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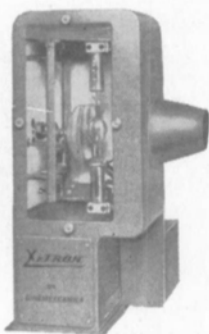
**XETRON**

PRODUCTS

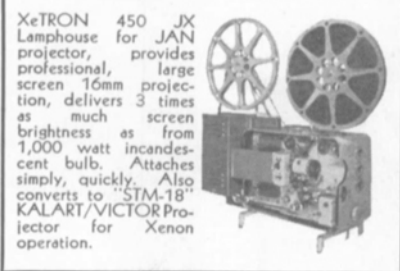
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**XETRON POWER SUPPLIES**

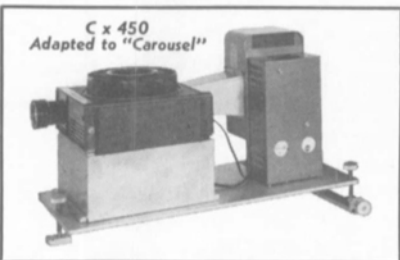


XeTRON CX lamphouse for 16mm, 35mm movie projectors and small format slide projectors. Delivers 2,000 to 2400 lumens and can be used with any standard 35mm projector. Also used to modify many heavy duty 16mm projectors for professional type use



XeTRON 450 JX Lamphouse for JAN projector, provides professional, large screen 16mm projection, delivers 3 times as much screen brightness as from 1,000 watt incandescent bulb. Attaches simply, quickly. Also converts to "STM-18" KALART/VICTOR Projector for Xenon operation.

NOW—AT LAST! A Xenon modification of the Kodak "Carousel" projector providing all the many advantages of the "Carousel", with FOUR TIMES the measured light output. Utilizing the proven Xetron lamphouse and rectifier units, and the Osram XBO 450W Xenon lamp, with conversion delivers 1,500 lumens light output to the screen. Not only this, but the light, with slides, also appears brighter to the eye because it is a high-intensity light, of a much higher color temperature (approx. 6,000 degrees Kelvin) than a normal incandescent lamp.



C x 450  
Adapted to "Carousel"

**XeTRON SILICON POWER SUPPLIES**—manufactured for XeTRON by Christie Electric Corp. of Los Angeles, recognized as the foremost manufacturer of silicon power supplies. The XeTRON Christie power supply is solid as an important adjunct to the CX and JX type Xenon units and are required if maximum light output and bulb life warranty is to be obtained. Approved by Osram.

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Literature on Request. Dealerships Available.

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Weiland, *Secretary-Treasurer*, c/o Ampex Corp., 2385 Bay Rd., 8-12, Redwood City, Calif.

The Electronic-Cam system of producing motion pictures for television was discussed for the April 30 meeting of the **Toronto Section** in a paper by Alfred Jetter, Bavaria Atelier G.m.b.H., Munich-Geiselgasteig, Germany. The meeting at Pathé DeLuxe Laboratories was attended by 120 members and guests.

Mr. Jetter's paper, which had been presented at the 95th Technical Conference, was read by Lou T. Wise, and the question-and-answer session was conducted by Mr. Jetter through three interpreters who specialize in different branches of the industry.

As an introduction to Mr. Jetter's paper, Hellmut H. Berger of CFTO-TV gave an

illustrated talk on the historical background of combined TV and film systems, such as those of Dumont and M-G-M.

Another feature of the program was a report by SMPTE Governor Roger J. Beaudry.—Maurice French, *Secretary-Treasurer*, 32 Dallington Dr., Willowdale, Ont.

Properties of Soundcraft Type 302 video recording tape were described for the May 13 meeting of the **Washington Section** at the Walter Reed Officers Club. The speaker was Edward Schmidt of Reeves Soundcraft Corp., Danbury, Conn.

Among the 43 members and guests at the meeting were representatives of the Federal Photographers Assn. and the Biological Photographic Assn. The meeting was preceded by a buffet dinner.—H. Paul Christman, *Secretary-Treasurer*, 5102 Danbury Rd., Bethesda, Md.

## Abstracts

Abstracts of papers appearing in other journals, chosen for their importance and timeliness, are published in the *Journal* from time to time. Most of these abstracts are translations, chiefly from the U.S.S.R., and are made available to the *Journal* by the Research Laboratories of the Eastman Kodak Company. As a rule, translations are made of the foreign language abstracts, not of the paper itself. The respective complete original texts can be consulted at some libraries. Current issues of *Tekh. Kino i Telev.* can be consulted at, or borrowed from, the Society's Headquarters Office; also of possible interest to some readers may be three papers which have been translated from the Russian and are available as manuscripts on loan from Society Headquarters:

(1) L. G. Golshstein, I. Ya. Levin and T. I. Maksimov, "Optical printer," *Tekhnika kino i telev.*, 3, No. 10, 58-62 (1959).

(2) M. M. Lisogor, "The 'Rossiya' Universal Cine Theater," *Tekhnika kino i telev.*, 6, No. 5, 1-8, (1962).

(3) I. B. Gordiichuk, "The present state of the manufacture of cine apparatus in the USSR," *Tekhnika kino i telev.*, 6, No. 5, 3-19, (1962).

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

The subject areas are grouped below:

Cameras  
Color Processes  
Copying Equipment  
General, History, Training, Bibliography  
High-Speed Photography  
Lenses and Shutters  
Light Sources  
Miscellaneous Apparatus  
Photographic Theory and Materials  
Physics and Chemistry  
Printing Equipment, Enlargers  
Processing Equipment

Projectors and Viewers  
Radiography and Nuclear Photography  
Sound Recording and Reproduction  
Special Applications

## CAMERAS

**Arriflex 16M (Test Report)**, K. Morcman, *Film user incorporating Industrial screen*, 18: xvi-xviii, Mar. 1964.

The Arriflex 16M 16mm motion-picture camera is a modified version of the standard Arriflex camera, for use solely with film magazines, of capacity 200, 400 and 1,200 ft. The 200- and 400-ft magazines contain gear-driven, sprocketed, feed and take-up mechanisms and are of the single-compartment type, accepting 200- and 400-ft darkroom reloads on plastic cores or 100- and 200-ft daylight loading spools. The 1,200-ft, double-compartment magazine has feed and take-up alongside each other on a common axis. The 16M camera head is reduced in size and the reflex finder prism has been moved from inside the camera onto the double-hinged door. A 50-cycle signal generator is incorporated into the camera and can be used for an automatic electric slate system. Synchronous sound recording with a ¼-in. tape recorder is possible.—N.W.

