

**Kino-Technik** vol. 14, May 1960  
 Hochfrequenzkinematographie mit Fastax-Zeitdehnerkamas im Millesekunden-Bereich (p. 137) *F. Kolb*  
 Die Impulsampe SPP 800 W in der Kinoprojektion (p. 141) *R. Doeckel*  
 Neue Kopier- und Entwicklungsmaschinen für 8-mm-Film (p. 147)

**Proc. Inst. Electrical Engineers**  
 vol. 107 Pt. B No. 32, Mar. 1960  
 High-Power Transmitting Valves With Thoriated Filaments for Use in Broadcasting (p. 172) *H. S. Walker, W. H. Aldous, R. G. Roach, J. B. Webb and F. D. Goodchild*

**RCA Review** vol. 21, Mar. 1960  
 Simultaneous Signal Separation in the Tricolor Vidicon (p. 8) *H. Borkan*  
 Ringing in Horizontal-Deflection and High-Voltage Television Circuits (p. 17) *T. Murakami*  
 The Influence of Magnetic Tape on the Field of a Recording Head (p. 45) *D. Della Torre*  
 Theoretical and Experimental Study of Wide-Band Paraboloid Antenna With Central-Reflector Feed (p. 94) *P. Foldes and S. G. Komlos*  
 Measurement of Semiconductor Properties Through Microwave Absorption (p. 124) *R. D. Larrabee*

**Research Film** vol. 3, No. 5, 1960  
 Time-Lapse Cinematography With the Interference Microscope (p. 267) *G. G. Rose*  
 Filming Light-Emitting Particles in Motion (Metal Drops in Vacuum Steel-casting) (p. 297) *D. Elle*

## 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*.

These subject areas are grouped below:  
 Cameras and Equipment  
 Film and Its Properties  
 Color Photography and Color Development  
 Film Processing (Apparatus and Chemistry)  
 Printing and Optics  
 Sensitometry and Image Structure  
 Projection

### CAMERAS AND EQUIPMENT (except High-Speed)

#### Camera Shutter With a System of Complete Internal Reflection

The action of the patented shutter is based on the complete internal reflection of the light rays. The shutter consists of two 90-degree, glass prisms, joined together along the hypotenuse faces, between which a small interval is left. In the latter is a transparent film. The space between the film and one of the prisms is filled with a transparent liquid, the pressure of which can be controlled. On increasing the pressure, the film is pressed against the hypotenuse face of the second prism, and both prisms form a transparent cube, transmitting the light rays. On lowering the pressure, the film comes away from the second prism, and the light rays cannot pass through the cube, since they experience complete internal reflection at the

hypotenuse face. S. C. G.—[Translated from *Referativnyi Zhur., Fiz.*] Japanese 7872. B. Takao. Filed Sept. 11, 1956.

#### For the Future Development of the Material and Technological Basis of Cinematography

At present the projected extension of the motion-picture network in the Soviet Union is hampered by insufficient output of apparatus and motion-picture film of the required quality. Plans for the next two or three years envisage the reconstruction of a number of apparatus factories in order to provide a sufficient number of projectors for the new cinemas, and also an increase in the number of processing laboratories, together with the improvement of those

already in existence. Similar reconstructions and extensions are planned for the manufacture of motion-picture film, particularly color stock, and, if the plans for the manufacture of nonflammable base are fulfilled by 1962, the transition to safety base should be practically complete. A feature of the plans is the development of the industry in provincial centers. (S. C. G.) —*Tekh. Kino i Televideniya*, 4:1-4, Jan., 1960, (in Russian).

#### Motion-Picture Apparatus Factories in 1960. (I) Moscow "Kinap." (II) Odessa "Kinap." (III) Samarkand "Kinap."

Descriptions are given of apparatus being made by the three main Soviet

## PRECISION® FILM EDITING EQUIPMENT

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 Model S635-1  
 Single Sprocket 35mm  
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 (not shown)



Model S616-3  
 Three sprocket  
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 16 or 35mm \$32.50 ea.

#### optical-magnetic sound readers



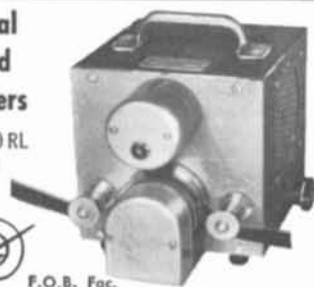
Model 800  
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Model 800RL  
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#### optical sound readers

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68 West 45th St., New York 36

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*Personnel:* Arthur Florman, Charles Lipow, Leonard Hollander, Ted Viilu, John Babb, Don Notto.

