

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 Televiziya* 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 Graphic Arts Research Center, College of Graphic Arts and Photography, Rochester Institute of Technology, Rochester, NY 14623, with the editorial cooperation of the Society of Photographic Scientists & Engineers.

The subject areas are grouped below:

Cameras
Cinematography

Data Recording and Processing
Film and Its Properties
General and Historical
High-Speed Photography
Holography
Optics
Photographic Theory and Materials

CAMERAS

Prospects for the development of quiet electric drives for professional motion-picture cameras (in Russian), E.I. Usyshkin and L.I. Sazhin, *Tekh. Kino i Televiziya*, 14: 6-13, Nov. 1970.

The main trends in the development of electric drives for professional motion-picture cameras are portability, versatility in regard to power supply, and low noise level. The technical means for improving synchronous electric drives are the use of magneto-electric motors (with rotating permanent magnet) and semiconductor devices for the conversion and control of frequency and voltage.—S.C.G.

CINEMATOGRAPHY

Color photography and cinematography (in Russian), S.A. Bongard and V.S.

Chel'tsov, *Usp. Nauch. Fotogr.*, 15: 218-243, 1970.

The history and future developments of photography on multilayer materials with color development, and the imbibition method of color cinematography are discussed. Bibliography of 250 references.—S.C.G. (Translated from *Usp. Nauch. Fotogr.*)

Scientific problems of cinematography (in Russian), V.G. Komar. *Usp. Nauch. Fotogr.*, 15: 273-286, 1970.

This article is devoted to the main paths of development of motion-picture technology in the USSR and an analysis of its future development and possibilities. The problems of raising the quality of the photographic image and sound, of improving the reproduction of space and movement, of extending the artistic and expressive sides of cinematography and of the miniaturization of the equipments of cinematography are discussed. Bibliography of 56 references.—S.C.G. (Translated from *Usp. Nauch. Fotogr.*)

Modern techniques of cinematography and television at the IX UNIATEC Congress (in Russian), V.I. Ushagina, V.G. Komar, B.N. Konoplev, E.M. Goldovskii, and A.F. Veklenko, *Tekh. Kino i Televiziya*, 15: 9-16, Feb. 1971.

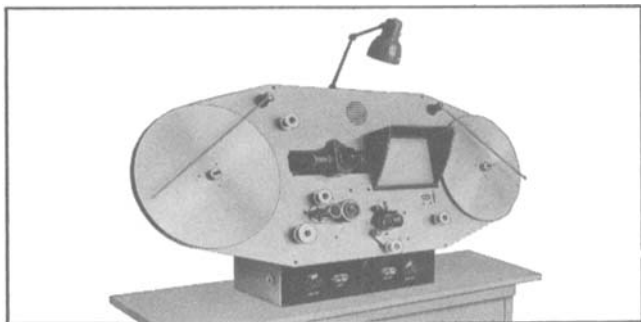
The proceedings of the IX UNIATEC Congress are briefly reported.—S.C.G.

