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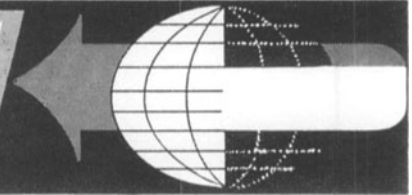
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**ABSTRACTS OF PAPERS  
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Abstracts of papers appearing in other journals chosen for their importance and possible value to researchers as well as those of timely interest, are published in the *Journal* 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:

- General
- High-Speed Photography
- Laboratory Practice
- Lens Systems
- Miscellaneous Apparatus
- Medical Photography
- Photographic Theory and Materials
- Projectors (and Projection)
- Sound Recording and Reproduction
- Television

**GENERAL**

**The economics of integrated circuits**, G. C. Padwick and R. Matthewman, *Radio and Electronic Eng.*, 31: 342-344, No. 6, June 1966.

This paper presents the concept of the "cost of ownership" of electronic equipment, and shows that equipment designed on the basis of integrated circuits often has a very low cost of ownership.

**The characteristics of mechanical and electrical rewinders** (in Russian), I. S. Golod, V. B. Liberson, and V. F. Piyavskii, *Tekhnika Kino i Telev.*, 10: 21-31, July 1966.

The causes of unsteadiness in the operation of mechanical rewinders in motion-picture apparatus is analyzed, and methods of eliminating them are considered. The operation of electrical rewinders and methods of improving their performance are discussed.—S.C.G. (Translation of authors' Abstract.)

**Microwave semiconductor devices**, G. D. Sims, *Radio and Electronic Eng.*, 31: 329-341, No. 6, June 1966.

The paper examines some of the classes of microwave devices which are of current

interest. Devices described are: frequency multipliers, up-converters, parametric amplifiers, tunnel diodes, backward diodes, hot electron devices and Gunn effect oscillators. Some of the problems and developments which the future may hold are discussed.

**HIGH-SPEED PHOTOGRAPHY**

**A high-speed camera with optical image compensation** (in Russian), A. A. Sakharov, *Kinotekhnika, Nauchno-tekhniceskii Sbornik NIKFI*, 4-80, No. 11, 1965; *Tekhnika Kino i Telev.*, 10: 83, May 1966.

A review is made of high-speed and so-called ultra-high-speed cameras, in which the exposure of a sequence of frames is carried out by means of optical compensation for image movement. Bibliography of 105 references.—S.C.G. (Abridged translation from *Tekhnika Kino i Telev.*)

**Determination of torque by high-speed cinematography** (in Russian), P. M. Alabuzhev, A. K. Zuev, M. N. Negodaev, A. M. Yarovov, G. F. Kopečkin, V. Kh. Kargin, and V. B. Khan, *Zh. Nauch. i Prikl. Fot. i Kinemat.*, 11: 258-262, No. 4, July-Aug. 1966.

A description is given of a method of measuring the torque on the rotating shaft of an electro-mechanical hammer, utilizing a high-speed framing motion-picture camera. The distortion of the shaft is recorded and the torque is obtained by an application of Hooke's Law.—S.C.G.

**Accelerating the camera**. J. K. Landré, *Perspective 8*: 38-50, No. 1, 1966.

Recent designs and trends in extending the mechanical and optical speeds of high-speed cameras are reviewed, with 52 references.—S.C.G.

**LABORATORY PRACTICE**

**Rapid processing of black-and-white films** (in Russian), I. B. Blyumberg and R. V. Dimitrov, *Tekhnika Kino i Telev.*, 10: 37-40, June 1966.

Developing and fixing solutions have been designed in which the development and fixing of motion-picture films may be completed in 1 to 2 min. The problem of utilizing accelerated processes for the processing of negatives and positives in an overall time of 5 to 10 min is discussed.—S.C.G. (Translation of authors' abstract.)

**A study of the matching of black-and-white positive motion-picture films** (in Russian), K. V. Vendrovskii, *Tekhnika Kino i Telev.*, 10: 20-31, Sept. 1966.