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**Dr.-Ing. Frank Früngel GmbH** Booth 27  
Hamburg-Rissen, Germany

*Exhibiting:* The Strobokin—a high-speed pulsed light capable of up to 50,000 flashes/sec; duration of each flash 1  $\mu$ sec; by addition of auxiliary power pack frequency may be extended to 300,000 flashes/sec, random burst. Also—Kerr-cell type shutter and pulsed x-ray device.

*Personnel:* Dr.-Ing. Frank Früngel, Dr. Walter Thorwart, H. G. Patzke, Otto Dietrich, Frank Kelly (J. A. Maurer, Inc.).

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**Heico, Inc.** Booths 37, 38  
25-27 North 6 St., Stroudsburg, Pa.

*Exhibiting:* Heico Resinator Mark IV. Purifies water physically and chemically through the use of Heico resins, removing such contaminants as iron, copper, algae, bacteria and sediment.

*Personnel:* W. J. Kellow, Jr., H. E. Ingraham, T. E. Ingraham, John H. Davis.

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**Karl Heitz, Inc.** Booth 49  
480 Lexington Ave., New York 17

*Exhibiting:* Kinoptik series of more than 20 high-speed color matched Achromats in mounts for 16mm, 35mm and TV cameras, ranging from extreme wide angle (1.9mm f/1.9) to telephoto (500mm f/5.6); Alpa 35mm all-in-one single lens reflex camera with automatic lenses, including 4 Achromats; Robot 35mm automatic cameras with electro-magnetic photo-recording system; Sinar interchangeable view camera; Lindia snap-in mounts; Camex 8mm single lens reflex camera.

*Personnel:* Karl Heitz, Rick Hershberger, Yvonne Brandes.

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**Hi-Speed Equipment, Inc.** Booth 4  
73 Pond St., Waltham, Mass.

*Exhibiting:* Hi-Speed Model FA-50 Spray Processor. This machine requires only two gallons of solution and processes 16/35 perforated or unperforated film at speeds up to 50 ft/min.

*Personnel:* Nicholas Cedrone, Richard Reedy.

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**Philip A. Hunt Co.** Booth 36  
Palisades Park, N. J.

*Exhibiting:* Photographic chemicals of black-and-white and color processing. Demonstration of electrostatic prints in black-and-white and color made with Hunt toning powders.

*Personnel:* Charles LoBalbo, Charles Belmont, R. A. Root.

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**Kenyon Products, Inc.** Booth 53  
Chester Airport, Deep River, Conn.

*Exhibiting:* Kenyon Stabilizer gyroscopic device, small, lightweight (24 oz.), used to stabilize hand-held cameras (and other optical instruments) against vibrations of aircraft, boats and land vehicles. Attached to camera by tripod mounting.

*Personnel:* T. W. Kenyon, E. H. Pallme, H. D. Riley, E. J. Conlin, Jr., J. H. McElroy, J. Newberry.

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**L. W. Photo Products Co.** Booth 19  
P.O. Box 147, 18220 Parthenia St., Northridge, Calif.

*Exhibiting:* Instrumentation cameras, projectors and accessories.

*Personnel:* Robert H. Lawrence.

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**D. B. Milliken Co.** Booth 28  
131 N. Fifth Ave., Arcadia, Calif.

*Exhibiting:* Milliken 16mm High-Speed Motion-Picture Cameras; speeds from 4 to 400 frames/sec.; intermittent movement with register pin: DBM 3-100 ft, DBM 4-200 ft, DBM 5-400 ft, DBM 9-400 ft (waterproof).

*Personnel:* Donald B. Milliken, T. W. Truesdell, R. L. Rodgers.

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**Motion Picture Enterprises, Inc.** Booth 44  
Tarrytown, N.Y.

*Exhibiting:* Film reels, cans and shipping cases; video tape reels; professional editing and laboratory equipment; Marguet splicers; Motion Picture and TV Service Directory.

*Personnel:* Herbert R. Pilzer, Victor Thomas.

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**Neumade Products Corp.** Booth 43  
250 W. 57 St., New York 19

*Exhibiting:* Video tape cabinets; audio tape cabinets; 70mm, 35mm and 16mm film cabinets; synchronizers, splicers and rewinds for 16mm, 35mm and 70mm; filmstrip and slide storage; film cleaner; editing tables.

*Personnel:* Lee E. Jones, Lew Grofsik, Robert E. Hempel, Warren W. Clements.

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**Nissei Sangyo Co., Ltd.** Booth 18  
501 Fifth Ave., New York 17

*Exhibiting:* High-speed camera with specifications of 16H camera body, camera speed 500 to 10,000 frames/sec., standard lens, single reflex type; timing light pulse generator, 100 to 1000 pulses, lens kit and accessories; Mitchell type tripod.

