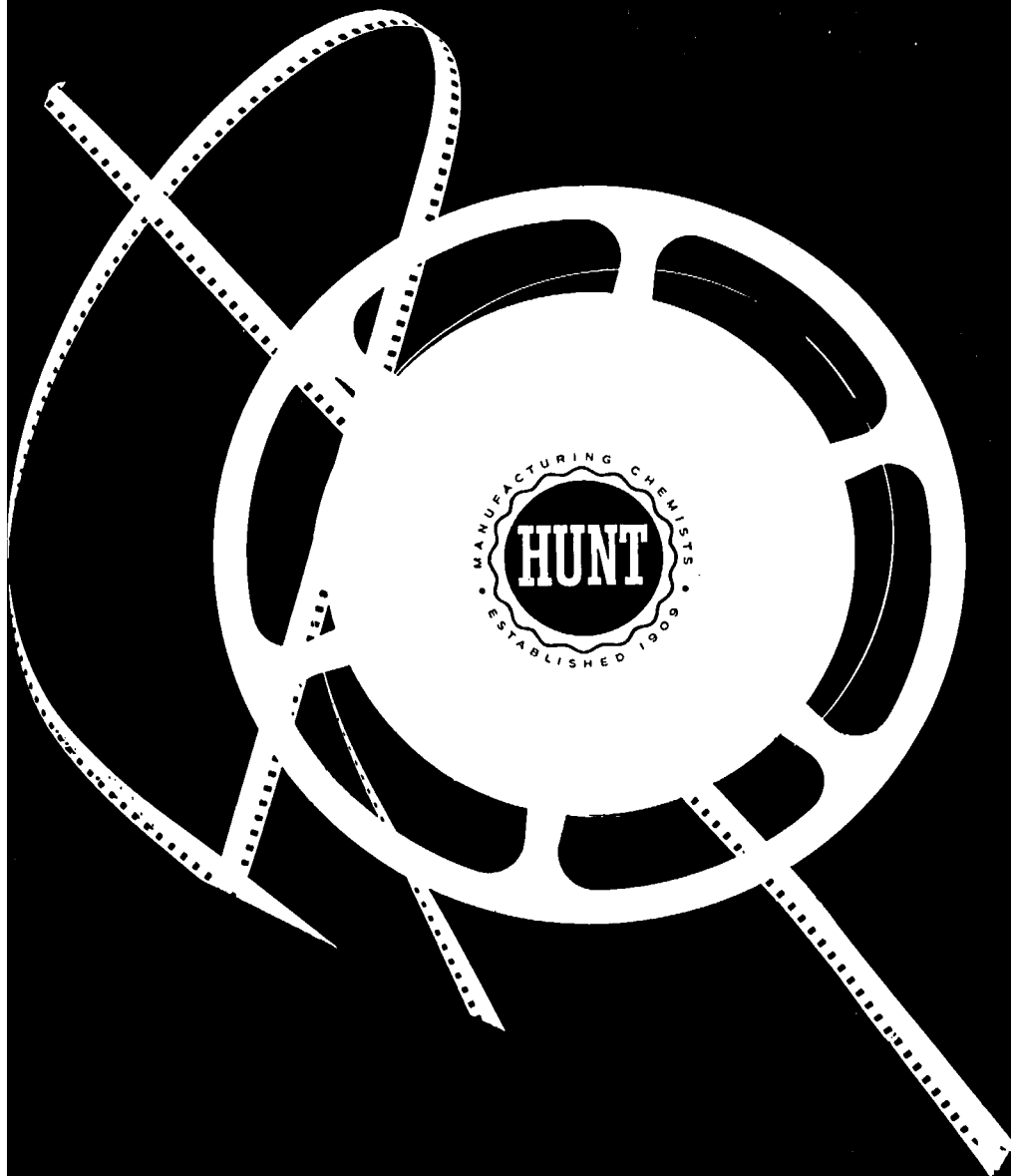
Write for membership particulars to:

SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS

9 East 41 Street, New York, N. Y. 10017

Telephone: (212) TN 7-5410





Hunt Cine Reversal Concentrates is an all-liquid system that offers solutions of consistent formulation possible only with concentrates. This complete developing system consists of four solutions: Cine 1 — Reversal First Developer, Cine 2 — Reversal Bleach Solution, Cine 3 — Reversal Clearing Solution and Cine 4 — Reversal Redeveloper.