**An original camera for cinemicrography in fast or slow tempo** (in Flemish), M. Sebruyns, *Natuurw. Tijdschr.*, 44: 96-99, No. 4-5, 1962; *Referativnyi Zhur.*, *Fotokinetika*, Abstract No. 10.46.251, 1963. (Title only.)

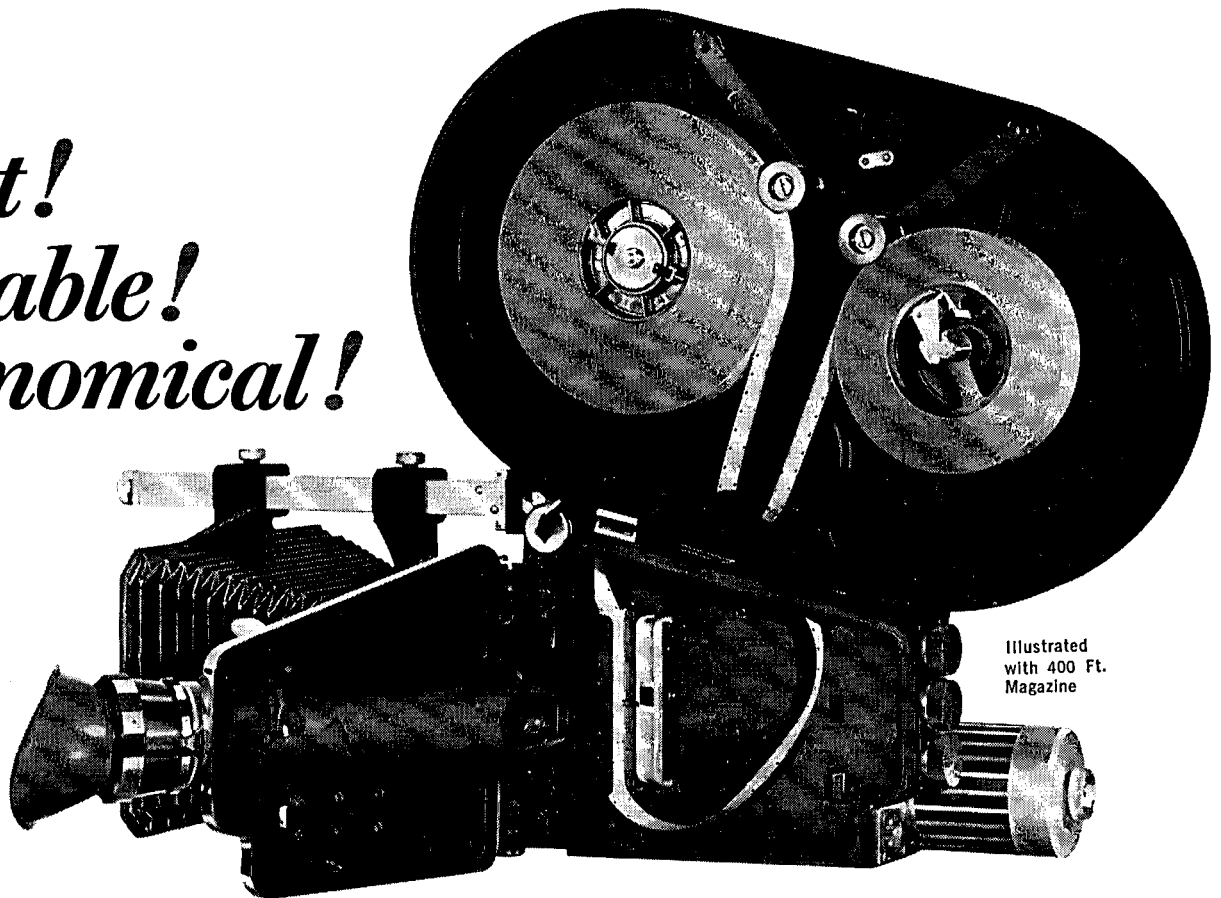
**Photographic camera** (British Pat. 951,419), E. Hahn; assigned to Veb Kamera und Kinowerke Dresden, filed Sept. 15, 1961; 2 pp., 1 plate.

A ciné camera is described in which automatic exposure control is provided by a diaphragm controlled by a galvanometer in series with a photosensitive resistor and a battery. For manual control

# ARRIFLEX® 16M

the new *quick-change magazine* camera

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**HERE'S WHY.** Because the magazines for the new Arriflex 16M have feed and take-up sprockets **built-in**, time consuming and critical threading of film is conveniently done when loading the magazine. And in loading, a precise 39 frame **loop** is automatically formed outside the magazine.

**HERE'S HOW.** To get set for filming, merely drop the loop inside the camera, secure the magazine via a quick-acting latch, place the loop into the film gate with registration pin retracted, and you're ready to roll! This simple fool-proof procedure takes only seconds! Attaching the magazine to the camera automatically connects camera and magazine drive mechanisms. No belts to change, no torque motors needed. As a consequence the magazines (except 1200 ft.) will automatically run forward or reverse.

**MOST IMPORTANT.** Arriflex's reputation for precision and rugged reliability is not compromised in

the new 16M model because **NO PART OF THE FILM GATE IS INCORPORATED IN THE MAGAZINES THEMSELVES!** The aperture plate, rear pressure plate, side guide rail—every component part essential to locating film precisely in the film plane is protectively located within the camera head! Only this system meets the demand for fast operation **and** precision **and** reliability. In addition, the cost of magazines is thereby kept low. No small saving when outfitting with more than one.

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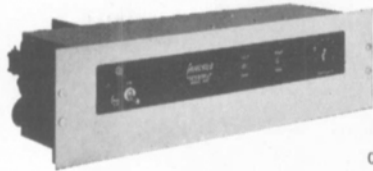
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The newest approach for the creation of "apparent loudness"—the Dynalizer is an automatic dynamic audio spectrum equalizer which redistributes frequency response of the channel to compensate for listening response curves as developed by Fletcher-Munson. Adds fullness and body to program material. Completely automatic with flexible controls. Easily integrated into existing equipment.



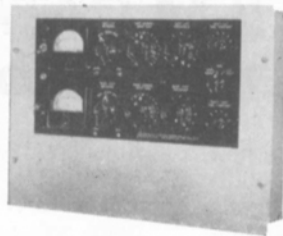
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control of reverberant time effects. Three time periods available at the flick of a switch—fast (staccato); a moderate time period; and a prolonged time decay for unusual effects.