A statistical study has been carried out on the Soviet-made MZ-3 positive motion-picture film and the printing of relief positives onto it under the conditions obtained

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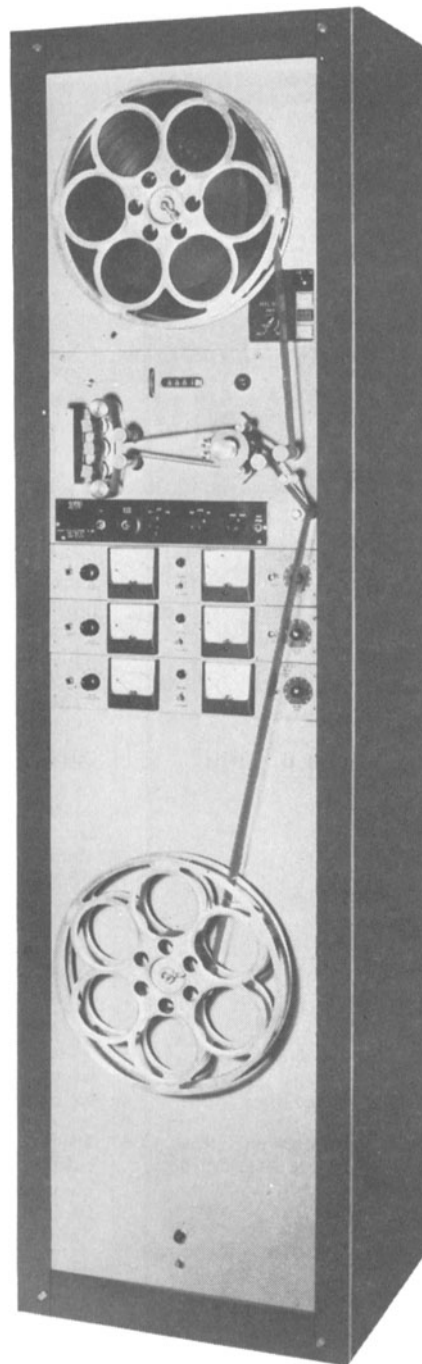
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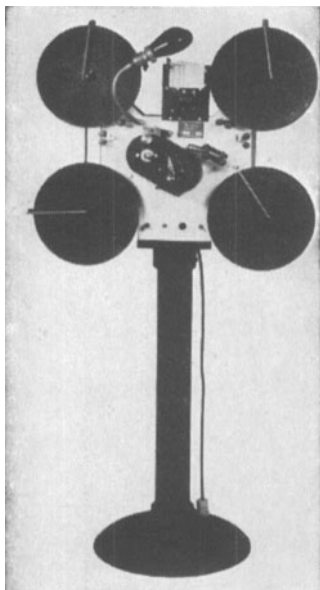
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in film processing laboratories. The results show that the use of preliminary matching of spools of film from a given batch by sensitometric evaluation in the processing laboratories is not completely effective because of the random selection of samples from insufficiently uniform film together with considerable instability in the process of preparing the release prints. It is shown that without improvement in the methods of manufacture and quality control of the film it is not possible to obtain any essential improvement in its uniformity.—S.C.G.

**The influence of processing conditions on image quality in cinefluography** (in English), M. de Belder, *Rev. méd. internat. photo, cinéma et télévis.*, 4: 229-233, No. 4, 1966; *Ref. Zh., Fotokinetekhnika*, Abstract No. 7.46.227, 1966.

The influence of four types of developer on the degree of contrast, granularity, resolving power, and speed of four types of negative x-ray motion-picture films is discussed. The results are set out graphically, and the theoretical basis is considered.—S.C.G. (Abridged from *Ref. Zh., Fotokinetekhnika*.)

**The technical and economic efficiency of possible directions in the automation of the mass production of 35mm black-and-white film prints** (in Russian), B. V. Valuškii, N. D. Bernshtein, S. T. Burda, E. M. Khalimovich, and L. Kh. Rubashkin, *Tekhnika Kino i Telev.*, 10: 1-11, Sept. 1966.

The main systems which have been suggested for the automation of the mass production of motion-picture release prints are analyzed for their technical and economic efficiency. For simplicity the analysis has been confined to 35mm black-and-white film.—S.C.G.

**The lighting system of the KMTs -1 printer** (in Russian), M. G. Shamshtein, *Tekhnika Kino i Telev.*, 10: 43-45, May 1966.

The Soviet KMTs-1 is a printer for the mass printing of color and black-and-white motion-picture positives. Its lighting system is described.—S.C.G.

