Abstracts

Abstracts from other Journals, chosen for importance and timeliness, are published in the *Journal* from time to time. The greater number of these abstracts are translations, chiefly from the U.S.S.R., and made available by the *Kodak Monthly Abstract Bulletin*

The subject areas are grouped below

- Cameras and Equipment (Except High Speed)
- Color Photography and Color Development
- Film and Its Properties
- Film Processing Apparatus and Chemicals
- High-Speed Photography and Instrumentation
- Printing and Optics
- Projection
- Sensitometry and Image Structure
- Television
- Videotape

CAMERAS AND EQUIPMENT (Except High Speed)

Discussion on Contemporary Forms of Cinematography and Possibilities in Their Development (In Russian), *Tekh. Kino i Televideniya, 4:* 86–94, September 1960.

Papers presented at a two-day discussion held in Leningrad in May, 1960, are summarized. The subjects covered were the various systems of panoramic, wide-screen, and wide-format cinematography and their application under the conditions of the Soviet industry. There was general agreement on a number of points including the following:

The most promising of the new forms is a system using wide-gage (70mm) film. The rapid development of other forms of cinematography does not decrease the importance of normal 35mm cinematography (in both color and black-and-white) which will remain the basic form for mass distribution for some time to come. The most successful of the wide-screen systems at the present stage of development is that using anamorphic images on 35 mm film. Concentration on the scientific and technical aspects of the new forms of cinematography has in the past deflected attention from the solution of the problems arising in the improvement of the quality of the 35mm and wide-screen cinematography at present in use. It is necessary to pursue these lines and also to concentrate on the elaboration and manufacture of all types of equipment and apparatus required by the new systems. More extensive work must be carried out on the exhibition of films, i. e., such problems as viewing conditions, type of screen and angle of viewing.

Finally, it was decided that steps should be taken to improve the collaboration between workers in different sections of the industry.—S.C.G.

New Motion-Picture Techniques (in Russian), I. B. Gordiĭchuk, *Tekh. Kino i Televideniya, 4:* 1–10, Sept. 1960.

A review is given of new forms of motion-picture apparatus and techniques whose design was finished in the Soviet Union during the years 1959 and 1960. A number of motion-picture cameras are described for ordinary cinematography, for use with 70mm film and for wide-screen and panoramic cinematography. A range of new lenses includes some for use with ordinary 35- and 16mm cameras, and also special lenses for use with wide-format films and for wide-screen cinematography. Other apparatus for the film technician includes a television viewfinder which allows the scene being filmed to be viewed simultaneously on several screens, a versatile camera crane, a single-frame projector for wide-format films for use in special-effects work, a double-exposure device and an optical printing machine.—S.C.G.

Cinematographic Systems of the Future (in Russian), E. M. Goldovskiĭ, *Tekh. Kino i Televideniya, 4:* 9–19, June 1960.

Consideration is given to the state of development in the new system of cinematography in the Soviet Union and abroad, and paths of investigation for the foundation of perfect systems of photography for the future are indicated. An attempt is made to work out the most important parameters in a cinematograph performance, and the difference between that and a cinematograph "attraction" is set out. For discussion, the question of an intermediate system of cinematography for the future is proposed, together with ways by which it could be brought about.—S.C.G. (Translation of Author's Abstract)

The Photography of Dynamic Background Sets (in Russian), Ya. L. Leĭbov, *Tekh. Kino i Televideniya, 4:* 74–75, June 1960.

In the photography of background studio sets in which motion occurs, great care is

required to make the final picture look natural. The geometry of the situation is discussed and recommendations are made for filming this kind of set.—S.C.G.

The Choice of the Optimal Parameters in Stereocinematography (in Russian), A. N. Shatskaya, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 195–206, No. 3, May–June 1960.

Adherence to the physiological criterion—the zone of stereoscopic depth—is the most important factor in stereocinematography, determining a good stereo effect and stereo vision without strain. The optical base for photography must be chosen so as to maintain the zone of stereoscopic depth. Two formulas are derived which fulfill this condition. The position of the footlight plane (i.e., the apparent plane in the stereoscopic picture which appears to coincide with the plane of the screen) during exposure can be conveniently determined, starting from the distribution of important objects in the subject field and dividing the overall difference in horizontal parallax into two. Two formulas are derived to allow the calculation of the distance of such a footlight plane.—S.C.G. (Adapted from Author's Abstract)

Soviet Books on Photography, Cinematography and Related Fields of Knowledge in 1959 (in Russian), *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 239–240, No. 3, May–June 1960.

A bibliography of books produced in Russia during 1959 is given. It is the first of a series of periodic bibliographies.—S.C.G.

The Problems Arising in the Development of Stereoscopic Cinematography (in Russian), B. T. Ivanov, *Tekh. Kino i Televideniya, 4:* 1–9, July 1960.