*Personnel:* K. Okamoto

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**O'Connor Engineering Laboratories** Booth 63  
9862 Highland Ave., Alta Loma, Calif.

*Exhibiting:* O'Connor Engineering Fluid Pan and Tilt Heads. Model C carries 20 lb; Model 100, 100 lb; Model 200A, 200 lb-suitable for TV; Model 200X, 150 lb-designed for missile tracking.

*Personnel:* J. T. Brodie, C. O'Connor.

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**Photo-Sonics, Inc.** Booth 54  
820 South Mariposa St., Burbank, Calif.

*Exhibiting:* 70mm Full-Frame (2.25 in. × 2.25 in.) Camera—180–360 frames/sec; 70mm Full-Frame Camera, high-speed intermittent—10 to 80 frames/sec; 70mm Ballistic Synchro Camera; 35mm High-Speed Rotary Prism Camera; 16mm High-Speed Rotary Prism Camera (3 models); 16mm Thin Line, Underwater High-Speed Camera.

*Personnel:* John Kiel, Darrell Lassiter.

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**Photo Animation, Inc.** Booth 61  
34 West St., So., Mount Vernon, N.Y.

*Exhibiting:* Portman Animation Stand and complete line of accessories.

*Personnel:* Warren Portman.

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**Precision Laboratories Div.,  
Precision Cine Equipment Corp.** Booth 20  
1037 Utica Ave., Brooklyn 3, N.Y.

*Exhibiting:* Precision Sound Readers for editing optical or magnetic soundtracks; unitized synchronizers; magnetic attachments for synchronizers; film slitters; editing devices for picture and sound; Noris 8mm Projector for synchronization with tape recorder.

*Personnel:* Irwin R. Sheldon.

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**Prestoseal Manufacturing Corp.** Booth 5  
37-27 33rd St., Long Island City 1, N.Y.

*Exhibiting:* Prestoseal equipment for splicing dissimilar materials with a thermal setting reinforcing agent, used with Presto Butt weld Splicer to heat-seal similar or dissimilar materials; 16mm, 35mm and 70mm butt weld splicers; digital paper tape splicer.

*Personnel:* Leonard A. Herzig.

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**Polaroid Corp.** Booth 6  
730 Main St., Cambridge 39, Mass.

*Exhibiting:* New Model 900 Camera; new Model 110B Camera and other film products. The demonstration will include the photographing of oscilloscope traces, using the Polaroid Land Roll Film Back and Polaroid Land Projection Film. These slides will be used to demonstrate the Pola-Land Optical Picture Comparator.

*Personnel:* R. Thomas B. Peirce, Jr., Rolf M. Augustin, Jr., Robert S. Quackenbush, Jr., Joan H. Smith.

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**Traid Corp.** Booths 23, 24  
17136 Ventura Blvd., Encino, Calif.

*Exhibiting:* Intermediate and high-speed cameras, including 16mm-1B Photosonics Camera, speed to 1000 frames/sec; miniature Traid 15, operating speed, 100 frames/sec; accessories.

*Personnel:* R. F. Peterson, Fred G. Roberts, Jr., Carlos Elmer, Al Uremovich.

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**Westinghouse Electric Corp.,  
Lamp Division** Booth 25  
1 MacArthur Ave., Bloomfield, N.J.

*Exhibiting:* Small, compact light sources for high-speed photography; high wattage and sealed-beam lamps.

*Personnel:* W. R. Wilson, F. H. Rixton and R. J. Stefany.

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**Wollensak Optical Co.** Booth 3  
850 Hudson Ave., Rochester 21, N.Y.

*Exhibiting:* Wollensak Optical 28 Models of Fastax-Fastair High-Speed Motion-Picture Cameras; accessory equipment; new reversal-negative 16mm portable film processor; Mirrotel lenses and boresights; Pro-Raptar lenses, series covering 35mm and 70mm formats; various photographic instrumentation products.

*Personnel:* Fred M. Emens, Charles B. Wade, Richard R. Youso, David C. Gilkeson, George K. Czarnikow, Robert B. Herden, Richard J. Wollensak.

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**Carl Zeiss, Inc.** Booths 31, 32  
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*Exhibiting:* Mach-Zehnder Interferometer, an instrument used for measurement of density changes in transparent media by means of light interferences. Applications include measurements of fluid flow (particularly in wind tunnels and shock-wave tubes), sound phenomena in liquids and gases, temperature distribution in the environs of heated substances, and measurements in flames.

*Personnel:* Dr. Walter Kinder, Karl Windel.