**Two new motion-picture processing machines**, R. Howard Cricks, Part I: **Lawley Unicon**, *Brit. Kinemat.*, 48: 270-274, No. 10, Oct. 1966.

The name "Lawley" is associated with the earliest researches into the continuous processing of motion-picture films, when H. V. Lawley was a colleague of Cecil Hepworth, and constructed his continuous processing machine, believed to be the first in the world. Lawley equipment manufactured today by Newman & Guardia— itself a company whose origins go back to the beginnings of our industry—is a direct descendant of this historic equipment.

**Driving gear of a motion-picture printing apparatus for frame-by-frame printing**, I. S. Golod, D. B. Abelev, B. L. Piotrovich and L. G. Tsifrinovich, 12.12.62. *Byulleten' Izobretenii* No. 24, 1965; *Tekhnika Kino i Telev.*, 10: 89, July 1966.

A driving mechanism consists of a motor connected with a shutter by means of the output shaft of a reduction gear, and contact units controlled by cams. In order to raise the accuracy of operation of the

mechanism and to increase the rate of frame-by-frame printing the cams are attached to the output shaft of the reduction gear and their contact units are joined up with the motor and a solenoid through a change-over switch connected with a device controlling the number of turns of the output shaft. The plunger of the solenoid is provided with a lever supported on the cam of the braking system of the motor shaft.—S.C.G. (Translated from *Tekhnika Kino i Telev.*)

### LENS SYSTEMS

**Universal wide-angle optical viewfinder for motion-picture cameras**, F. S. Novik and N. I. Khorueva, 11.18.1961; *Byulleten' Izobretenii*, No. 4, 1965; *Tekhnika Kino i Telev.*, 10: 92, July 1966.

A view-finder for motion-picture cameras is claimed consisting of a reversing prismatic system, an objective, a field lens and an ocular. In order to obtain a large angle of view (up to 80°) when the image is observed on a matte surface, the field lens of the finder is provided with two interchangeable wide-angle, afocal attachments with magnifications of 0.53 and 0.66. The negative component of the attachments consists of a single concavo-convex lens and a negative cemented lens, and the positive component is a plano-convex lens with an equal refractive index.—S.C.G. (Abridged from *Tekhnika Kino i Telev.*)

**Device for the simultaneous optical printing of combination frames**, Ya. S. Lisianskiĭ, B. K. Gorbachev and Yu. M. Britan, 4.25.1964; *Byulleten' Izobretenii*, No. 12, 1965; *Tekhnika Kino i Telev.*, 10: 91, July 1966.

Apparatus for the simultaneous optical printing of a combination frame from three images consists of a camera and three rear projectors. One of the rear projectors is placed on the optical axis of the objective of the taking camera and the other two are set at an angle to it. The projectors are fixed onto movable heads so that it is possible to displace them along their optical axes and to rotate them around the nodal points of their objectives. In front of each projector is placed a field lens directing the image through a block prism with semitransparent surfaces into the camera objective.—S.C.G. (Abridged from *Tekhnika Kino i Telev.*)

### MISCELLANEOUS APPARATUS

**Time-lapse apparatus from finished parts with electronic control for photomicrography** (in German), J. Bereiter-Hahn, *Forschungsfilm*, 5: 341-346, No. 4, 1965; *Ref. Zh., Fotokinetekhnika*, Abstract No. 6.46.264, 1966.

An account is given of the development of a device for the time-lapse cinematography of processes in the living cell with frame periodicities in the range 0.7 to 180 s. The operation of the device is based on the use of electronic time relays. In order to obtain a periodicity greater than 180 s a mechanical relay is substituted for one of the electronic relays.—S.C.G. (Abridged from *Ref. Zh., Fotokinetekhnika*.)

**Transistorized power packs for motion-picture cameras** (in Russian), B. V. Timo-



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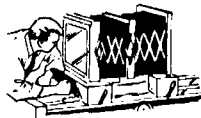
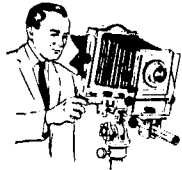
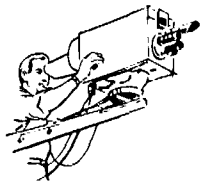
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fccv, T. M. Mal'yskov and Yu. M. Kurochkin, *Tekhnika Kino i Telev.*, 10: 67-71, Aug. 1966.