The author, a pioneer of Soviet stereoscopic cinematography, asserts his conviction that wide-screen and panoramic systems do not give a sufficiently natural representation of three-dimensional scenes, and gives his views on the future of true stereoscopic cinematography.—S.C.G.

COLOR PHOTOGRAPHY AND COLOR DEVELOPMENT

A Printer for the Additive Printing of Color Films (in Russian), M. G. Shamshteĭn, B V. Valuĭskiĭ, A. K. Feĭst, S. N. Podlesnykh and R. U. Rud', *Tekh. Kino i Televideniya, 4:* 12–20, Aug. 1960.

A description is given of the UKA-T's color printer which has been designed by the NIKFI Research Laboratories in conjunction with the Moscow film-printing laboratories. The principle of the optical system is well known, the light being passed through three-color additive filters and then through a matte consisting of a strip of film in which are punched sets of holes to regulate the amount of red, blue and green light for each scene, and a similar strip of film at right angles to adjust the light for the color balance of the positive material, before being recombined at the film gate. The choice of filters and the illumination of the printing gate are discussed, and the matte-transport mechanism is described in some detail. In addition, a small device for preparing the mattes and backing filter strips is described—S.C.G.

Elimination of Errors in the Internal Masking of Color Multilayer Films (in Russian), Yu. B. Vilenskiĭ, Chen' Kuan-Min, L. F. Patrikeeva and E. I. Tul'chinskaya. *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 183–186, No. 3, May–June 1960.

The unwanted absorption of a dye used for color photography should be independent of the wanted absorption. When the wanted absorption of a dye is plotted against the unwanted absorption, full correction is represented by a straight line parallel to the axis of the wanted absorption. In practice, the relation is frequently a curve, owing to insufficient correction at low wanted densities and overcorrection at high wanted densities. Such distortion in masking occurs when correction is made by a mixture of masking and nonmasking couplers in a single layer and is due to their different reactivities. Full color correction can be obtained by putting the masking and nonmasking couplers into separate layers of emulsion, the sensitivities of which differ in such a way as to offset the difference in reactivities of the dyes.—S.C.G.

Study of the Kinetics of Development of Color Positive Film at Different Temperatures (in Russian), N. I. Kirillov and L. P. Lysenko, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 4:* No. 2, 84–89, Mar.-Apr. 1960.

Although manufacturers give directions for processing their film, batch-to-batch variations are sufficiently large to require modifications of the processing conditions in order to obtain standard sensitometric properties. The effect of such modifications has been studied for Agfa Type-5 color positive film. In addition to the processing temperatures, the concentration of the developing agent and the time of development were varied and their effects on the gamma and speed of the layers were studied. The effect of a preliminary hardening of the film for development was also studied. The data obtained form a basis for the modification of the color processing in order to obtain a constant speed and gamma.—S. C. G.

FILM AND ITS PROPERTIES

The Tension of Motion-Picture Films Caused by Friction in Photographic Solutions (in Russian), I. S. Golod, *Tekh. Kino i Televideniya, 4:* 39–40, Sept. 1960.

A mathematical analysis is made of the tension arising in a motion-picture film due to the drag of the liquid on passing through the tanks of solution in a developing machine. It is concluded that the tension in a normal- or narrow-gage film, passing through photographic solutions with lamina flow, in an average processing machine working at the rate of 2000 to 2500 m/hr, is 12 to 15 g. This has only a small influence on the total tension and corresponds to about 5% of the tension due to the drag of the film-carrying rollers. With turbulent flow, the viscous drag of the solution may reach 120–150 g, or 40–50% of the tension due to the drag of the rollers.—S.C.G.

The Standardization of Motion-Picture Film Stock, Apparatus Elements and Developed Films for Wide-Gage Cinematography (in Russian), *Tekh. Kino i Televideniya, 4:* 68–69, Sept. 1960.

On Sept. 1, 1960, the following departmental standards, covering various aspects of 70mm motion-picture film and apparatus, came into force in the Soviet Union: NORM-KINO 2-60, 22-60, 23-60, 24-60, 25-60 and 27-60. The chief recommendations of these standards are summarized.—S.C.G.

FILM PROCESSING APPARATUS AND CHEMICALS

The Improvement of the Properties of Motion-Picture Films and Their Processing (in Russian), N. G. Trofimenko, S. E. Tikhonovich and B. A. Zaborovskii; Ya. A. Mikheev and M. F. Tokarev; and E. A. Rudman, *Tekh. Kino i Televideniya, 4:* 41–45, Sept. 1960.