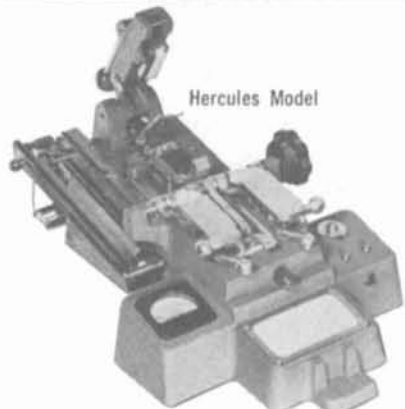
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**Zoomar, Inc.** Booths 45, 46  
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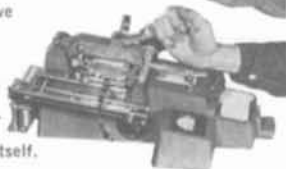
Newly modified Presto-Splicer butt-welds motion picture film, microfilm, acetate, mylar, Polyester, safety-base, paper . . . or any other kind of tape or film . . . AND INTERMIXES ANY OF THESE MATERIALS making a failure-proof, invisible weld that is literally the strongest part of the tape. Every splice you make will be a cleaner splice . . . a stronger splice . . . a PERMANENT splice, with

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motion-picture apparatus factories. (S. C. G.)—(I) N. A. Isaev. (II) A. I. Perminov. (III) V. K. Karpov. *Tekh. Kino i Televideniya*, 4:51-9, Jan., 1960, (in Russian).

### A Seven-Lens Objective for Motion-Picture Cameras With a Mirror Shutter

For increasing the back focal length of an objective and also correcting distortion, curvature of field, and astigmatism, in the front part is placed a negative component consisting of two lenses: the weak positive meniscus convex placed towards the positive component of the objective. By the introduction of the front negative component into an objective with a focal length of  $F = 28\text{mm}$ , the back focal length is equal to 1.15 F. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya* Russian 115, 231. M. M. Rusinov, M.I. Kuzlmina. Filed June 20, 1953.

### FILM AND ITS PROPERTIES

#### [Soviet] Standard on Apparatus (Micrometers) for the Measurement of the Length of Motion-Picture Film Stock and Motion-Picture Films (Gost 8910-58)

A brief description of the standard, GOST 8910-58, *Apparatus for the Measurement of the Length of Motion-Picture Stock and Motion-Picture Films (Micrometers): Basic technical requirements*, is given. [Abstractor's Note: The discrepancy between "9810-58" in the title and "8910-58" in the text exists in the original.] (S. C. G.)—*Tekh. Kino i Televideniya*, pp. 65-7, Dec., 1959 (in Russian).

#### Some Factors in the Plasticizing Process of Cellulose Triacetate Motion-Picture Film

The brittleness of triacetate film compared with that of nitrocellulose film is a problem which is aggravated by the difference in shrinking properties: the difference between the shrinkage of the emulsion layer and the relative lack of shrinkage of the triacetate film setting up stresses in the latter. A range of plasticizers has been studied, and it is concluded that plasticizers based on esters of the higher fatty acids with from six to sixteen carbon atoms in the acid radical and from one to nine atoms in the alcohol radical are compatible with partially hydrolyzed fibrous cellulose triacetate in the quantities necessary for lowering the brittleness of the base. To some extent, the compatibility depends on the temperature and relative humidity. The structure of the alcohol radical is important: with a given number of carbon atoms in the acid radical, plasticizing action improves with increase in the number of carbon atoms in the alcohol radical. (S. C. G.)—L. V. Rozenal', M. I. Mumzhiyev, Z. K. Averbukh, and A. F. Mukovina. *Tekh. Kino i Televideniya*, pp. 12-17, Dec., 1959, (in Russian).

#### New High-Speed Motion-Picture Negative Film, Type E

A new, Soviet-produced, motion-picture negative film is described. If the speed of an earlier type of film, AM-1, is taken as equal to 1, the new film has a speed of 2.5

for a light source of color temperature of 5000 K. and 4 to 5 for a light source with color temperature of 3000 K. On the same rating, Kodak Tri-X Film has speeds of 2 to 2.5 for both sources. The new film has a better spectral response, lower graininess, and better resolution than earlier Soviet films of the same or higher speeds. Intended for news and art films under unfavorable conditions of natural light, and especially in artificial light, it is the product of collaboration between NIKFI and the Soviet No. 3 Film Factory. (S. C. G.)—A. O. Kondakhchan, S. A. Verkhovets, and G. G. Shevyakov. *Tekh. Kino i Televideniya*, pp. 16-18, Nov., 1959.