The transistorized circuits described provide light-weight power packs for use with portable motion-picture cameras driven by electric motors. They make use of dc voltage transformers to give the required voltage from low-voltage batteries.—S.C.G.

Device for time-lapse cinematography (in Russian), E. L. Okrushko, *Tekhnika Kino i Telev.*, 10: 65-67, Sept. 1966.

A timing device is described for attachment to a motion-picture camera to allow time-lapse cinematography.—S.C.G.

### MEDICAL PHOTOGRAPHY

The use of electron-optical image intensifiers for the cinemicrography of biological subjects (in Russian), M. Ya. Korn and M. M. Butslav, *Zh. Nauch. i Prikl. Fot. i Kinemat.*, 11: 172-175, 3 pl., No. 3. May-June 1966.

The strong lighting required in cinemicrography is often a disadvantage in biological research, as it may interfere with normal cellular activity. The difficulty can be overcome by making use of an image intensifier, and examples of pictures obtained by this method are reproduced. The method has, however, the disadvantages that color pictures cannot be obtained and that the cameras used require specially designed optics.—S.C.G.

Cinemicrographic system for high-speed photography of the circulation of the blood in the vessels of the lungs (in German), E. Heyse, *Forschungsfilm*, 5: 536-561, No. 4, 1965; *Ref. Zh., Fotokinetikhnika*, Abstract No. 6.46.265, 1966.

A report is given of an experiment in carrying out the high-speed cinematography of the flow of blood (in particular the erythrocytes) in the lungs of a rabbit. The arrangement of the 16mm Fastax camera and the lighting for the photography of the opened rabbit are described.—S.C.G. (Abridged from *Ref. Zh., Fotokinetikhnika*.)

### PHOTOGRAPHIC THEORY AND MATERIALS

New method of making Fresnel transforms with incoherent light, Gary Cochran, *J. Opt. Soc. Am.*, 56: 1513-1517, Nov. 1966.

A new method for recording Fresnel transformations of two- and three-dimensional scenes illuminated by spatially incoherent light is described. The technique is based on the properties of the triangular interferometer and the afocal optical system. Experimental results with one- and two-point objects have verified the basic principles of the method.

Method of photography and reproduction of multiple-pair stereoscopic images with a single-lens motion-picture camera, S. P. Ivanov, *Byulleten' Isobreteni'*, No. 10, 1965; *Tekhnika Kino i Telev.*, 10: 91, July 1966.

A method of taking and reproducing multiple-pair stereoscopic images uses single-lens motion-picture cameras moving in