In an article having the same title, E. A. Iofis (*Tekh. Kino i Televideniya, 4:* 33, Jan. 1960) discussed a number of problems affecting workers in the Soviet motion-picture industry. Further additions to the discussion are presented. The first three authors of the present paper draw attention to the lack of up-to-date equipment and suggest a number of improvements as an immediate short-term program. The next two authors point out that the large-scale automatization envisaged by Iofis is not applicable in a number of smaller studios. Desires for improvement in motion-picture studios and processing laboratories are also set forth by the last author.—S.C.G.

Influence of the Concentration of Developing Agents on Rapid Development. II. Study of the Hydroquinone Developer (in Russian), V. A. Veĭdenbakh and P. I. Levina, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 241–246, July-Aug. 1960.

In Part I (*Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 20, 1960), the action of Metol was found to be not completely explicable by the electrochemical theory of development. It seemed possible that this was because the uncharged amino groups were capable of penetrating the charge barrier and adsorbing onto the silver halide surface. Experiments have now been carried out with hydroquinone, which possesses two negatively charged groups in the para positions. The results

obtained differ significantly from those with Metol. The differences are shown in the form of the density vs. log-concentration curves for the developing agents, and by the restraining action of potassium bromide on the hydroquinone. There was no difference in the mechanism of fog formation with the two developers.—S.C.G.

Machine for Removing the Emulsion Layer from Film Copies (in Russian), V. Mishchenko, *Kinomekhanik*, 38–40, Mar. 1960.

The machine described is intended for the mechanical removal of the emulsion layer from unwanted film prints in order to provide a clean base for use as a leader strip. The machine can be used for 35- and 16mm prints and is intended for use at film-distribution centers—S.C.G.

HIGH-SPEED PHOTOGRAPHY AND INSTRUMENTATION

Testing of Photographic Shutters by Slit Photography and Some Points in the Operation of Between-the-Lens Shutters (in Russian), (Translated from *Tekh. Kino i Televideniya.*) E. T. Dubatovko, *Optiko-Mekhan. Prom.*, No. 1, 23-60, 1960; *Tekh. Kino i Televideniya, 4:* 81, Sept. 1960.

Methods are described for determining the characteristics of photographic shutters with the aid of a drum camera with a slit, and some points in the operation of between-lens shutters are discussed.

Consideration is given to the following problems: the determination of the dimensions of bundles of rays leaving the objective and falling on different points of the image plane; the determination of the characteristics of blind shutters with peripheral action; the determination of the characteristics of disk shutters with peripheral action; points in the operation of between-the-lens shutters and problems of the determination of their characteristics: and the determination of the characteristics of "Venetian-blind" shutters.—S.C.G.

Apparatus for High-Speed Cinematography (in Russian), (Translated from *Tekh. Kino i Televideniya.*) *Informatsionnyi Sbornik NIKFI*, No. 3, 11–16, 1960; *Tekh. Kino i Televideniya, 4:* 78, Sept. 1960.

Technical data are given for Soviet-produced high-speed motion-picture cameras, flashlight sources and auxiliary apparatus used in high-speed cinematography, and for analyzers for 16- and 35mm motion-picture films. Information is given on the basic types of Soviet-produced black-and-white and color films and on high-speed motion-picture cameras imported from the German Democratic Republic.—S.C.G.

Proceedings of a Conference on High-Speed Photography and Cinematography Leningrad, November 12–15, 1957 (in Russian), *Uspekhi Nauch. Fotografii, 6:* 1–223 (whole issue), 1959.

Individual papers presented at the conference have been abstracted separately.—S.C.G.

Terminology in the Field of High-Speed Photography and Cinematography (in Russian), A. A. Sakharov, *Uspekhi Nauch. Fotografii, 6:* 218–220, 1959.

Suggestions are made for the compilation of a glossary of accepted terms used in high-speed photography and cinematography for Russian use. Tables are given attempting a classification of the methods of high-speed photography and of the types of image obtained.—S.C.G.

The SFR High-Speed Streak Camera (in Russian), V. B. Likorenko, *Uspekhi Nauch. Fotografii, 6:* 130–138, 1959.

The SFR camera, in regular production in the Soviet Union, consists of a motion-picture camera with interchangeable parts so that it can be used either as a streak camera giving continuous scanning of the process under study with a time resolution of up to 10^{-8} sec (with an image-scanning speed on the film of up to 3750 m/sec), or as a high-speed motion-picture camera giving a sequence of photographs with a taking frequency of up to 2.5×10^{16} sec (with a mirror rotating at the rate of 75,000 rpm).—S.C.G.

Extending the Operational Possibilities of the SKS-1 Motion-Picture Camera (in Russian), S. V. Ryllo, *Uspekhi Nauch. Fotografii, 6:* 141–144, 1959.