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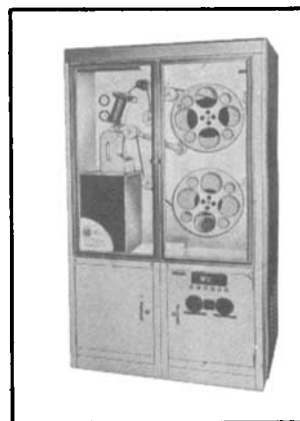
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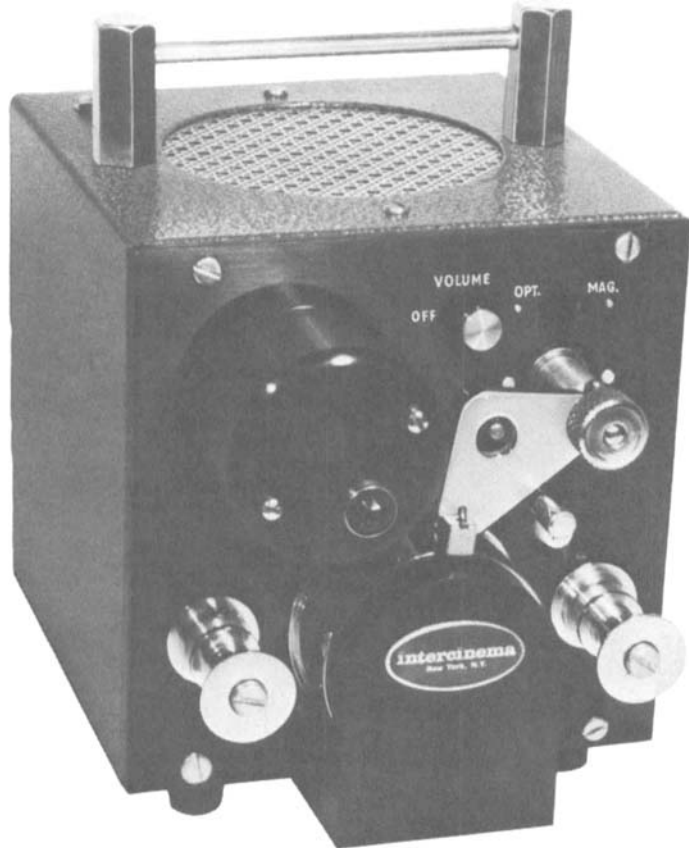
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cinematographic systems (in Russian), E.M.Goldovskii. *Tekh. Kino i Televizeniya*, 15: 19-27, Jan. 1971.

A study has been made of the change in information capacity when a film prepared by one system of cinematography is printed for another, e.g., a normal 35mm negative is transformed into a wide-screen positive. The results are collected in a table showing the relative information capacities of different combinations of normal, wide-screen and wide film systems. The significance of the findings for the film industry is discussed.—S.C.G.

The present state and future development of wide-film cinematography (in Russian), V.G.Chernov, A.A. Anashkin, and T.A. Sýrnikév, *Tekh. Kino i Televizeniya*, 15: 61-66, 1971.

The present use of wide-film (70mm) systems in the Soviet film industry is discussed and a forecast is made of their future development.—S.C.G.

DATA RECORDING AND PROCESSING

The application of cathode-ray tubes to film recording and scanning, Jim E. Wurtz and F. John Marshall, *Jour. Soc. of Photo-Optical Instr. Engrs.*, 9: 186-195, Aug.-Sept. 1971.

There exists an ever increasing need for producing information from a machine or putting information into a machine. This information is often an alphanumeric or pictorial form and is created or presented on two-dimensional media such as film. A computer often processes information serially, so a point of light which can at great speed be controlled on a two-dimensional surface in position and intensity, is the desirable characteristic of film recorders and scanners.

There are a number of ways of producing a point of light which can be controlled in position and intensity, but none quite so fast or versatile as by a cathode-ray tube. It was thought that solid-state technology with light emitting diode arrays and other schemes would replace the cathode-ray tube. Actually the effect of semiconductor technology has been to remove the limitations in CRT driving circuitry and make it possible to do things with CRT's that could not be done before. New transistors for deflection, high voltage diodes, solid-state multipliers, etc., have made possible high-speed character generators, faster and more accurate spot positioning, higher stability anode voltage supplies and compact sophisticated linearity correction circuitry. This, coupled with advances in phosphors and electron gun design, has created more applications for high resolution CRT's. Interestingly, there are very few applications where all of the capability of contemporary precision high resolution tubes is fully exploited.

FILM AND ITS PROPERTIES

Equipment and automatic control of drying of film materials in the Tsen-trnauchfil'm studios (in Russian), Ya.I.Belyaev, *Tekh. Kino i Televizeniya*, 14: Nov. 1970.