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the photosensitive resistor is replaced by a fixed resistor from which tapings are taken. Selecting the required aperture selects one of these tapings, and the appropriate current then flows through the galvanometer to set the diaphragm.—H.J.L.

**Eumig S3 zoom** (Test Report), N. Dyer, *Amateur Photographer*, 127: 354, 358, Mar. 4, 1964.

The Eumig S3 8mm zoom cine-camera is the latest version of the S2 camera. New features are the fixed-focus 9 to 18mm *f*/1.8 Eumigon zoom lens with a coupled, tubular telescopic optical viewfinder and a mechanism safety lock. A selenium photocell gives fully automatic exposure control, with the taking aperture indicated in the viewfinder. Sockets are provided for the Eumig T5 portable tape recorder. The camera is made in Austria by Eumig, Elektrizitats and Metallwaren Industrie.—N.W.

**Cameras** (British Pat. 954,864), E. Hahn and L. Reschke; assigned to Veb Kamera und Kinowerk Dresden, filed Oct. 12, 1961; 3 pp., 1 plate.

A mechanism which allows the manual setting of the aperture of an automatic camera operates without risk of damaging the delicate moving coil apparatus and eliminates the errors introduced by carrying out the setting electrically.—R.A.W.

**The RFK-1M recording camera with electronic flashlamp** (in Russian), E. A. Zel'din, *Tekhnika kino i telev.*, 7: 58-60, Dec., 1963.

The Soviet RFK-1M camera is used for a number of scientific and technical purposes requiring photography at rates up to 6 frames/sec. The circuit which enables electronic flash lighting to be used with the camera is described.—S.C.G. (Translated from *Tekh. kino i telev.*)

**Olympus Pen 3EE 8mm camera** (ACW Test Report), Anon., *Amateur Cine World*, 7: 604-605, Apr. 30, 1964.

This 8mm cine camera can be used with the built-in 13mm *f*/1.8 Olympus Cine Zuiko fixed-focus lens or with a 9 to 27mm focusing zoom lens attachment, and has through-the-lens reflex viewfinding. Fully automatic exposure control is provided by a cadmium sulfide cell with power from a mercury battery, an iris diaphragm in front of the photocell giving adjustment for film speeds from 5 to 400 ASA. There is no manual exposure control. An electric motor, powered by four penlight cells, gives a single running speed of 16 frames/sec. The camera is distributed in Great Britain by the Pullin Optical Co. Ltd.—N. W.

**Fujica power zoom Reflex 8 De Luxe** (Test Report), N. Dyer, *Amateur Photographer*, 127: 520-522, Apr. 1, 1964.

This 8mm ciné camera from Fujica has a 12-element 9 to 36mm *f*/1.8 Fujinon zoom lens, focusing down to 3½ ft with click-stop positions at 30, 10 and 5 ft. A 6.5 to 25mm wide-angle Fujinon converter lens is available. The direct reflex viewfinder has a split-image, central rangefinder and an aperture in-

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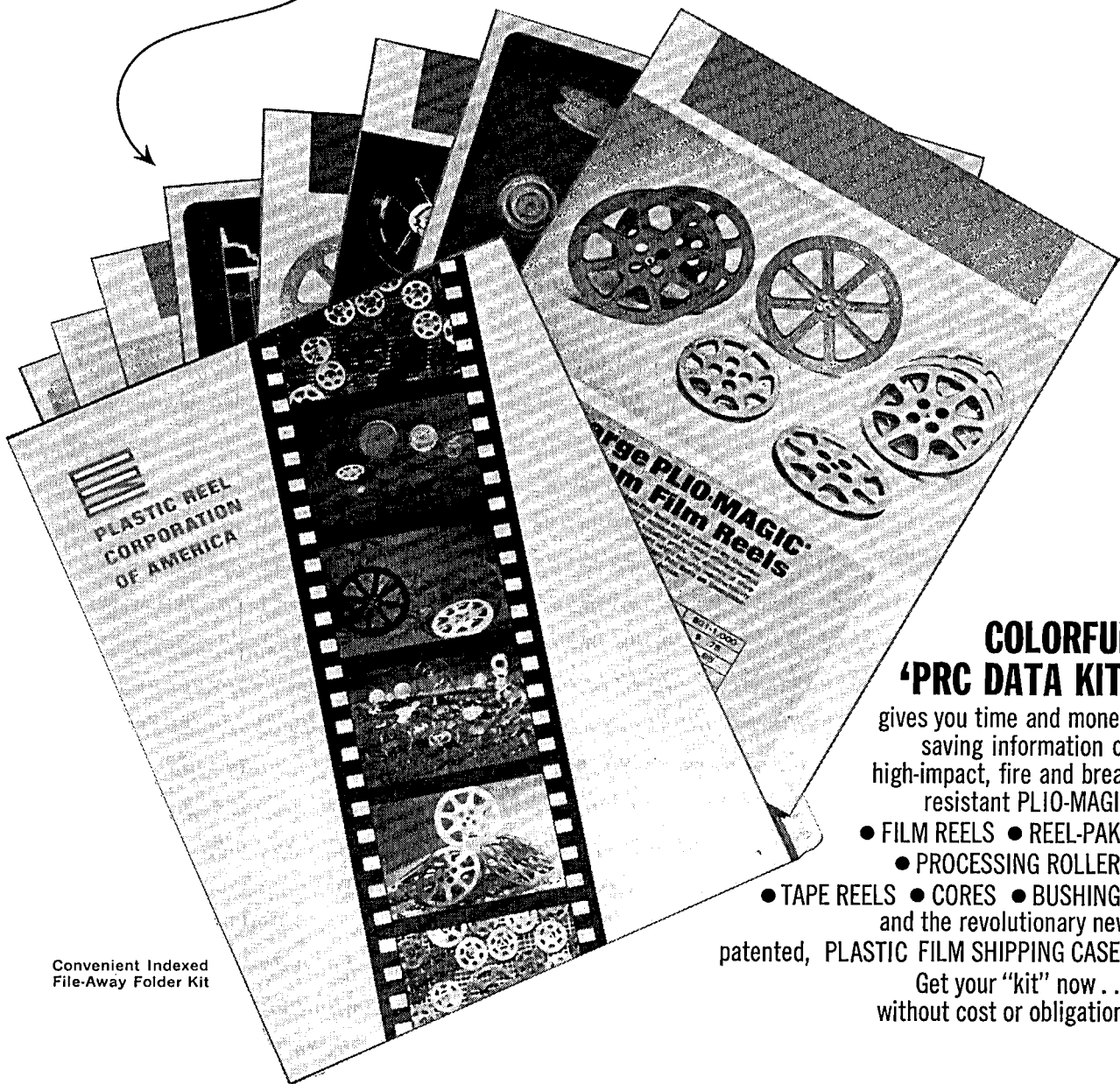
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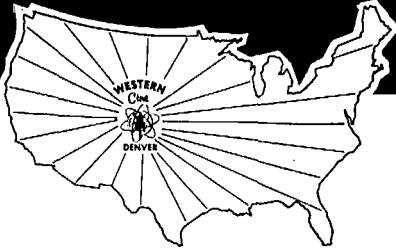
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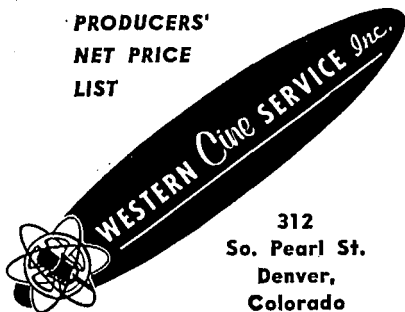
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dicator. A cadmium sulfide photocell gives fully automatic exposure control for film speed settings of ASA 10-250, with fractional automatic correction and manual override. An electric motor, powered by four Penlite cells, gives speeds of 16 and 24 frames/sec. Three extra cells in the pistol grip give a speed of 48 frames/sec. Other facilities are powered reverse running and two-speed zoom operation.—N.W.