The SKS-1 camera, widely used in the Soviet Union, is a high-speed motion-picture camera taking 150–4000 pictures/sec on 16mm film. Modifications have been made in order to increase the taking speed. The voltage across the motor is increased during running by means of a mechanically operated autotransformer, and the four-sided reflecting block is

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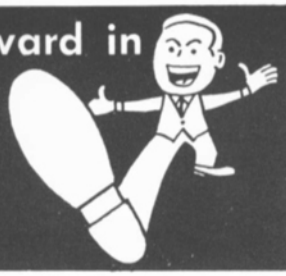

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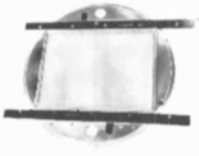

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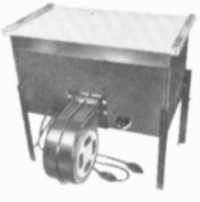

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replaced with one having eight sides.—S.C.G.

Optical Accelerators and a New Design of High-Speed Motion-Picture Camera (in Russian), L. A. Samurov, *Uspekhi Nauch. Fotografii, 6:* 121–130, 1959.

The accelerators described, which are intended for increasing the rate of angular rotation of a beam of light, consist essentially of a number of mirrors rotating on a common axis with a number of stationary mirror elements, circular in form, grouped around the axis of the mirrors in such a way that multiple reflections are obtained. Such a system makes it possible to obtain a very high writing speed without approaching speeds of rotation of the mechanical parts dangerously close to destruction. A high-speed camera based on these principles has been designed.—S.C.G.

Some Problems in the Theory of Mirror Scanning (in Russian), A. S. Dubovik, *Uspekhi Nauch. Fotografii, 6:* 102–112, 1959.

The mode of action of a number of rotating-mirror systems is analyzed. The topics discussed are mirror scanning in streak cameras and high-speed motion-picture cameras, a rotating-mirror device to compensate for film movement and multiple reflection systems of the type described by Shnirman (G. L. Shnirman, *Uspekhi Nauch. Fotografii, 6:* 93, 1959).—S.C.G.

Some Problems in the Development of High-Speed Motion-Picture Cameras and Photochronographs with Mirror Scanning (in Russian), G. L. Shnirman, *Uspekhi Nauch. Fotografii, 6:* 93–101, 1959.

An analysis is made of the action of high-speed cameras with rotating mirrors. It is shown that increase in the length of the optical lever does not increase the time resolution, but a shorter optical lever can give lower resolution in practice with a real optical system. Time resolution is independent of dimensions of the mirror, but depends on the rate of rotation, which, in turn, is determined by the shape and mechanical properties. The case in which a number of intermediate focusing lenses are used in front of the sensitive material is also discussed. A device for increasing the speed of rotation of the light lever consists of two inclined mirrors rotating on parallel axes in opposite directions, the light being subjected to multiple reflections in the wedge-shaped gap between them. A camera using this device has been used in the Institute of Chemical Physics of the Academy of Sciences of the Soviet Union, and operates at a speed of 6 million frames/sec with a frame diameter of 12 mm, and up to 33 million frames/sec with a diameter of 5 mm. For recording a series of images of a rapidly occurring, self-luminous event, a combination of a four-sided rotating mirror with a drum carrying photographic material is used, which is described.—S.C.G.

Use of Electronic Elements in Apparatus for High-Speed Photography (in Russian) P. V. Kevlishvili, *Uspekhi Nauch. Fotografii, 6:* 91–92, 1959.

Brief mentions are made of the different ways in which electronic apparatus can be used in high-speed photography. These include synchronizing devices, shutters, measuring devices, control devices, timing devices and image-converter tubes.—S.C.G.

A Small Turbine Motor for High-Speed Streak Cameras (in Russian), S. N. Sidorov, *Uspekhi Nauch. Fotografii, 6:* 116–120, 1959.

On the basis of results obtained from testing turbine motors, it is possible to recommend the construction of a small, axial turbine motor for rotating a mirror with dimensions of 6 by 15 by 28 mm, with a frequency of 240,000/min, in photochronography or high-speed motion-picture cameras.—S.C.G. (Translation of Author's Abstract.)

An Electrical Circuit for High-Speed Framewise Photography or Flash Discharges with the Aid of Image-Converter Tubes (in Russian), V. A. Simonov and G. B. Kutukov, *Uspekhi Nauch. Fotografii, 6:* 90, 1959.

Spark Equipment for High-Speed Photography on Stationary Film (In Russian), A. I. Salischev, *Uspekhi Nauch. Fotografii, 6:* 155–171, 1959.

Apparatus for spark photography is described that is capable of taking twelve

pictures at the rate of 400,000 and 137,000/sec, at 0.24 natural size, the diameter of the object field being 110 mm. The apparatus consists of a bank of spark gaps operated in rapid succession by an electrical circuit, and a bank of objectives, each objective corresponding to one discharge gap. An optical system directs the light from each spark gap onto the object being photographed and thence to the appropriate objective.