Descriptions are given of a conditioner designed for drying films in the drying

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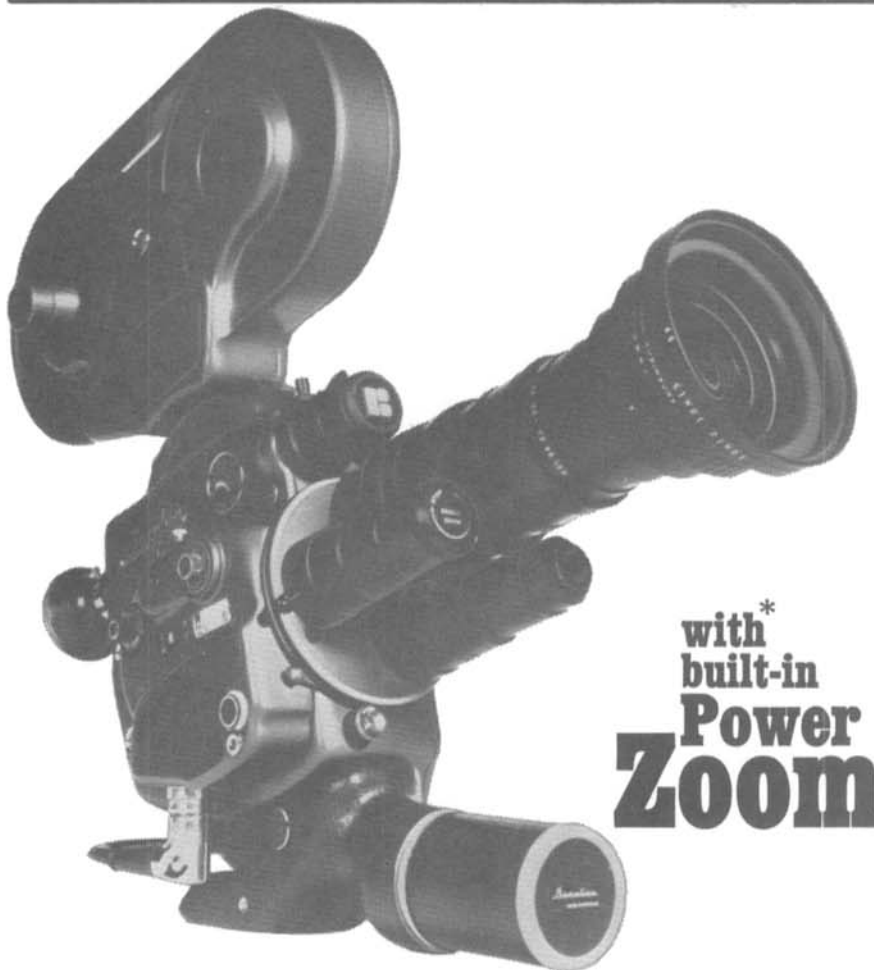
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cabinets of the processing machines used in the studios, and of the automatic controls used in conjunction with it.—S.C.G.

A study of some physical properties of multilayer film systems (in Russian), G.I.Burdugin and P.V.Kozlov, *Trudy NIKFT*, 15-22, No. 58, 1970; *Ref.Zh., Fotokinetekhnika*, Abstract No. 11.46.149, 1970.

A study has been made of the temperature dependence of the linear dimensional changes of triacetate, polyethylene-terephthalate, and gelatin films, and also of images on two-layer experimental systems. The behaviour of film systems in the temperature range of -100 to +250 C has been studied by linear dilatometry.—S.C.G. (Translated from *Ref.Zh., Fotokinetekhnika*.)

The graininess of black-and-white reversal films (in Russian), B.N.Modestov and O.M.Sedel'nikova, *Tekh.Kino i Televideniya*, 14: 18-22, Dec. 1970.

Graininess and granularity measurement have been made on a number of Soviet and foreign motion-picture films of the black-and-white reversal type. It is concluded that granularity rather than graininess is the better measurement for the comparison of this type of film.—S.C.G.

A study of the directional development effect (in Russian), I.B.Blyumberg, G.V.II'inskaya, I.M.Sokolova and L.A.Shtykan, *Tekh.Kino i Televideniya*, 14: 16-21, Nov. 1970.