Hunt Cine Reversal Concentrates reduce mixing time and avoid the messy mixing of bulk chemicals.

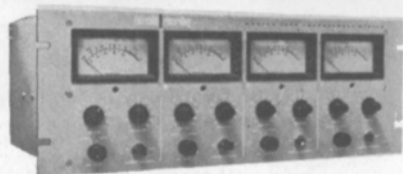
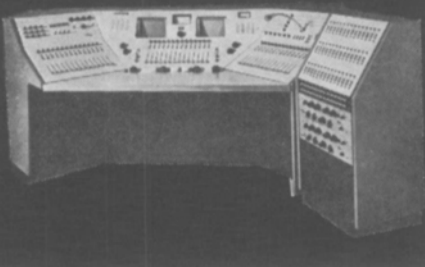
Hunt Cine Reversal Concentrates contain special sequestering agents that help keep automatic processors clean during operation by preventing chemical build-up on rollers.

If you process negative B & W Cine film use Cine 5-Negative Developer and Cine 6-Negative Replenisher Use **Flash-O-Graph® Fixer** to complete the processing cycle. It is the compatible fixer for this system because of its high speed action that works 3 to 4 times faster than conventional fixer formulas. Flash-O-Graph Fixer is packaged in cartons of 4x1-gallon poly bottles, 5-gallon Cubitainers and 50-gallon drums.

Hunt Cine Reversal Developers overcome the problem of developer degradation, usually found in other liquid developers, because of the Hunt Developer Activator System (U.S. Patent 3038801, Foreign Patents Pending) using Graphidone® as one of the developing agents. This assures the user of a ready-to-use, factory-fresh solution, regardless of how long the concentrate has been in inventory.

Cine Reversal Concentrates are packed in easy-to-handle cartons of 4x5-qt. poly bottles to a carton (makes 20 gallon) and in economical 5 gallon Cubitainers (makes 20 gallons).

SUPER SOUNDS start with FAIRCHILD



FAIRCHILD MASTER TAPE IMPROVEMENT SYSTEM

FAIRCHILD MTIS with "focused-gap" head design reduces bias-induced noise to a point where it is no greater than 1.5 db than the noise of virgin or bulk-erased tape. FAIRCHILD MTIS has an S/N ratio of 72 db on one track of a 4-track 1/2" tape. FAIRCHILD MTIS increases the recording level by 4 db over present standards, with the lowest harmonic, intermodulation, and cross-modulation distortion of only .5%. Only the FAIRCHILD MTIS comes in a compatible, convertible package allowing you to update your present tape transports to the highest quality "state-of-the-art" recording standards.

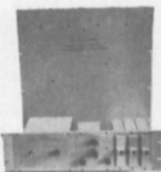


FAIRCHILD CONAX

The world-accepted way to control high frequency spillovers in FM due to pre-emphasis. Lets your station maintain real high levels even with brass and crashing cymbals and still avoid FCC citations.

THE REVERBERTRON

The new compact reverberation system which gives your station that real big voice. With the Reverbertron you can have that Carnegie Hall effect as close as the gain control on the Reverbertron. And there's the added plus of an increase in apparent loudness of your station sound due to reverberation, as originally described by Dr. Maxfield.



Write to FAIRCHILD — the pacemaker in professional audio products — for complete details.

FAIRCHILD
RECORDING EQUIPMENT CORPORATION
10-40 45th Ave., Long Island City 1, N. Y.

Developments in the design of 16mm motion-picture projectors and models available on the non-Soviet market are reviewed.—S.C.G.

SOUND RECORDING AND REPRODUCTION

Voice-over-lip synchronization device (In English), Anon., *NHK Labs. Notes*, No. D-2, 1966. 7 pp., illus.; *Ref. Zh., Fotokinetekhnika*, Abstract No. 10.46.196, 1966.