**Underwater cameras,** Anon., *Diver*: 24-30, Apr.-May 1964.

A survey of the current market gives details of the Calypsophot and Nikons 35mm scaled cameras and twelve waterproof camera housings.—N.W.

### COLOR PROCESSES

The application of the Minsk-1 electronic computer to the solution of problems in color photography (in Russian), L. F. Artyushin, N. V. Sokolova and V. V. Kurpik, *Tekhnika kino i telev*, 8: 5-9, Jan. 1964.

Programs have been worked out for the Russian Minsk-1 electronic computer for use in color-separation studies in which the effective densities or color coordinates are to be calculated from values of the surface concentrations of the dyes or for problems requiring the calculation of surface concentration from the effective densities.—S.C.G.

**Ciba Cilchrome-Print process,** Anon., *Brit. J. Phot.*, 111: 308-309, Apr. 17, 1964.

The Ciba Cilchrome-Print material is designed for direct positive printing from a positive color transparency without the use of color development paper or an intermediate negative, and uses the silver dye-bleach method. Azo dyes are dispersed in an integral tripack paper base material in which each layer contains a photographic emulsion. There is a yellow filter layer as in a tripack reversal material, under the first layer. The speed of the material is not given by the manufacturers but printing can be carried out with an ordinary photographic enlarger. Advantages claimed for the process are simpler processing with less critical conditions; and dyes, particularly yellow and magenta, with greater color saturation than the equivalent color development dyes, and much better resistance to fading. Inclusion of an extra reversal development stage will allow Ciba to market later a material for making color prints from color negatives, to be called Cilcolor-Print.—N.W.

### COPYING EQUIPMENT

**Xerographic reproduction apparatus** (British Pat. 950,313); assigned to Rank-Xerox Ltd., filed Jan. 12, 1960; 6 pp., 6 plates.

An apparatus is described in which images of continuously moving microfilm are projected onto a rotating, electrostatically charged, xerographic cylinder. The rate at which the film moves through the projector is determined by the required magnification of the xerographic print.—A.E.S.

**Image reproduction** (British Pat. 951,251); assigned to Rank-Xerox Ltd., filed Mar. 9, 1960; 8 pp., 4 plates.

An automatic Xerographic copier with optical and mechanical means for projecting an image from a stationary original onto a moving light-sensitive element (selenium drum) is claimed. The original is held on a carriage moving horizontally in concert with a projection lens over and across a slit closely spaced above the rotating drum. Full particulars of gears, slot size and shape and automation of conventional electrographic process stations are given.—A.R.

### GENERAL, HISTORY, TRAINING, BIBLIOGRAPHY

**The visit of a group of American motion-picture experts to the U.S.S.R.** (in Russian), M. Vysotskiĭ, *Tekhnika kino i telev.*, 8: 92-94, Jan. 1964.

A group of motion-picture experts visited the U.S.S.R. from October 20 to November 11, 1963, to study Soviet motion-picture production. An account of their very full schedule of engagements is given.—S.C.G.