### COLOR PHOTOGRAPHY COLOR DEVELOPMENT

#### Photoacoustic Characteristics of Soundtracks on Color Multilayer Motion-Picture Film With Separate Processing

A study has been carried out of the photoacoustic characteristics of the soundtrack on multilayer motion-picture film with different methods of separate processing. In the conclusions, it is shown that, instead of the accepted method it is convenient to introduce into production a method of separate bleaching of the image, so that the silver reduced during the color development is completely preserved on the soundtrack. It is also suggested that film prints should be issued in two forms: with the soundtrack intended for use with antimony-caesium photocells, and with sound tracks intended for working with caesium oxide photocells. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*.] A. V. Tsirulina. *Trudy Leningrad. Inst. Kinozhener.*, pp. 5-34, No. 5, 1959.

#### An Index of Photographic Activity of Diffusing Couplers in Color Development

A description is given of work done on the influence of different diffusing couplers on the rate of color development, by an estimation of the rate of development of a silver image; an attempt to explain the laws of color development on the basis of the results obtained; and the establishment of a method of quantitative characterization of the reactivity of color-development couplers. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*.] B. A. Chartoriiskii and V. S. Chel'tsov. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 16-23, No. 29, 1959.

#### An Index of the Reactivity of Nondiffusing Couplers by the Magnitude of the Energy of activation of the Color Development Process

A report is given of the results of a study in which, in particular, it was confirmed that there is a straight-line relation between the logarithm of the rate of development and the reciprocal of the absolute temperature, corresponding to the Arrhenius equation, for color development in the temperature range, 10 to 25 C. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*.] S. P. Sharlanzhiev and V. S. Chel'tsov. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 24-32, No. 29, 1959.

### A Study of a New Form of Processing of Multilayer Color Negative Film

A study has been made of the effect of processing with pastes by the NIKFI method on the sensitometric properties of multilayer negative materials. It is shown that, for the present Soviet multilayer film, Type DS-2, such a change is completely feasible. (S. C. G.)—[Translated from *Referativnyi Zhur, Fiz.*] A. Wrzesinski. *Tech. Kinematogr.*, pp. 32-5, No. 9, 1957.

### Matrix Films for Imbibition Printing

Results are given of work carried out at NIKFI, together with Film Factory No. 3 (Shostka), on the elaboration and manufacture of a set of matrix films adequately balanced for contrast. It is shown that the coefficient of contrast of the films approximates to the optimal for printing the matrices immediately from the color negative. The contrast of the relief image, within necessary limits, can be lowered, providing a corresponding choice of conditions for printing the matrices. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] S. A. Bongard. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 73-80, No. 29, 1959.

### Effects of the Absorption of Light by a Layer of Matrix Film on the Gradation of the Photographic Relief Image

Results are given of studies of the effects of a change in the spectral sensitivity of an emulsion, the absorption of light by the emulsion layer, and the composition of the printing light on the gradational properties of a matrix film. It is shown that alteration of these factors controlling the depth of penetration into the emulsion layer of the actinic radiation gives rise to an important change in the gradation of the relief image. (S. C. G.) [Translated from *Tekh. Kino i Televideniya*] S. A. Bongard. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 81-92, No. 29, 1959.

### A Study of the Processes of Color Development

An account is given of methods worked out for the determination of the leuco basis of azomethine dyes derived from 4 - (4' - diethyl - 2' - methylphenyl-imino) - 3 - methyl - 1 - phenylpyrazol 5 one and 4 - (4'd iethylphenyl-imino) - 3 - methyl - 1 phenylpyrazol - 5 - one, based on the potentiometric titration with iodine of an aqueous-alcoholic solution of the leuco base stabilized with an inorganic acid. With the aid of this method, it is shown that, on reduction of the dyes, the corresponding leuco bases, containing two hydrogen atoms more than the dyes, are formed. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] A. S. Kheinman and V. S. Chellstov. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 5-15, No. 29, 1959.

### The Influence of a Yellow Light Filter Layer on the Resolving Power and Effective Speed of Color Negative Materials

Results are given of work undertaken to decide whether a yellow light-filter layer, containing colloidal silver and generally placed between the top and middle emulsion layers of the film, decreases the resolving powers of the middle and lower emul-

sion layers. (S. C. G.)—[Translated from *Tekh, Kino i Televideniya*] I. M. Kilinskii and A. N. Iordanskii. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 59-61, No. 29, 1959.

### FILM PROCESSING (APPARATUS AND CHEMICALS)

#### A Study of a Friction Film-Transport Mechanism with Automatic Maintenance of the Constancy of Tension of the Film, in Which the Upper Axle With the Driving Roller Rotates While the Lower Axle is Fixed

The results are given of a study made on film-transport mechanisms of the following types: with single-loop transport of the film, and with a friction drive. Curves are obtained for the tension of the film for different variations in the construction of the film-drive mechanism and other factors. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] I. S. Golod. *Inf.-tekh. Byul. TsKB Min. Kultur. S.S.S.R.*, pp. 17-29, No. 4 (18), 1958.