A second spark apparatus takes thirteen consecutive pictures at the rate of 150,000/sec at 0.1 natural size, the diameter of the object field being 142 mm. This apparatus uses only two lenses, the light from each spark gap being formed into a beam by a single condenser and reflected by a mirror system (with a separate mirror for each spark gap) to the object being photographed; another system directs the light from the object by a similar set of mirrors through a common objective to the appropriate positions on a stationary film. A number of high-speed silhouette photographs taken by these two pieces of apparatus are reproduced.—S.C.G.

A Study of the Process of Cutting Metals by the Method of High-Speed Cinemicrography (in Russian), C. P. Tambovtsev, *Uspekhi Nauch. Fotografii, 6:* 174, 1959.

High-speed cinemicrography has been used to study a number of aspects of metal-cutting. The results of these investigations were reported in a lecture, a brief summary of which is presented.—S.C.G.

Use of High-Speed Cinematography for the Study of the Machining of Parts of Precision Apparatus (in Russian), N. I. Ryendenkov, *Uspekhi Nauch. Fotografii, 6:* 173, 1959.

A brief note summarizes a lecture at which a high-speed apparatus was demonstrated for studying the machining of parts of precision apparatus.—S.C.G.

Apparatus with Electronic-Flash Sources (in Russian), K. E. Monakhov, *Uspekhi Nauch. Fotografii, 6:* 200, 1959.

A brief report is given of a lecture and demonstration covering apparatus for the observation and photography of the flow of gas in aerodynamic tubes, and for the study of working machinery by stroboscopy.—S.C.G.

Use of High-Speed Cinematography with Electronic-Flash Sources in the Study of Aerodynamics and Rigidity of Rotating Elements in Aircraft Construction (in Russian), A. I. Khokhlov, *Uspekhi Nauch. Fotografii, 6:* 201–202, 1959.

A brief summary is given of a lecture. The characteristics of electronic-flash sources and of the Askania type of high-speed camera are outlined and the investigations in which they have been used are listed.—S.C.G.

A Study of the Free Flight of Grains by the Method of High-Speed Cinematography (in Russian), A. A. Kukibnyĭ, *Uspekhi Nauch. Fotografii, 6:* 202–205, 1959.

In a number of industrial processes, a granular material is projected for a distance through the air. The trajectories of such granular materials have been studied by means of high-speed cinematography of the grains against a reference network of horizontal and vertical strings.—S.C.G.

High-Speed Cinematography of a Flash Discharge in a Liquid Dielectric Medium with the Aid of the SKS-1 and SFR Cameras and Also with X-Rays, for the Study of the Dynamics of the Electro-Erosion of Metals (in Russian), V. N. Zolotykh and A. I. Kruglov, *Uspekhi Nauch. Fotografii, 6:* 185–192, 1959.

The photography of electro-erosion processes in light is difficult because the brightness of the discharge channel makes observation difficult. For this reason, high-speed studies with flash x-ray discharges were made in addition to those with ordinary electronic flash. The SKS-1 camera was used for frame frequencies up to 5000/sec and SFR-2M camera for frequencies above 40,000/sec. The electrical circuits used are described and the data obtained on electro-erosion are discussed.—S.C.G.

Study of the Mechanism of the Destruction of Rods Under the Action of a Shock Wave with the Aid of High-Speed Cinematography (in Russian), A. N. Khanukaev, *Uspekhi Nauch. Fotografii, 6:* 180–182, 1959.

In a study of rock-blasting methods, transparent plastic rods were used as models. A detonating charge was placed at the end and exploded, and the effect of the shock wave was studied by cinematography with an FP-22 camera operating at the frame speed of 98,600/sec. Results obtained at the frequency are discussed, and it is concluded that for further work a frequency of 0.5–2.5 $\times$ 10^6/sec is required.—S.C.G.

Some Results of an Investigation of Hydraulic Excavator Jets by Means of High-Speed Cinematography (in Russian) L. P. Severin, *Uspekhi Nauch. Fotografii, 6:* 183–184, 1959.

Study of Surface Boiling with the Aid of High-Speed Cinematography (in Russian), G. C. Treshchev, *Uspekhi Nauch. Fotografii, 6:* 213, 1959.

An abstract only of the original lecture is given.—S.C.G.

An Experimental Study of the Entry of a Body Into Water (in Russian), A. M. Rushaĭlo, *Uspekhi Nauch. Fotografii, 6:* 207–210, 1959.

Results obtained by high-speed cinematography are discussed.—S.C.G.

Use of High-Speed Cinematography for Studying the Process of Mechanization of Tea-Picking (in Russian), L. I. Markarov, *Uspekhi Nauch. Fotografii, 6:* 206, 1959.