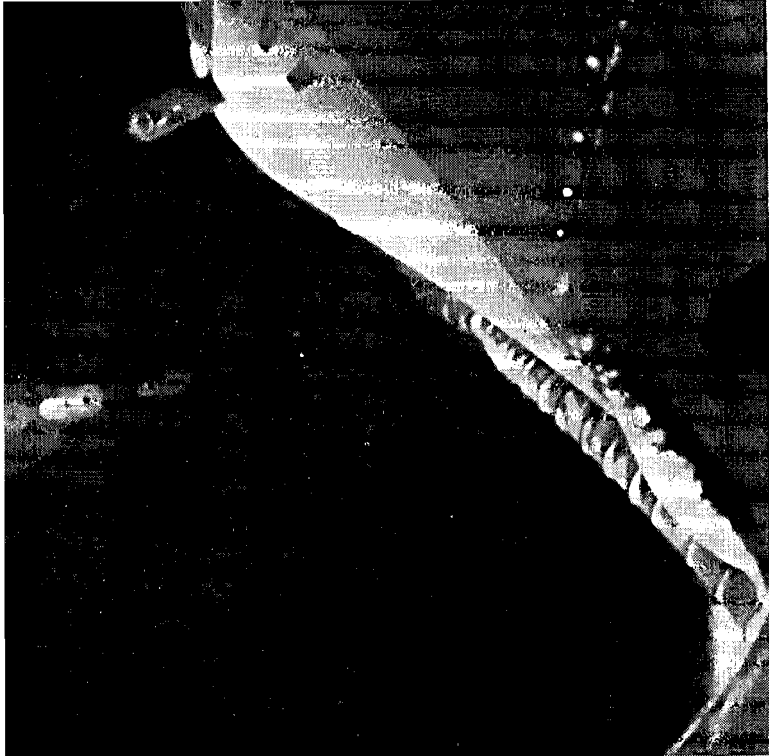
### HIGH-SPEED PHOTOGRAPHY

**Double-exposure photography,** N. Dombrowski and A. Levy, *Nature*, 202: 521, May 2, 1964.

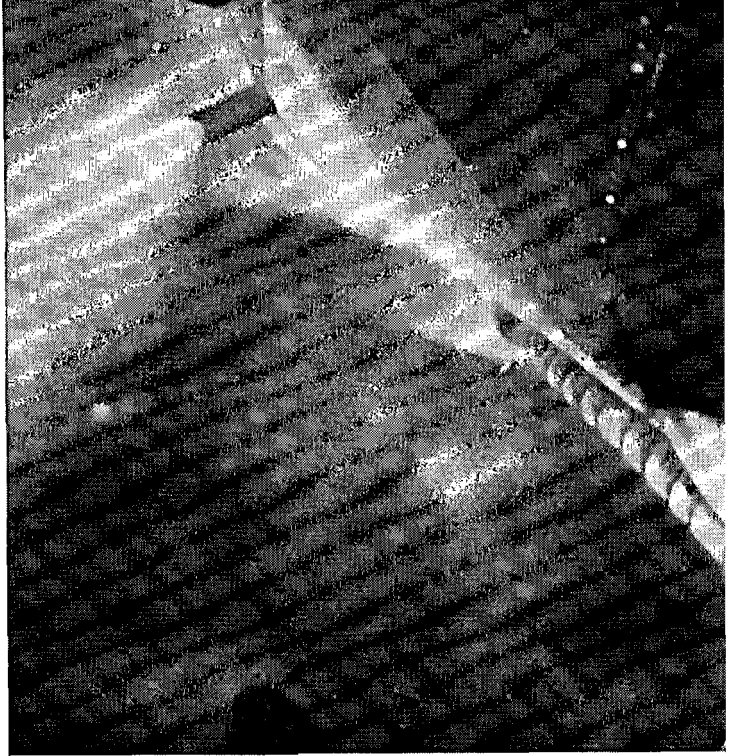
The normal technique of determining the velocity of a moving object by taking two photographs at known time intervals is limited in accuracy by degradation and increased graininess of the image caused by the second exposure. The accuracy is greatly improved by making the first exposure by reflected light, the object being against a dark ground; the second exposure is a shadowgraph produced by backlighting, which exposes the previously unexposed parts of the emulsion except the silhouette of the second image.—R.S.B.

**Ultra-high-speed photography and cinematography** (in Italian), M. F. Arborio, *Atti Coll. ingegneri Milano*, 95: No. 9-10, 183-92, 1962; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 12.46.184, 1963.

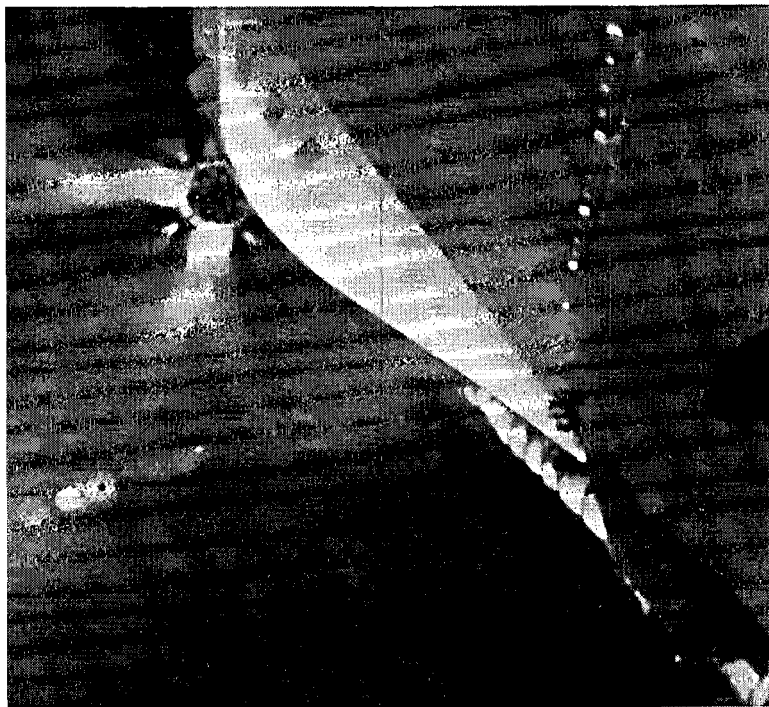
A short review is given of the field of application of high-speed photography and cinematography. Recent apparatus for photography at ultra-high frequencies is listed. Examples are discussed of the high-speed photography of the breaking of a crystal and destruction of an electric lamp by a bullet. The electrical circuit is given for an apparatus for x-ray cinematography at a frequency of  $1 \times 10^9$  frame/sec. Photography is carried out with a potential of 100,000 v and a current strength of 2,000 amp. With the help of this apparatus it is possible to photograph the working of the heart, the movement of the lung cavity during coughing, etc. The operating principles of stroboscopic systems with a rotating prism and sector disc are discussed. The principle of stroboscopic photography with electronic flash is also described, giving exposure times of down to  $2 \times 10^{-7}$  sec.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetekhnika*.)



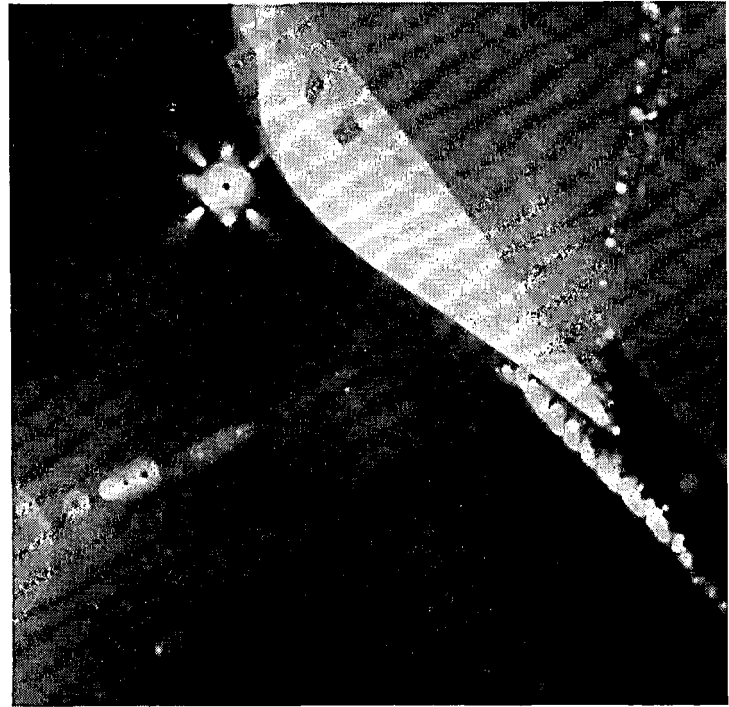
Looking spaceward from an outboard camera on the Saturn booster