Uneven development due to the presence of a boundary layer on film moving through a developer solution is discussed. Directional effects in the processing of motion-picture positive film may be eliminated if the rate of travel of the film is >2000 m/h for a metol-hydroquinone developer and ≥1000 m/h for a phenidone-hydroquinone developer. They can be avoided in the processing of motion-picture negative film only by the use of jet development. For duplicating films speeds of ≥1500 m/h (phenidone-hydroquinone) and ≥3600 m/h (metol-hydroquinone) should be used, or jet development. A tentative quantitative estimation of the conditions of motion of the developer in the developing machine and the relation between the directional effect and the thickness of the layer have been made.—S.C.G.

Polyvinylacetate lacquers for motion-picture materials (in Russian), B.N.Korostylev, R.A.Sorokina, and A.A.Petrova, *Trudy Vses. Nauch.-Issled. i Proekt. Inst. Khim.-Fotgr. Prom.* 115-121, No. 3, 1970; *Ref. Zh. Fotokinetekhnika*, Abstract No. 1.46.81, 1971.

The possibility has been studied of using the sodium salt of the polyvinyl acetal of 2,4-disulphobenzaldehyde for obtaining lacquer coatings on the back of photographic films. Such lacquer layers impart good antistatic properties and may be used for the antihalation protection of photographic materials, at the same time ensuring the necessary flatness of the film. It is shown that a layer of 2,4-disulphobenzaldehyde polyvinylacetal coated on a polyethylene-terephthalate support does not cause an increase in the brittleness as takes place in the case of layers coated with gelatin.—



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S.C.G. (Translated from *Ref. Zh. Foto-kinotekhnika.*)

Visual perception of density differences on color film, K. Staes and R. Verbrugghe, *British Kinemat. Sound and TV*, 53: 332-334, Sept. 1971.

Sensitometry is the most commonly used tool in controlling the photographic color process and photographic color materials. Deviations from color balance are also expressed in terms of density differences; they compare to the sensitometric results for a neutral. Tolerances as to deviations from color balance, and sensitometric results for a neutral. Tolerances, as to deviations from color balance, and sensitometric results, can only be evaluated in relation to the perceptibility of color differences.

In this paper, equally perceptive color differences are translated into density differences. Computation was based on the I.C.I. color difference formula. Figures are given for the Gevachrome Original type T 600, and for the Gevacolor Print Film T 9.85. An area of acceptable deviations is given for these color materials.

GENERAL AND HISTORICAL

Motion picture equipment in the Soviet Pavillion at Expo 70 (in Russian), N.D. Bernshtein, I.M. Bolotnikov, V.G. Komar, G.D. Muzykanskii and V.S. Shchekochikhin, *Tekh. Kino i Televideniya*, 14: 6-15, October, 1970.

Descriptions are given of the projection equipment used in the Soviet Pavillion at Expo 70.—S.C.G.

International Congress on Photographic Science in Moscow (in Russian), K.B. Chibisov and V.I. Sheberstov. *Zh. Nauch. i Prikl. Fotogr. i Kinematogr.*, 15: 449-450, No. 6, Nov./Dec. 1970.

A brief account is given of the International Congress on Photographic Science held in Moscow from July 29 to Aug. 5, 1970.—S.C.G.