An abstract only of the original lecture is given.—S.C.G.

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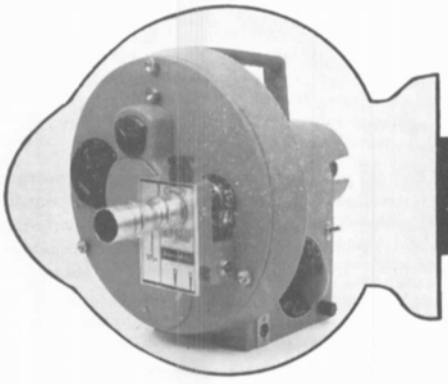
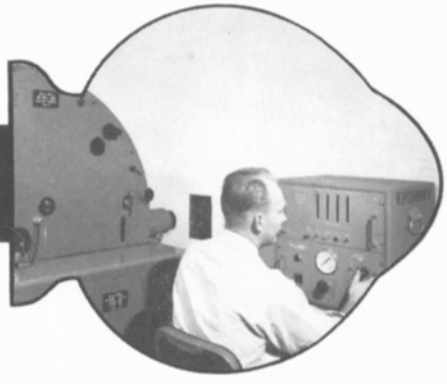


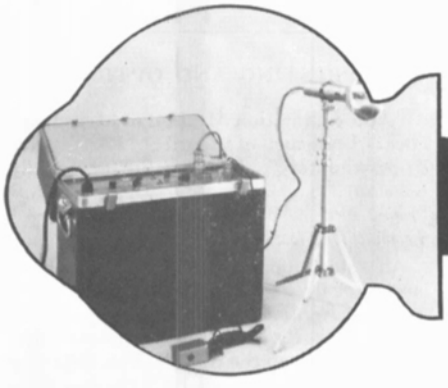
Dynafax Continuous-Writing Framing Camera

For object speeds from 100 to 2,000 meters per second at 0.1 magnification. No synchronization necessary. Produces 224 16-mm frames on 35-mm film. Rates, 200 to 26,000 pps.

Model 189 Synchronized Framing Camera



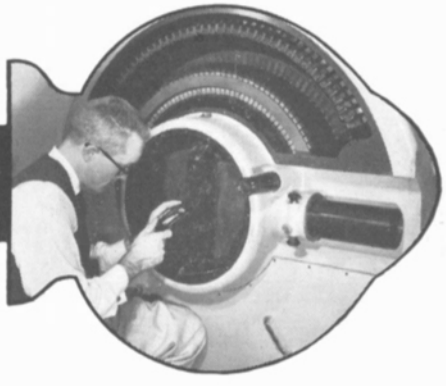
For object speeds from 500 to 25,000 meters per second at 0.1 magnification. Twenty-five 35-mm frames. Rate, to 4.3 million per second.



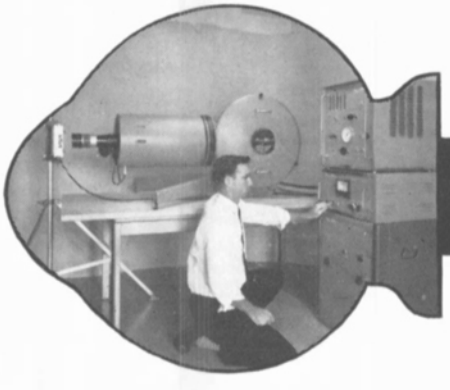
Model 357 Electronic Flash Unit

One-million beam candlepower of cold light in square pulses provides uniform illumination of high-speed sequences over adjustable time ranges of 8.6, 11.15, 14.85, and 22.35 milliseconds.

Model 192 Continuous-Writing Framing Camera



For object speeds from 1,000 to 13,000 meters per second at 0.1 magnification. No synchronization necessary. Eighty 35-mm frames. Rates to 1.4 million per second.



Model 339 Continuous-Writing Streak Camera

New camera produces uninterrupted streak image on 50-in strip of 35-mm film. Incorporating a 2600-rps distortionless beryllium mirror, unit has writing rates to 9-mm per microsecond with writing time 145 microsec.

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Use of High-Speed Cinematography for the Study of Processes Occurring in an Acoustic Field in a Liquid (in Russian), L. O. Makarov, *Uspekhi Nauch. Fotografii, 6:* 211, 1959.

An abstract only is given of a lecture on results of cavitation and other process obtained by means of high-speed cinematography.—S.C.G.

Use of High-Speed Cinematography in the Study of Aerodynamic Processes and Burning (in Russian), S. V. Bukhman, *Uspekhi Nauch. Fotografii, 6:* 212, 1959.

This is an abstract of a lecture.—S.C.G.