Second-stage ullage motor (one of four) ignites



Second stage (small circle to left of booster) coasts free as retrorockets hold booster back



Second-stage motors ignite to push 37,300-pound load into orbit

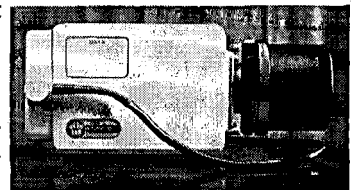
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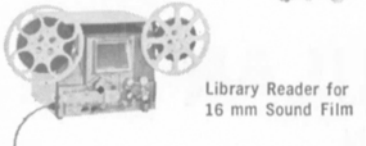
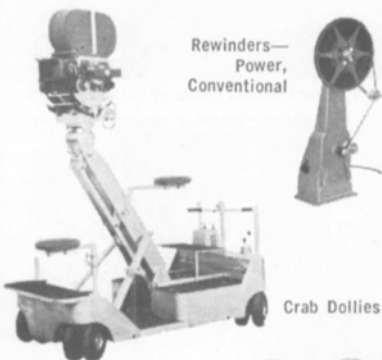
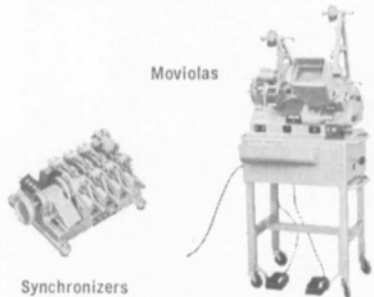
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**Synchronization system for ballistic cameras**, Anon., *Space/Aeronaut*, 39: No. 4, 132-33, 1963; *Referativnyi Zhur.*, *Fotokinetikhika*, Abstract No. 12.46.114, 1963.

A system is described for the synchronization of the shutters of eight Wild BC-4 ballistic cameras placed at distances of up to 225 km from the time impulse generator.—S.C.G. (Abridged from *Referativnyi Zhur.*, *Fotokinetikhika*.)

**A simple method for simultaneous projection of a schlieren image on a viewing screen and into a camera**, C. A. Nebbeling, *J. Roy. Aeronaut. Soc.*, 67: No. 631, 454, 1963; *Referativnyi Zhur.*, *Fotokinetikhika*, Abstract No. 12.46.176, 1963.

A method is described for observing simultaneously on a screen and by high-speed cinematography processes occurring in an aerodynamic tunnel. Usually a mirror reflecting the light beam onto the screen is rotated before the beginning of filming by a special rapidly acting mechanism and directs the light into the camera lens. The image on the screen then disappears, and therefore when unstable processes are being studied the accuracy of the filming is not certain. If a mirror with a knife edge is placed in the light beam, dividing it, it is possible to observe the image and carry out the cinematography at the same time. In order to carry out photography at a frequency of 3,000 frames/sec on the 16mm film with a sensitivity of 16 ASA, the Phillips CS150 150-w lamp is used on a 66-v d-c supply.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetikhika*.)

#### IMAGE SENSING, INTENSIFICATION AND DISPLAY

**An optical character scanner**, Robert J. Potter, *SPIE Journal*, 2: no. 3, 75-78, Feb./Mar. 1964.

An experimental machine has been designed and constructed to be used for optical character recognition. As an integral part of the recognition system, an optical character scanner has been built which optically scans a 35mm microfilm transparency and provides binary information for the rest of the character recognition system. An IBM 1401 computer system delivers gross commands to the character recognition machine, allowing the scanner and other parts of the system to be partially autonomous. The experimental system has been used to study the problems of character recognition. It offers opportunity for considerable flexibility to do research experiments, and it is not intended to be a prototype of a commercial recognition machine.

#### LENSES AND SHUTTER

**Automation of the setting operations in photography with amateur cameras** (in Russian), M. Ya. Shul'man, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 62-78, Jan.-Feb. 1964.

Devices for automatic setting of shutter and aperture and automatic focusing, incorporated in modern cameras for

amateur use, are reviewed. (Bibliography of 85 references.)—S.C.G.

**Improvements in or relating to camera arrangements, for example for television** (British Pat. 953,867), G. H. Cook; assigned to Rank Precision Industries Ltd., filed Jan. 14, 1960; 16 pp., 4 plates.

The zoom lens systems described in Patent 953,866 are incorporated in television cameras and the like where their relatively long back focal lengths facilitate the inclusion of filters, beam splitters, etc., and enable a compact camera to be designed. This patent is divided out of Patent 953,863. Reference is made to Patent 953,866.—J.L.H.

#### MISCELLANEOUS APPARATUS

**Apparatus for recording ultraviolet fluorescence on thin-layer chromatographic photos**, J. O. Barron, *Brit. J. Phot.*, 111: 216-217, Mar. 20, 1964.

An apparatus developed at the Tropical Products Institute (DSIR) for the photographic recording of ultraviolet fluorescence on thin-layer chromatographic plates, is described. To avoid degradation due to long exposure times, a conventional flash equipment is used. In this way enough fluorescence is obtained to expose an HP3 or P1200 plate. The apparatus is designed about Swiss Sinar camera components using the 5- by 4-in. format. A suitable filter system is incorporated in the apparatus. It is generally used with fast panchromatic plates but has been used successfully with Ektacolor Type S and E3 Ektachrome and also with Polaroid films, both black-and-white and color. With the equipment described in the article, fluorescent spots on thin-layer chromatographic plates may be recorded without any of the difficulties normally encountered with other systems.—H.J.B.

**Improvements in or relating to phototelegraphic apparatus** (British Pat. 954,523), K. G. Hoer; assigned to Muirhead & Co. Ltd., filed Mar. 12, 1962; 6 pp., 3 plates.

In order to make higher transmission speeds possible, air bearings are used to support the main drum of the apparatus, which, except for improvements in construction and manufacture, is the same in principle as earlier apparatus.—E.W.H.S.

**Film granularity measurement, R and D**, No. 33, 30-31, May 1964. (cf. *Ind. Electronics*, 2: No. 5, 213-214, May 1964.)