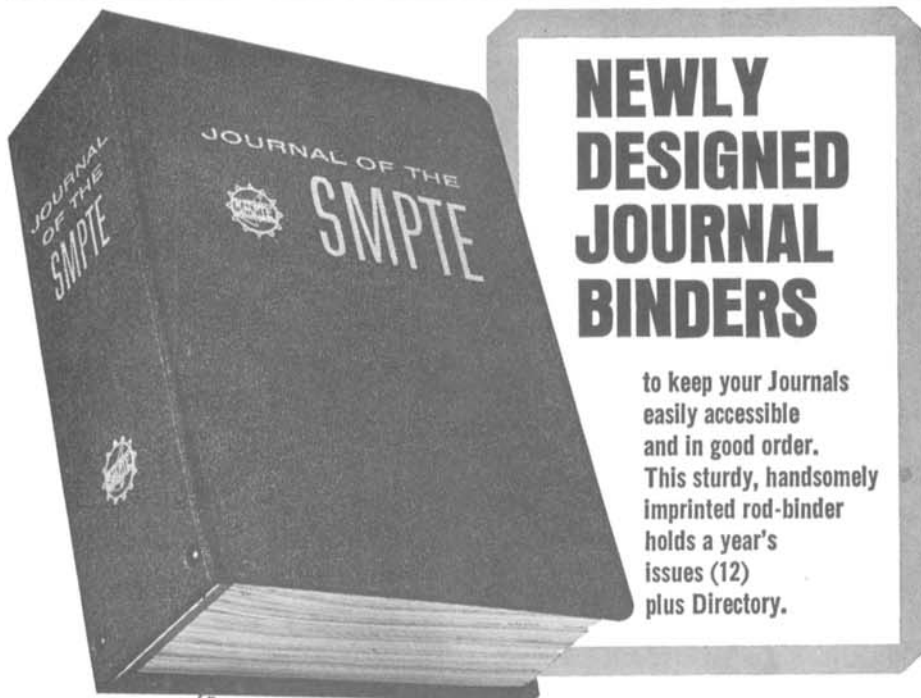
An essay in the history of the development of Soviet photographic science (in Russian), K.V. Chibisov and Yu. N. Ghorokovskii, *Usp. Nauch. Fotogr.*, 15: 4-22, 1970.

A general essay in the history of Russian photographic science during 50 years of Soviet power. Special attention is given to the genesis and development of the main scientific schools and groups in institutes and colleges in the fields of scientific photography and photographic and motion-picture technology. The bibliography provides information on the publications of Soviet scientists. It is supplemented by the bibliographies to the other articles in this collection. Bibliography of 104 references.—S.C.G. (Translated from *Usp. Nauch. Fotogr.*)

HIGH-SPEED PHOTOGRAPHY

Image converter streak camera with picosecond resolution, M. Ya. Schelev, M. C. Richardson and A. J. Alcock, *Applied Physics Letters*, 18: 354-357, No. 8, Apr. 15, 1971.

A streak camera incorporating a standard, readily available, image-converter tube has been developed and used for the