Use of High-Speed Cinematography in Higher Schools (in Russian) B. V. Kubeev, *Uspekhi Nauch. Fotografii, 6:* 215–217, 1959.

The potentialities of high-speed films in Soviet high-school teaching are briefly reviewed. Mention is made of a number of such films which have been made and of the groups which are carrying out this type of work.—S.C.G.

A Study of the Process of Forming Metallized Coatings by the Method of High-Speed Cinematography (in Russian), S. R. Zhukovskiĭ and V. K. Pereverzev, *Uspekhi Nauch. Fotografii, 6:* 175–179, 1959.

The Soviet-made FP-22 high-speed camera has been used to study the metalization of surfaces by projecting the particles from an arc discharge between metallic wires onto a surface by means of an air blast. The disposition of the camera and optical equipment is described for the following three stages of the process: the melting of the metal; the transfer of metallic particles in the air blast; and deposition on the surface.—S.C.G.

Continuous Light Sources for High-Speed Cinematography (in Russian), V. G. Pell', *Uspekhi Nauch. Fotografii, 6:* 7–13, 1959.

High-speed cameras with frequencies up to 100,000 frames/sec may be used to photograph events lasting for 0.08 to 10 sec. Continuous light sources of high power are needed to cover this range of exposures. The requirements of a satisfactory source of this type are: high brightness and small dimensions of the light-producing body; high working stability to give even illumination; suitable spectral composition of the light; high light-output; long working life; and the possibility of being overrun for short periods of time. The high-intensity carbon arc, the high-pressure mercury-vapor lamp, the high-pressure xenon lamp and incandescent lamps for projectors and spotlights are considered from these points of view. A table shows how each type of lamp meets the requirements.—S.C.G.

Brightness of Some Flashlight Sources (in Russian), M. Vanyukov and A. A. Mak, *Uspekhi Nauch. Fotografii, 6:* 31–4, 1959.

The variation of maximum brightness with wavelength and with the induction of the discharge circuit in flashlight sources is studied.—S.C.G.

High-Power Flashlight Source. (in Russian), M. P. Vanyukov, A. F. Dobretsov, V. I. Isaenko and A. A. Mak, *Uspekhi Nauch. Fotografii, 6:* 53–57, 1959.

The lamp described is capable of giving flashes not exceeding 1 μsec in duration with a frequency of up to 4000 cps. The impulses are provided by a continuous oscillatory discharge between two condensers.—S.C.G.

Exposure Time in High-Speed Cameras with Compensating Prisms (in Russian), E. A. Tarantov and Yu. A. Tsvetaev, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii, 5:* 280–288, No. 4, July-Aug. 1960.

A mathematical analysis is given of the exposure of film in a high-speed camera, using optical compensation by means of a rotating prism. The Soviet SKS-1 high-speed camera can easily be altered so that the partial exposure time (i.e., the exposure time for any individual part of the frame) can be varied without affecting the frame frequency or the total exposure time for the frame as a whole.—S.C.G.

PRINTING AND OPTICS

An Autocollimation Method of Measuring Focal Lengths of Optical Parts with Approximately Plane Surfaces (in Russian), S. E. Evlasov, *Optiko-Mekhan. Prom.*, No. 2, 37–40, 1960; *Tekh. Kino i Televideniya, 4:* 81, Sept. 1960.

An autocollimation method of measuring large focal lengths is described. This method essentially consists in determining the focal lengths of the part by means of the distance between the images of an infinitely distant object, obtained by reflection from the first and second surfaces of the part, in the image space of the objective of the viewing tube.

It is shown that, in regard to accuracy, the autocollimation method of measurement is equivalent to the method of calculation, if the surfaces are determined with an accuracy of up to 0.01 interference band.—S.C.G. (Translated from *Tekh. Kino i Televideniya.*)

The Mechanization and Automation of Motion-Picture Print Production (in Russian), V. K. Miloslavov, *Tekh. Kino i. Televideniya, 4:* 11–13, Sept. 1960.

In the Soviet Union, the printing of release positives is fairly highly mechanized, but the various auxiliary processes still require much manual work. The immediate task is, therefore, the mechanization of these processes, including the making of chemicals, testing and transport. The next stage is seen as the complete automatization of the printing process itself and, finally, the complete automatization of the whole process, making use of a combined printing and developing machine. The basic requirements are already available, but it is necessary that the printing laboratories and responsible bodies make a firm effort to solve the problems which arise.—S.C.G.

A Sound-Absorbing Attachment for the 18- and 22-Mm. Focal-Length Objectives for the "Moscow" Motion-Picture Camera (in Russian), A. V. Zonov, *Tekh. Kino i Televideniya, 4:* 70–71, 1960.

The new 18- and 22mm focal-length lenses will not fit directly onto the "Moscow" motion-picture camera. A special holder is described for this purpose. —S.C.G.