#### A Study of a Section of a Multiloop Friction Film-Drive Mechanism With Rotating Upper or Lower Axles, on Which all the Rollers Are Free

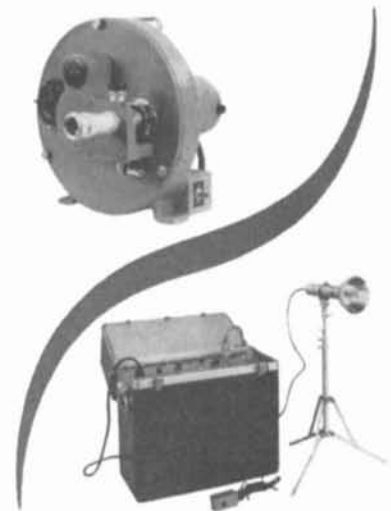
Mechanisms with rotating upper axles, and with rotating lower axels have been studied. Numerical data and schemes of distributing the tensions of the loops of film for different variations in the construction of the mechanism are obtained. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] I. S. Golod. *Inf.-tekh. Byul. TsKB Min. Kultur. S.S.S.R.*, pp. 18-24, No. 5 (19), 1958.

#### A Comparative Analysis of Some Forms of Film-Transport Mechanism in Developing Machines

Consideration is given to a section of a five-loop, film-transport mechanism with drive pulleys of different types, set on ebonite bearings, fluoroplastic bearings, and on roller bearings of vinyl plastic. Experimental curves for  $\Delta p = f(Q_1)$  are derived, as well as formulas for calculation and graphs showing the distribution of forces in the length of film in one section of the film-transport mechanism with drive pulleys of different types. An analysis is made of film-transport mechanisms, and practical recommendations are given. (S. C. G.)—[Translation of Author's Abstract] I. S. Golod. *Tekh. Kino i Televideniya*, pp. 32-5, December, 1959 (in Russian).

#### Improvement of the Properties of Motion-Picture Films and Their Processing

The author makes a number of personal suggestions for the improvement of films and processing in the Soviet Union, and the article is printed by the editorial board of the Russian journal with the purpose of provoking discussion. It covers developing machines, printers, auxiliary apparatus in processing, the developing processes themselves, the photographic properties of motion-picture film, and the organization of production. (S. C. G.)—E. A. Iofis. *Tekh. i. Televideniya*, 4:33-36, Jan., 1960 (in Russian).



## new light on high-speed photography

Now Dynafax Camera sequences can be perfectly illuminated from start to finish — all 224 frames emerge from processing with an exactly uniform density. Availability of the Beckman & Whitley Model 357 Electronic Flash Unit makes this not only feasible but routine.

Developed and produced specifically to match the operating parameters of the Dynafax, the new unit delivers 1200 watt seconds in a single square pulse of cold light which is controllable over the range from 8.6 to 22.3 milliseconds. These periods are equal to the total writing times of the camera from 26,000 frames per second down to 10,000 frames per second.

Synchronization of the flash unit with the event being photographed is easily accomplished through the versatile triggering facilities included in the Model 357 — either make or break circuits, a positive pulse, or light striking a photoelectric cell. For focusing and light arrangement the unit can be set to provide a 60-flash per-second modeling light. The complete unit comes in a sturdy glass-fiber carrying case matching that which houses the Dynafax itself.

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## PRINTING AND OPTICS

### A [Soviet] Standard on Motion-Picture Objectives for Cinematography with 35mm Film and Interdepartmental Standards on Methods of Testing Objectives

A brief note is given on the standard GOST 6741-58, which became effective in 1959, and on the interdepartmental standards, MN61-59, MN62-59, MN63-59, MN64-59, and MN65-59. (S. C. G.)—*Tekh. Kino i Televideniya*, p. 65, Dec., 1959, (in Russian).

### Lighting Systems With Devices for Supplementary Alternation of the Illumination of the Printing Gate of Printers

In motion-picture positive printers, the illumination at the printing gate is altered according to the printing characteristics of the negative. Devices are considered for carrying out an independent alteration of the light to compensate for fluctuations in the output of the incandescent lamp. (S. C. G.)—M. G. Shamshtein and S. N. Podlesnykh. *Tekh. Kino i Televideniya*, pp. 25-31, Dec., 1959 (in Russian).