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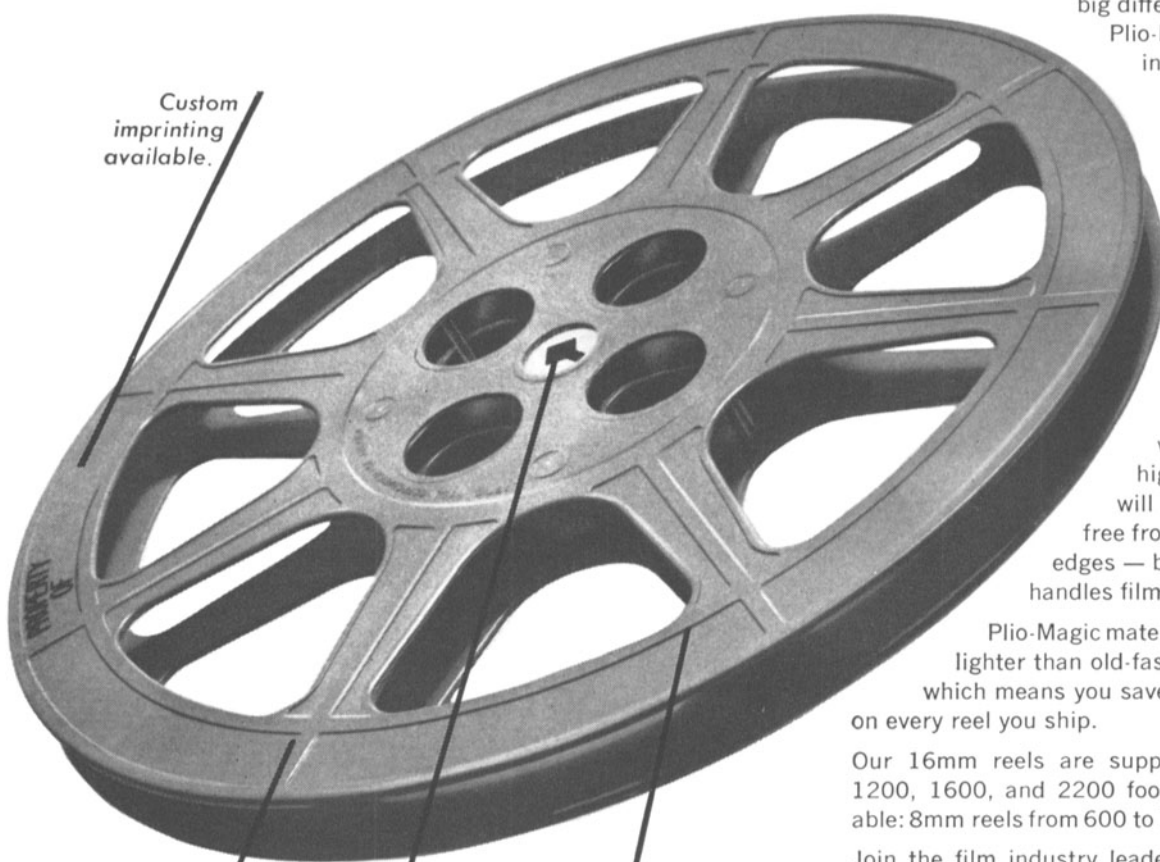
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an arc round the subject. In order to obtain a dynamic image, photography is carried out with a motion-picture camera, the film gate of which has been set horizontally. The rate of movement of the camera and the frame frequency are chosen such that the magnitude of the time parallax does not exceed twice the magnitude of the resolving power of the human eye. On reproducing multiple-pair stereoscopic images with multiple-lens projectors on stereo-screens with lenticular rasters, the direction of motion of the film must be opposite to that of the taking camera, and on reproduction on integral and confocal-linear screens the directions of these two motions coincide.—S.C.G. (Translated from *Tekhnika Kino i Telev.*)

**Fresnel-transform representation of holograms and hologram classification**, John T. Winthrop and C. R. Worthington, *J. Opt. Soc. Am.*, 56: 1362-1368, Oct. 1966.

The transmittance of a hologram is described in terms of Fresnel transformation. This description facilitates the establishment of requirements for the hologram-recording material and it leads naturally to a classification of holograms made from plane transmitting objects illuminated by a point source. Four subtypes are singled out: the Fresnel-transform hologram, geometrical shadowgram, quasi-Fourier-transform hologram, and Fourier-transform hologram. The type of hologram produced depends on the spatial-frequency content and overall dimension of the object. Carrier-frequency and film requirements vary with the type of hologram. Experimental arrangements with and without lenses are briefly described.

**An objective method for the measurement of perceived magnitudes** (in Russian), S. M. Kozlovskii. *Novye issledovaniya v pedagogicheskikh naukakh*, 111-118, No. 5, 1965; *Tekhnika Kino i Telev.*, 10: 82, May 1966.

For the study of a number of problems in motion-picture and television technology, and in particular problems of image quality, it is important to work out a method of measuring the visual evaluation of the parameters of a motion-picture or television image (sharpness, contrast, geometrical distortion, etc.). The threshold method of measurement of perceived magnitudes used hitherto by foreign (L. Jones, M. Abribat and others) and Soviet (M. V. Antipin, E. L. Orlovskii, A. P. Sorenzon and others) authors cannot give positive results owing to its inherent defects: the lack of additivity of magnitudes at and above the threshold, the wide variability of the differential thresholds of sensation, etc.

A method of solving these problems is proposed by way of reducing the perceived magnitudes to a system of objective equivalents. The experimental data obtained by this method show small dispersion and good reproducibility of observational results.

The objective method allows the use of mathematical methods of studying the process of image perception, and it can be used for ascertaining the presence and form of the functional relation between the calculated results and the visual evaluation, for the control of an instrumental method of evaluation, for the determination of the

permissible values of distortion in the image-transmitting system, etc.—S.C.G. (Translated from *Tekhnika Kino i Telev.*)

**Optical coding in the reproduction of the image in television and photography** (in Russian), S. B. Gurevich and V. A. Rabinovich, *Tekhnika. Kino. i Telev.*, 10: 38-44, July 1966.