The Measurement of the Light-Scattering Coefficient of Cinematograph Objectives (in Russian), F. S. Novik and L. M. Glotova, *Tekh. Kino i Televideniya, 4:* 48–54, Aug. 1960.

The research institute, NIKFI, has prepared an interdepartmental standard number, MN 63-59, for the measurement of the light-scattering coefficient of cinematograph objectives, and apparatus has been constructed for carrying out the tests. This consists essentially of a photometric sphere, with an aperture at one side from which light passes through the lens to be tested, and an aperature directly opposite which serves as a dark object against a bright background. Light from the lens is received by a photoelectric cell connected to a galvanometer, the lens and the cell being mounted on a rotatable arm so that the light passing through the lens can be measured at different angles. Measurements carried out on a number of lenses with this apparatus are tabulated and discussed. Generally speaking, the Soviet-produced lenses show a somewhat higher scatter than imported objectives. Possible methods of reducing the scatter are discussed. It is suggested that limits should be set to the permissible light-scatter of cinematography objectives.—S.C.G.

PROJECTION

Projection Problems in Auditoria of Wide-Screen Cinemas (in Russian), A. M. Yur'ev, *Tekh. Kino i Televideniya, 4:* 61–68, Aug. 1960.

The problems discussed include the dimensions of the auditorium, the position of the seating, the angle of viewing and projection and screen brightness, all in relation to the width of the screen.—S.C.G.

The Printing of Narrow-Gage Release Prints in Newsreel Film Studios (in Russian), I. B. Gordiĭchuk, *Tech. Kino i Televideniya, 4:* 55–60, Aug. 1960.

Consideration is given to problems arising in the organization of printing narrow-gage release prints of newsreel and documentary films in newsreel studios; a number of different working schemes are set out for printing image and soundtrack, starting with originals of 35mm film; and recommendations are given for obtaining the best quality of image and sound.—S.C.G. (Translation of Author's Abstract.)

Motion-Picture Projection Lenses (in Russian), L. N. Belyaeva, *Tekh. Kino i Televideniya, 4:* 75–78, Aug. 1960.

The structures and properties of a number of foreign (i.e., non-Soviet) projection lenses are discussed.—S.C.G.

SENSITOMETRY AND IMAGE STRUCTURE

Domestic Considerations in Regard to Sensitometric Standardization. II (in Hungarian), T. Barna, I. Berty, G. Dobrányi, E. Schalk, and O. Szimán, *Kép-és Hang-tech., 5:* 106–107, 1959; *Referat. Zhur., Fiz.*, Abstract No. 15682, June 1960.

Observations are put forward by photographic and cinematographic technicians in Hungary in relation to the conditions of sensitometric testing and methods of expressing the properties of photographic materials. Recommendations are given on the testing of motion-picture negative and motion-picture positive materials (choice of light source and conditions for exposure to daylight and artificial light, conditions of development, method of density measurement and criteria of speed), and the evaluation of graininess, resolving power and other properties are considered.—S.C.G. (Translated from *Referat. Zhur., Fiz.*)

TELEVISION

Stereo-Color Television (in Russian), P. V. Shmakov and V. E. Dzhakoniya, *Tekh. Kino i Televideniya, 4:* 30–40, Aug. 1960.

Factors Determining the Sharpness and Detail-Rendering of Spatial Images with Different Methods of Exposing Films for Television (in Russian), V. B. Tolmachev, *Tekh. Kino i Televideniya, 4:* 21-30, Sept. 1960.

Technological factors are considered which determine the visual sharpness and detail rendering of spatial images in television presentations of films exposed by different methods. It is shown that the visual sharpness and detail-rendering of the screen image of television films is limited by the resolving power of the broadcasting video channel.—S.C.G. (Translation of Author's Abstract.)

VIDEO TAPE

A Magnetic Image Recording Machine

A brief description is given of a prototype machine for recording pictures on magnetic tape, constructed by the Leningrad KINAP factory in collaboration with several research institutes. (S. C. G.)—R. M. Kasherininov, V. V. Radkovskii, and V. G. Komar. *Tekh. Kino i Televideniya, 4:* 57, Feb., 1960 (in Russian).

The Problem of Magnetic Tape for the Recording of Motion Pictures (in Russian) G. V. Avilov, D. M. Yuzhnaya, E. M. Boitler, and S. Kh. Nazarov, *Tekh. Kino i Televideniya, 4:* 14–20, Sept. 1960.

Magnetic tape intended for the recording of motion pictures requires properties, both mechanical and magnetic, that are different from those of ordinary magnetic tape for sound-recording. These special requirements are reviewed and the suitability of a number of existing tapes for this purpose is discussed.—S.C.G.