Information is given on apparatus developed in the NHK (Japan) laboratories for simplifying dubbing of motion-picture films. In dubbing usually more than 50% of the working time is spent on recording speech of commentators, and this involves difficulties in locating the beginning and end of the scenes to be dubbed. It is suggested that in recording speech by commentators an image of the spectrum envelope of the signal of the sound accompaniment of the film should be projected on a screen in synchronism with the film, together with time marks in the form of lines showing the beginning and end of the scenes. The operator determines the beginnings and endings of the scenes by the form of the spectrum envelope and the reproduction of the sound. The apparatus for carrying out these operations are described.—S.C.G. (Abridged from *Ref. Zh., Fotokinetekhnika*.)

Sound quality of 16mm prints (In Hungarian), F. Uzsoki, *Kép-és hangtech.*, 12: 49-54, 63, 64, No. 2, 1966. *Ref. Zh., Fotokinetekhnika* Abstract No. 10.46.194, 1966.

Problems of recording and reproducing sound in 16mm cinematography are discussed. Usually the negative of a soundtrack on 16mm film is obtained by reduction from a soundtrack on 35mm film. The lower speed of the narrow film significantly decreases the recorded frequency band. The copying process in turn causes a further decrease in the width of the band and an increase in noise, and introduces distortions. The cause of many faults is connected with the material of the film. Thus transition from a black to a white area on the soundtrack occurs over a band of 10 nm in width, this being due to the resolving power of the photographic layer. With the aim of improving the quality of sound reproduction it is recommended that cinematography be carried out with a frame frequency at which the recorded frequencies are substantially limited: the upper frequency limit should be ~ 4 Kc/sec. The dynamic sound range is limited to ~ 16 dB with the aid of automatic compression. In order to obtain clearness of speech, the level of a musical accompaniment should be reduced relative to the level of speech by at least 10 dB. Period maintenance of all apparatus is recommended.—S.C.G. (Translated from *Ref. Zh., Fotokinetekhnika*)

SPECIAL APPLICATIONS

Image recording in electron microscopy, J. F. Hamilton and J. C. Marchant, *J. Opt. Soc. Am.*, 57: 232-239, Feb. 1967.

Three properties of any recorder are of primary importance in electron microscopy: (1) its spread function, (2) its signal-to-noise characteristics (or, detective quantum efficiency, DQE), and (3) its sensitometric curve shape. Photographic materials are found to have spread functions that are not limiting under normal conditions. The remaining two factors are investigated by analysis of mathematical models and comparison with experimental results. Most photographic materials are found to be near-perfect detectors, in that they record the input signal without appreciable loss and do not seriously add to the input noise. They have similarly shaped curves of density vs electron exposure. It is shown that to optimize the recording step in electron microscopy, it is advantageous to be able to select-granularity combinations at will, if DQE can be kept high. Variations in the processing of a commercial photographic plate are found to accomplish this effect.

Techniques and information content of sonoholograms, P. Greguss, *Jour. Photo. Sci.*, 14: 329-332, No. 6, Nov./Dec. 1966.

Some attempts have been made to apply ultrasonography to metrology, from which sonophotometry has evolved. The information content of this method is, however, not sufficient since the sonosensitive films record only amplitude of the U.S. waves and do not give any information about phase variation. It is shown that using the holography method, discovered in 1947 by D. Gabor, and using sonosensitive plates, holograms can be obtained by U.S. waves. Drawing a parallel between these holograms—termed sonoholograms—and those of Leith and Upatnickis taken with laser, it is not possible to establish any principal differences.

TELEVISION

Source-receiver encoding of television signals, J. O. Limb, *Proc. of the IEEE*, 55: 364-379, Mar. 1967.

The first stage of efficiently coding television signals—the nonreversible process of obtaining a discrete signal—is investigated. The process depends on the properties of the source and the receiver which in this case is the human sense of vision. Emphasis is given to the examination of the properties of the receiver and the selection of an appropriate criterion of performance. The criterion adopted is the probabilistic measure of viewer preference in a direct comparative judgment between the original and the coded-decoded version. For this criterion the precision with which picture components need be reproduced will depend primarily on the visual thresholds associated with the picture components. The "Optimum Decision" model of threshold vision is investigated using the criterion.

As an example a practical encoder is discussed which is designed around the loss of sensitivity of the visual system adjacent to a change in luminance. High-quality pictures have been encoded having first-order entropies in the range 0.8 to 2.0 bits per picture element.