Optical coding is the transformation of an input image into a form which will pass through a system, photographic or television, with the minimum possible loss of useful information. It consists of two functions: the separation of the useful information out of the input image, and putting it into a form (continuous or discrete) in which it will be transmitted through all subsequent stages of the system without further loss of information. Methods of analyzing and coding images are discussed, with emphasis on fiber optical systems, and the problem of estimation of the efficiency of an optical coding system is considered—S.C.G.

**PROJECTORS (and PROJECTION)**

**Daylight projection screen** (in German), K. L. *Ind. Anz.*, 88: 219-220, No. 12, 1966; *Ref. Zh.*, *Fotokinetekhnika*, Abstract No. 6.46.252, 1966.

A screen consists of two folding flaps set at an angle of 45° one to the other. One flap is a plane mirror, and the other is covered with a transparent film of artificial material. The light flux of a projector set parallel with the projection plane is directed with the aid of the mirror flap onto the flap with the transparent sheet. Owing to the small distance between the two flaps light scattering is insignificant, thus allowing the exhibition of films and slides in an illuminated position. The screen is marketed in dimensions of 640 × 640 and 300 × 300 mm.—S.C.G. (Translated from the Russian abstract.)

**SOUND RECORDING AND REPRODUCTION**

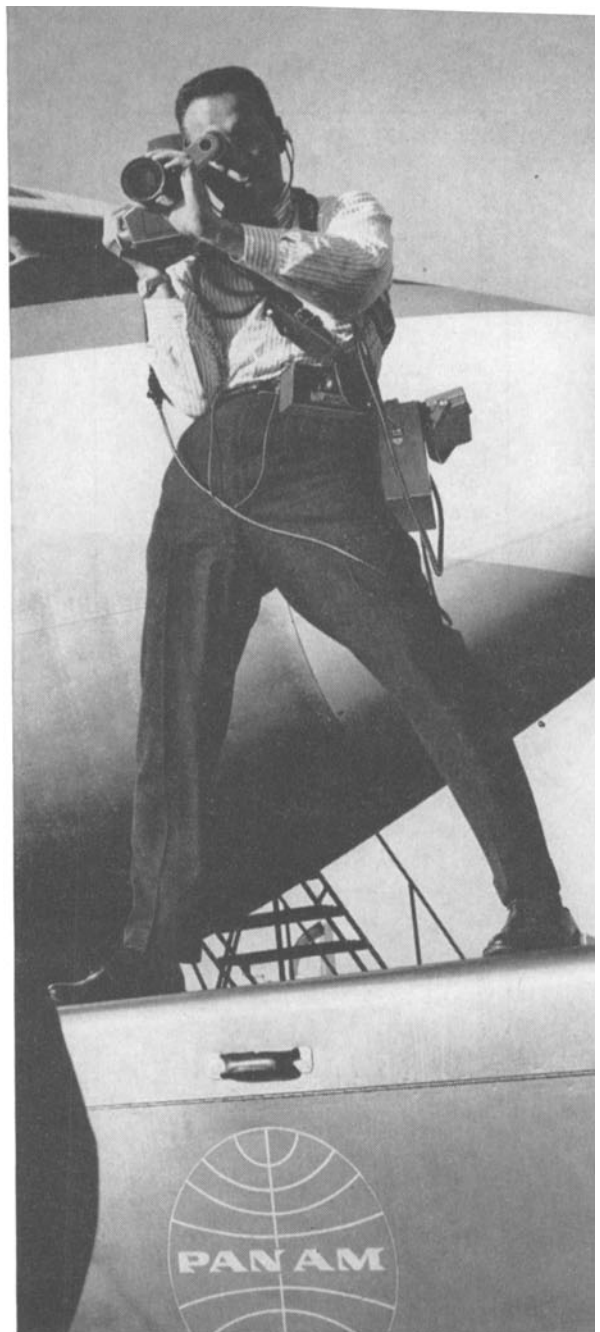
**Evaluation of the quality of sound recordings on motion-picture films** (in Russian), L. S. Trakhtenberg, *Tekhnika Kino. i Telev.*, 10: 10-13, July 1966.