The R.M.S. granularity instrument, constructed in the Kodak Research Laboratories at Harrow following the Eastman Kodak (Rochester, N.Y.) specification, is described, with special reference to the R.M.S. valve voltmeter and the variable bandpass filter.—H.J.L.

#### PHOTOGRAMMETRY

**Machine-aided reconnaissance photo-interpretation**, George S. Sebestyen, *SPIE Journal*, 2: No. 3, 89-92, Feb./Mar. 1964.

Automatic Target Recognition from aerial photographs is formulated in decision theoretic terms. Methods of rep-

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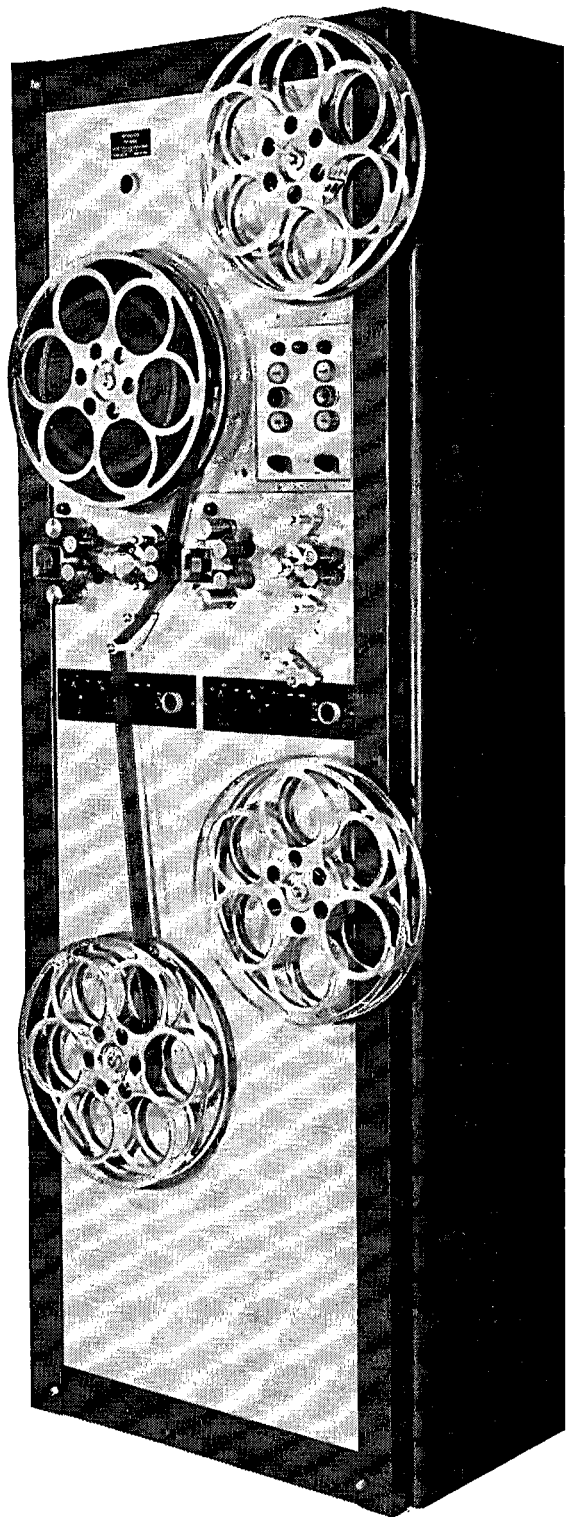
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representing images on photographs as multidimensional vectors are discussed, and the method of processing the resulting parametric representation of images by computer-aided means is presented. The electrooptical instrumentation aspects of obtaining the vector representation of photographic images is illustrated with examples.

### PHOTOGRAPHIC THEORY AND MATERIALS

**Picture blur and the negative. A practical method of measurement,** T. V. Hauser, *Brit. J. Phot.*, 111: 226-231 and 233, Mar. 20, 1964.

An assessment of picture quality is attempted by measuring the reduction in contrast of the fine details of a picture (microcontrast). Measurements on photographic materials are carried out by microdensitometry on an "octobar" test chart, and the results are related to visual assessments of picture quality by a panel of observers. The effect of lens performance can also be assessed in this way.—H.J.L.

**Halation by reflection in photographic layers,** K. Vendrovsky and I. Pakoushko, *J. Phot. Sci.*, 12: 71-75, Mar./Apr. 1964.

Regularities in the mechanism of halation by reflection in photographic layers are examined. The equations are derived on the presumption of complete light diffusion in photographic layers. The experimental trials show that the equations are valid and adequate to a rate of accuracy sufficient for practical purposes.

**Replenishment of solutions in batch processing,** P. Carlu, *J. Phot. Sci.*, 12: 61-70, Mar./Apr. 1964.

The advantages of replenished batch processing are on the one hand the safer handling of the film in deep tanks, as compared to tray processing, and on the other hand the certainty of constant photographic results over long periods, especially desirable in the graphic arts field for color separation negatives and positives. So as to ensure constancy of the replenished solution, a part of it must be discarded after each processing run, and the volume levelled up with replenisher. A simple equation is presented which allows the handling of all factors acting on the equilibrium composition of the replenished solution, and on the replenisher formula and the replenishing rate. Practical rules for handling replenished batch processes, deduced theoretically as well as by experiment, are also presented.

**Color reproduction theory and separation filters,** P. Kowaliski, *J. Phot. Sci.*, 12: 76-85, Mar./Apr. 1964.

Comparison of recent views on color reproduction theory with its now classical aspects shows that theoretically deduced filter requirements are not necessarily of absolute validity. Empirical filter determinations are discussed and examples of the effects of filter set variations are given in some practically occurring instances of process reproduction.

**Influence of light scattering in a photographic layer on the exposure of the uppermost elementary layer,** A. Spühler

and F. Trautweiler, *J. Phot. Sci.*, 12: 57-60, Mar./Apr. 1964.

Theory and experiments show that the effective exposure in the uppermost elementary layer (i.e. the uppermost layer of grains) of a photographic emulsion coating is  $1 + 8.8R$  times ( $R =$  reflection factor of the emulsion) as high as the exposure caused by an incident flux of "parallel" light. The experiments show that in determining the exposure increase by means of a substitute layer (which stands for the genuine elementary layer for the experiment) the physical properties of this layer are of decisive importance; an inappropriate choice of this layer will yield exposure values which are lower than those applying in the elementary layer.