### A Photographic Method for Measuring the Temperature of Light Sources

Some photographic methods of measuring brightness temperature and color temperature and color temperature are described. For the determination of bright-

ness temperature of the surface to luminous transparent bodies a method is possible which is based on the comparison of photographic densities formed by unknown and standard light sources, within the limits of a fairly narrow spectral region, subsequently referring the results to the given wavelength. In essence, the practical realization of this method depends on a number of simplified assumptions, in particular, on the linear relation between the density and exposure; Wien's law is used for the spectral distribution of the energy of radiation, but, at temperatures higher than 4000 K., it is necessary to use Planck's law, determining the light flux by means of numerical integration. Consideration is given to the possibilities of also determining the brightness temperature in the case of cavity radiation. For determining the color temperature, the authors propose two methods: by using the "blue/red" ratio (i.e., the ratio of the brightness in two sufficiently separated parts of the spectrum); and by the relative spectral distribution of energy [i.e., the linear relation between  $\log(\beta\lambda^{-5})$  and  $1/T$ , deriving from Wien's law]. In the first case, to obtain the required data, it is essential to take into account departures from additivity of the photographic action of radiation with different spectra compositions; and in the second, that Wien's law, the limits of which are restricted, is observed. Photographic errors (nonuniformities of the emulsions and their development) depend on the magnitude of the measured temperature: at 10,000 K. they

do not exceed  $\pm 1.5\%$  for brightness temperature and  $\pm 6\%$  for color temperature. (S. C. G.)—[Translated from *Referativnyi Zhur Fiz.*] S. G. Grenishin, A. A., Solodovnikov, and G. P. Startsev. *Trudy Komiss. po Piroometrii pri Vsesoyuz. Nauch.-Issled. Institut. Metrol.*, pp. 57-68, No. 1, 1958.

### Problems of the Stability of the Motion-Picture Image

A study is made of the conditions for obtaining a steady image in the printing of special-effects films involving intermediate positives and negatives, with special reference to the positioning of the registration pin in the camera, printer, and projectors used. (S. C. G.)—Ya. L. Lel'bov. *Tekh. Kino i Televideniya*, 4:27-30, Feb., 1960 (in Russian).

### Special Effects Cinematography in the Production of Films by the Electronic Method

A survey is made of the basic forms of electronic special-effects cinematography in the production of films by the electronic method, based on obtaining an image on a kinescope screen with subsequent recording on motion-picture film. (S. C. G.)—[Translation of Author's Abstract] V. A. Burgov. *Tekh. Kino i Televideniya*, 4:31-8, Feb., 1960 (in Russian).

### Afocal Optical Systems and Their Use in Motion-Picture Techniques

The necessity for using interchangeable lenses of different focal lengths for motion-picture and still photography is described. The design principles of afocal mountings for these lenses are discussed. (C. A. B.)—[Translation of Author's Abstract] J. Picman. *Jemna Mehanika a Optika*, 4:336-40, Oct., 1959 (in Czech).

### Apparatus for Printing 16mm Films With Magnetic Sound Tracts

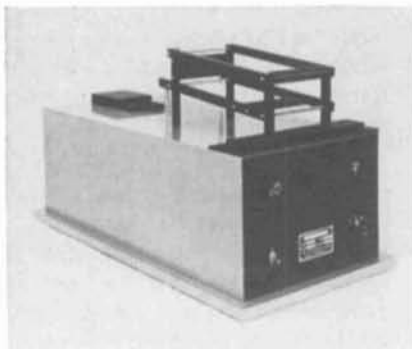
Some details are given of the development work on the Soviet-made KMP-3 apparatus intended for carrying out one of the last operations in the process of manufacture of 16mm copies, the placing of the sound on the film. This operation is carried out by transcribing onto the magnetic track of the film copy the original magnetic soundtrack recorded on a 35mm perforated sound carrier. (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] G. K. Khanova. *Informats.-Tekh. Byul. TsKB Minist. Kultury SSSR*, pp. 3-20, No. 2 (21) 1959.

## SENSITOMETRY AND IMAGE STRUCTURE

### Correlation of the Basic Sensitometric Properties of Photographic Emulsions With Those in Color Development

Results are given of an investigation undertaken to explain the connections between the [black-and-white] speed and contrast of emulsions and the properties of emulsions when color-developed. From the experimental results, it can be concluded that, on color development, speed for the dye image,  $S_N$ , is equal to the speed for the silver image,  $S_{Ag}$ , multiplied by the ratio  $D_N/D_{Ag}$ . (S. C. G.)—[Translated from *Tekh. Kino i Televideniya*] T. V.

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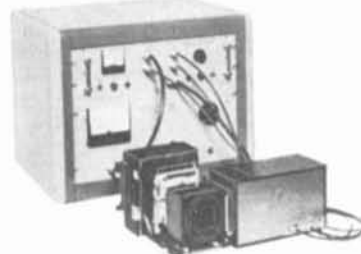
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Abramova and V. S. Chel'tsov. *Trudy Vsesoyuz. Nauch.-Issled. Kinofotoinst.*, pp. 33-42, No. 29, 1959.