Criteria are given for the subjective evaluation of sound quality during the production of motion-picture films, which are common for the majority of listeners. An analysis is made of the sound sensations produced by different distortions in the sound reproduction channel, and also defects in pronunciation in front of the microphone, which influence the technical quality of the sound on the film.—S.C.G. (Translation of author's abstract.)

**TELEVISION**

**Television aids to motion-picture film making—The Livingston Add-a-Vision and EFS systems**, G. E. Hayden-Pigg, *Brit. Kinemat.*, 48: 140-151, May 1966.

The Add-a-Vision system allows members of the production team to see on T.V. monitor screens the image which is being taken on film by the camera. Mitchell BNC cameras are modified by the incorporation of an Angenieux zoom lens with a beam-



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**Color television transmission systems,** F. W. de Vrijer, *Philips Tech. Rev.*, 27: 32-46, No. 2, 1966.

Few will dispute the economic and technical usefulness of standardization. Indeed, at the present time, considerable efforts are being made to bring about a degree of orderliness in the variety of measures, parameters, definitions, symbols, etc., that have grown unchecked in many branches of technology. International standardization is, in fact, absolutely essential as a preliminary to new developments that are only just under way, especially where huge investments are involved, as is now the case with color television in Europe. It is to be hoped that, in the imminent decision in the struggle between the rival systems, the need for uniformity will prevail. In this article, the author attempts to set out as objectively and as clearly as possible the questions under discussion.

**The measurement of raster distortions on the kinescope screen.** (in Russian), A. Ya. Khesin and A. A. Kurmit, *Tekhnika Kino i Telev.*, 10: 17-22, Apr. 1966.

A method of calculation is described for determining the errors in the measurement of distortions of the television screen due to the influence of the curvature of the screen when photographic and projection, and also automatic, methods are used.

Corrections are also required when direct measurements are made on the screen with a ruler.—S.G.C.

**The 1964 B.R.E.M.A. color television home viewing tests,** R. N. Jackson, K. E. Johnson and B. J. Rogers, *Radio and Electronic Engineer*, 32: 79-92, No. 2, Aug. 1966.

During the summer and autumn of 1964 the British Radio Equipment Manufacturers Association (B.R.E.M.A.) carried out extensive tests of N.T.S.C. color television receivers, to assess their performance under typical domestic operating conditions. This paper describes the organization of these tests and records the results obtained. It was found, somewhat unexpectedly, that the viewers found the (U.H.F.) tuning controls easy to use and this may be regarded as very satisfactory since the quality of the picture obtained was good.

**Ultimate sensitivity of space-camera imaging devices with particular reference to the slow-scan vidicon,** Leonard R. Malling, *J. SPIE*, 4: 272-276, No. 6, Aug./Sept. 1966.

The sensitivity of differing space photographic imaging concepts is compared in terms of the photo-electron population of the discrete picture element. The velocity of the scanning beam is included for storage surfaces. The photon population has been photometrically established for blackbody temperatures of interest. The method is il-

lustrated for a slow-scan vidicon for which the quantum efficiency is shown to be  $\eta = 0.4$ .

**Television in Eastern Europe and the Soviet Union,** Joseph Roizen, *J. Telev. Soc.*, 17: 136-141, No. 6, April-June 1966.

Due to financial and other factors television has not progressed in Eastern Europe with the same rapidity that is evident in Western Europe and other parts of the world. Considerable efforts are now being made to overcome this lag and in this article the author describes, from firsthand experience, the present state and rate of progress.

**New phosphors for color television,** A. Brill and W. L. Wanmaker, *Philips Tech. Rev.*, 27: 22-27, No. 1, 1966.

Until recently, the phosphor most commonly used for "red" in color television tubes has been a sulphide phosphor. The location of the color co-ordinates has proved very satisfactory, but its light output leaves something to be desired. In the Philips laboratories at Eindhoven it has been found that red phosphors of very high efficiency can be made by activating suitable substances with trivalent ions of certain rare-earth metals. The best results have so far been obtained with phosphors activated with europium. Europium phosphors have already found fairly wide application.

**Television lighting and the conversion from monochrome to color,** Charles J. Neenan, *J. IES*, 47: 514-525, Aug. 1966.