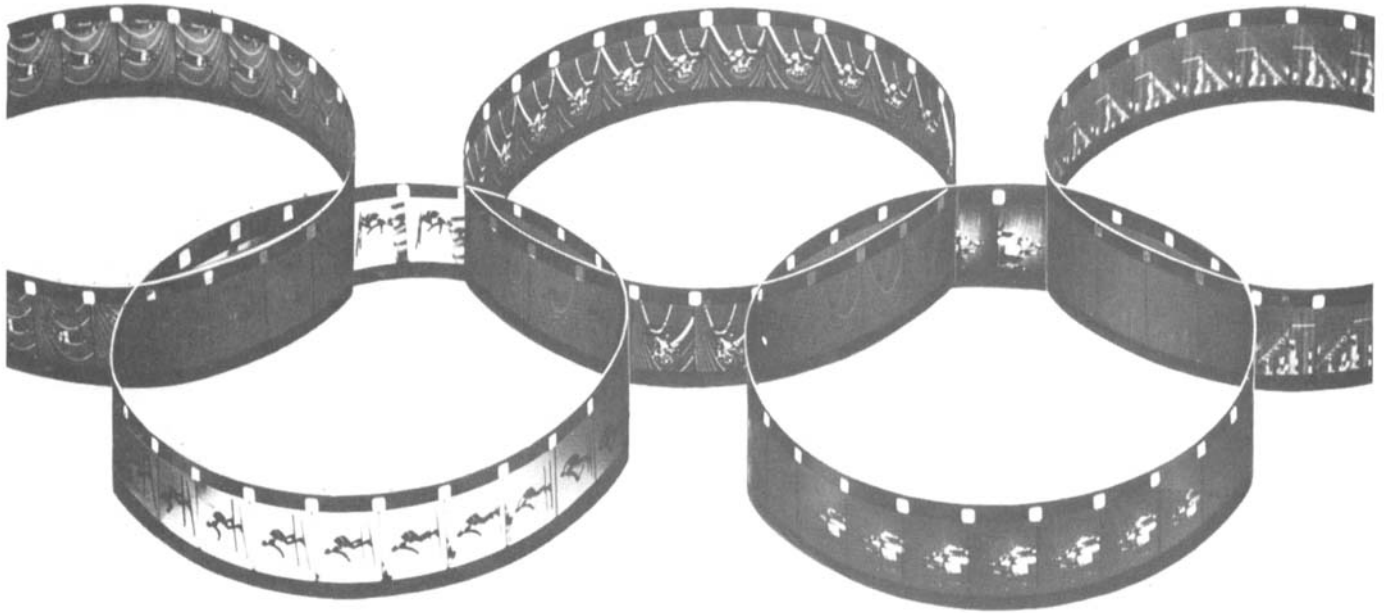


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The present state of high-speed motion-picture cameras with continuous motion of the film and compensation by prism (in Russian), G. I. Belinskaya and A. A. Kepel, *Zh. Nauch. i Prikl. Fotogr. i Kinematogr.*, 15: 305-313, No. 4, July/Aug. 1970.

Present-day motion-picture cameras with taking frequencies in the range of 250 to 30-40 thousand frames/s are reviewed.—S.C.G.

HOLOGRAPHY

Rock probe deformation measured by holographic interferometry, W. Fink, P. A. Buger and L. Schepens, *Optics and Laser Technology*, 2: 146-150, Aug. 1970.

Mechanical pressure-induced deformations of cylindrical rock probes were measured by holographic time-lapse interferometry. As it was generally impossible to find any zeroth-order fringes, a moving-fringe evaluation method as first given by Bonch-Bruевич was used. Small displacements parallel to the hologram plane could thus be measured with very high accuracy. The method is applicable to any type of local displacement of surface elements, limited only by the solid angle subtended at the hologram by the object.

PHOTOGRAPHIC THEORY AND MATERIALS

Image brightness and exposure in photography from a motion-picture screen (in Russian), S.A. Drukker, *Tekh.-Kino i Televideniya*, 14: 22-26, Nov. 1970.

The topics discussed are: the relation between exposure and the brightness (for the spectator) of images on the screen when pictures are shot from the screen; the independence of exposure and brightness of distance; and the influence of the moment of starting the motion-picture camera, in phase or out of phase with the projector shutter.—S.C.G. (Translated from *Tekh. Kino i Televideniya*.)

Lenticular screens with dimensions 1.2 by 1.25 m for the showing of stereo films at Expo 70 (in Russian), L.V. Akimkina, V.G. Komar, and N.V. Mel'nikova. *Tekh.-Kino i Televideniya*, 14: 28-32, Oct. 1970.

After a discussion of the problems of separation and contrast of the images in integral stereoscopy, the 1.2 by 1.25 m lenticular screen used for the showing of stereoscopic films at Expo 70 is described.—S.C.G.

Formulas for the conversion of speed values (in Russian), V.N. Shipina. *Trudy Leningrad Inst. Kinoizhenerov*; 219-224, No. 16, 1970; *Ref. Zh., Fotokinetika*, Abstract No. 10.46.165, 1970.

An analysis is given of the factors affecting the conversion of speed values determined by the criteria of 0.2 and 0.85 above fog, and at different values of contrast with the criterion of 0.85 above fog. The analysis is carried out with the aim of discussing the limits of acceptability of the different conversion formulas for speed values in the expected transition to new international standards of speed determination.—S.C.G. (Translated from *Ref. Zh., Fotokinetika*.)

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