**Studies of the Ability of Photographic Materials to Reproduce Small Elements of an Optical Image. III. The Influence of the Conditions of Positive Printing on Reproduction of Two-Dimensional Objects**

The correctness of the photographic reproduction of small, two-dimensional elements of an optical image as a result of a two-stage photographic process is characterized as satisfactorily by the magnitude of the resolving power in the positive image as it is when only the negative stage of the process is carried out, the resolving power of the negative material then serving the same purpose. (S. C. G.)—(Translation of Author's Abstract) Yu. K. Vifanskii, Yu. N. Gorokhovskii, and N. D. Khrul'kova. *Zhur. Nauch. i Priklad. Fotografii*, 5:14-19, No. 1, Jan.-Feb., 1960 (in Russian).

**Scattering of Light by Opal Glasses and Their Use in Densitometry**

The Russian sensitometric standard, GOST 2817-50, specifies that the densities of a step wedge should be read with the emulsion surface in contact with an opal glass, the thickness of which should be such that no increase in it will influence the results. This specification was considered to be inadequate, in view of the different properties of different opal glasses. Accordingly, a study was made of the light-scattering properties of a number of Soviet-produced opal glasses, together with one foreign one, and an opal plastic. The angular distribution of scattered light from the opal glasses is tabulated. (S. C. G.)—V. A. Korndorf and I. H. Chernyi. *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 4: 430-32, No. 6, Nov./Dec. 1959.

**Sensitometry of Black-and-White Reversal Motion-Picture Film**

Processing formulas and directions are given for the sensitometry of reversal motion-picture films. The sensitometric characteristics are discussed, and it is suggested that the reversal speed should be expressed as the reciprocal of the exposure required to give a final (positive) density of 1.5. In the sensitometric testing of reversal films, it is recommended that a family of positive characteristic curves be obtained for different times of first development, and, that, from these, the reversal speed, gamma, minimum density, and maximum density, should all be determined in relation to the length of the first development. The speed then quoted on the package should be that obtained with development conditions giving a minimum density of 0.05. Results of such tests are given for a Soviet reversal film and a number of foreign films. (S. C. G.)—S. S. Gilev and L. V. Kiseleva. *Tekh. Kino i Televideniya*, pp. 18-27, Aug. 1959.

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**[Soviet] Standards for Anamorphic Optical Systems and Attachments for Cinematography and Projection with 35mm Wide-Screen Motion-Picture Films**

Two new Soviet standards became effective Jan. 1, 1960. They are GOST 9040-59 Optical Systems for Anamorphic Cinematography and Anamorphic Attachments for Motion-Picture Objectives, and GOST 9039-59 Anamorphic Attachments for Motion-Picture Projector Lenses. They are briefly reviewed. (S. C. G.)—*Tekh. Kino i Televideniya*, pp. 65-6, Dec., 1959. (in Russian).

**Automatic Control of a Motion-Picture Projector Arc Lamp at 15000 Lumens**

A description is given of a system of automatic control of a motion-picture projector arc lamp at 15000 lumens, developed in the Illuminating Engineering Laboratories of NIKFI. Tolerances in the focusing requirements are formulated. A photorelay is described for maintaining the crater of the positive carbon in the focus of the optical system, using a photoconductor as the radiation-receiving element. The results of a trial of the photorelay are set out, together with a device for striking the arc and automatically maintaining its length. (S. C. G.)—[Translation of Authors' Abstract] T. V. Derbisher and V. V. Piskunov. *Tekh. Kino i Televideniya*, pp. 19-24, Nov., 1959.

**National [Soviet] Standard on 8-mm Motion-Picture Projectors for Amateur Use.**

A brief note is devoted to the Standard, GOST 9100-59, *Amateur Motion-Picture Projectors for 8mm Motion-Picture Films. Fundamental Parameters*. This standard became effective Jan. 1, 1960. (S. C. G.)—*Tekh. Kino i Televideniya*, 4:71, January, 1960 (in Russian).

**The FKS 1 Film-Viewing Table**

The FKS-1 film-viewing table is an experimental model intended for the examination of films in archives and gives facilities for listening to the sound record as well as for viewing the picture. Its construction is described. (S. C. G.)—I. A. Ratushnyak. *Tekh. Kino i Televideniya*, 4:58-60, Feb., 1960 (in Russian).

**The De-Anamorphizing of Wide-Screen Films**

An analysis is given of a method of de-anamorphizing images without the use of cylindrical optics. It makes it possible to prepare the usual type of film for exhibition on screens with the aspect ratio of 1:1.38 from an anamorphic negative with the aspect ratio of 1:2.55. (S. C. G.)—(Translation of Author's Abstract) A. G. Boltyanskii. *Tekh. Kino i Televideniya*, 4:1-10, March, 1960 (in Russian).

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