It is intended that this paper should serve as a guide for those involved in the conversion of television studio lighting from monochrome to color operation. Although the basic production lighting techniques are essentially the same for both, lighting levels required for color are substantially greater.

These higher lighting levels lead to increases in both power and air-conditioning needs. Further, in order to achieve the higher levels, higher wattage luminaires are required, which, in turn, results in higher necessary dimmer and outlet capacity.

In addition to these obvious requirements, light sources and control systems, together with studio grid and hanging systems, are discussed. It is imperative that all of these interrelated factors are evaluated both individually and collectively in order to ensure adequate operating facilities at a reasonable cost.

**Long relay chains for television signals,** Bruno John Vieri, *J. Telev. Soc.*, 17: 146-153, No. 7, Autumn, 1966.

A discussion of communication, regarded as a process of selection, introduces a review of long relay chains for television signals. Factors which affect their performance are listed and random noise is chosen for particular attention. Some measurements of the noise in long links in Europe are reported and the communication capacity of the channels is estimated. There follows a short survey of methods for using available channels more efficiently, but it is concluded that, although some of the present techniques could provide real economies in channel requirements, the slight degradation of picture quality and the high cost restrict their usefulness.

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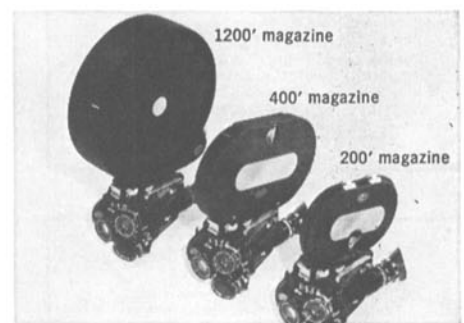
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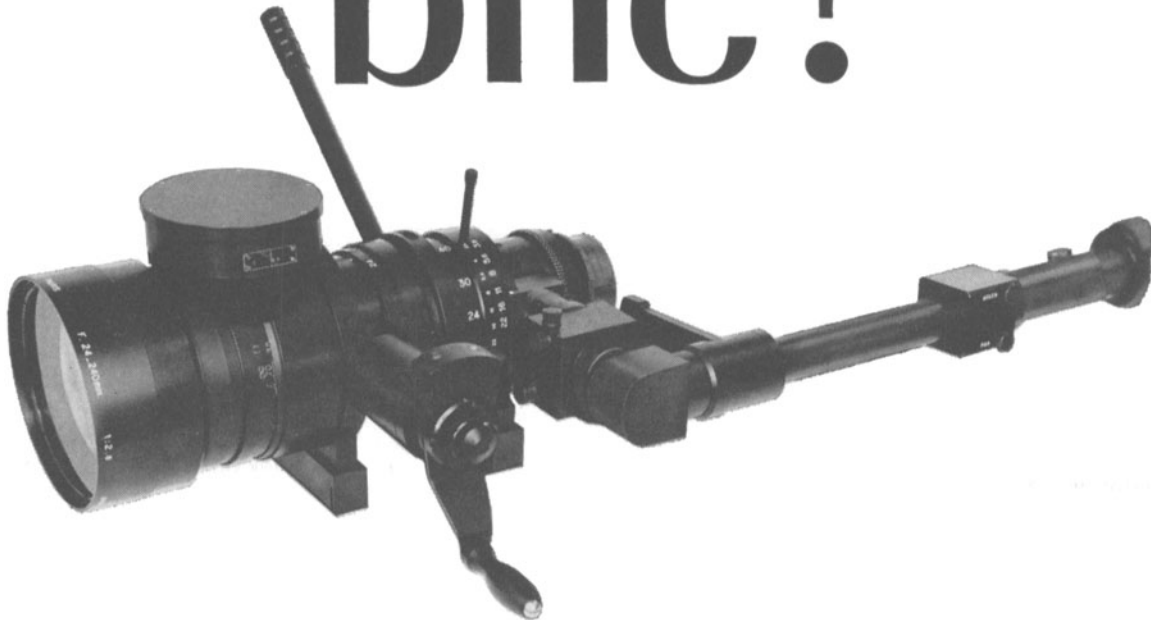
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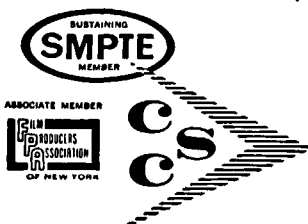


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