**The influence of heat on the sensitivity of a photographic film to low intensity light,** P. W. Henson, *J. Photo. Sci.*, 12: 102-109, Mar./Apr. 1964.

A fast radiation monitoring film, the Ilford PM 1, was exposed at 0 per cent relative humidity to low intensity u-v light from a plastic scintillator, the exposure temperature being varied between +10 and +75 C. Films were also heated at 60 C and 0 % RH and subsequently exposed to the scintillator light at 30.0 C, the results indicating the presence of latent sub-image in the heated film at the end of the heating. From the temperature dependence of the net film density obtained with constant heating time the activation energy of 1.26 eV was derived, this corresponding to the formation energy of a Frenkel defect in silver bromide. The results suggest that the effect of increased temperature in increasing light absorption is a minor one in this instance.

**The VUZORT system of sensitometric measurement (in Russian),** E. Bureš, J. Moravek and L. Steiskal, *Tekh. kino i telev.*, 7: 13-25, Dec. 1963.

Theoretical questions concerning sensitometric measurements of color multilayer positive materials are considered. Results are given for light of different wavelengths used for the densitometric measurements. The Research Institute VUZORT has designed a densitometric system on the basis of the work recorded for the measurement of the densities of color positive materials.

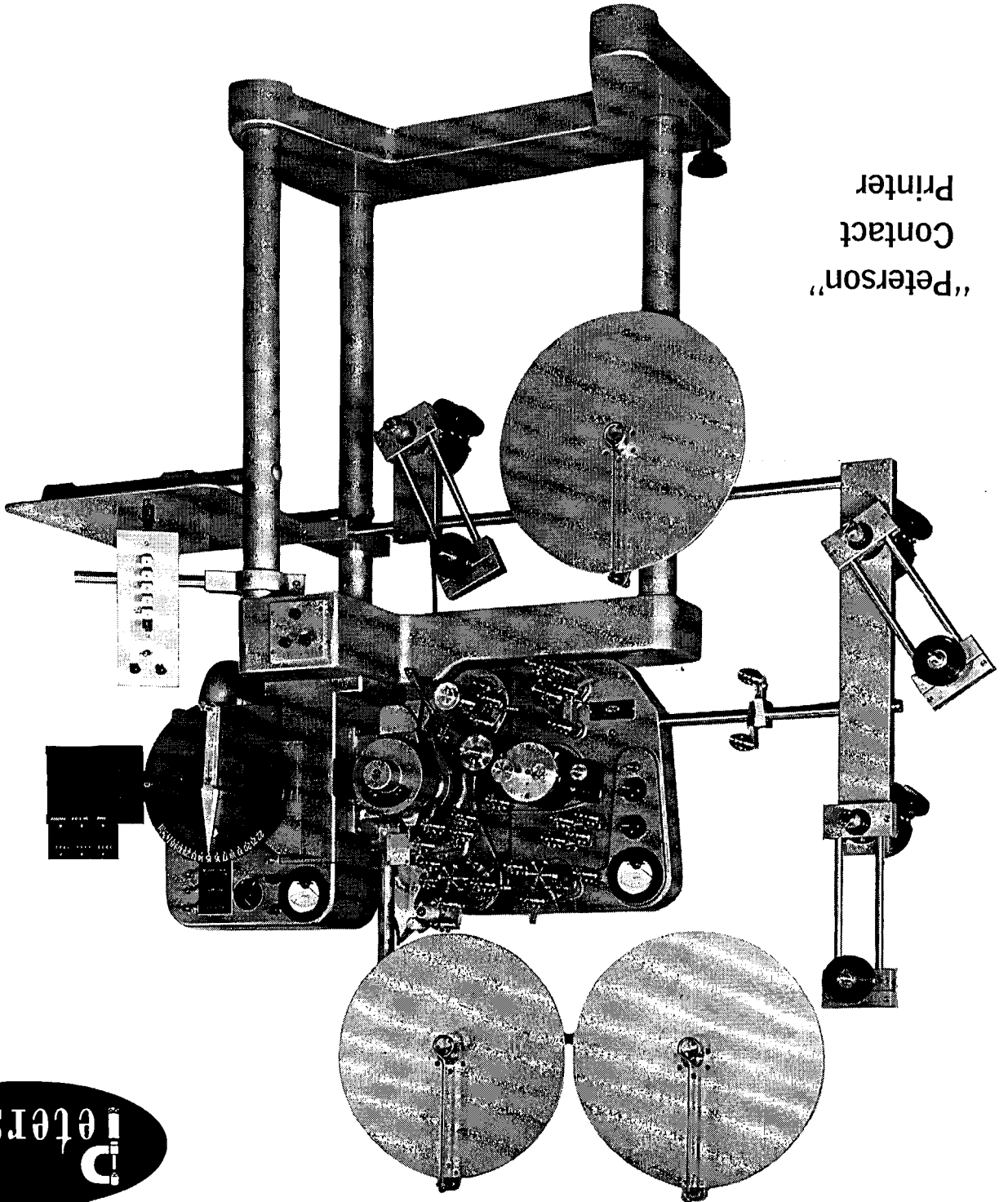
Basically the VUZORT system measures a visual gray test strip of a multilayer color positive material with three equal monochromatic density values. The monochromatic radiation in the three spectral bands used for measurement (blue, green and red) are chosen in such a way that the influence of the unwanted spectral absorptions of the dyes used in the film are as small as possible and the measured density values approximate to the visual diffusion density of the measured visual gray multilayer test strip.—S.C.G. (Translation of author's abstract.)

**A study of the relation between spectral sensitivity and the impurity spectral absorption of photographic emulsions (in Russian),** Zh. L. Broun, V. G. Varsnaver, L. P. Mel'nichuk and K. V. Chibisov, *Zhur. Nauch. i Priklad. Fotografii* i

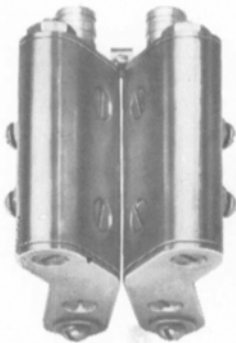
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*Kinematografi*, 9: No. 1, 38-45, Jan.-Feb. 1964.

By analogy with the differential method of Kirillov for determining the absorption spectrum of impurities in silver-halide emulsions, a differential method has been used for determining the relative spectral distribution of sensitivity due to impurity centers. With normal emulsions containing different amounts of silver iodide and a Lippmann emulsion which had been gold-sensitized, spectral distribution of sensitivity due to impurity centers took the form of discrete bands, the position of which in the spectrum corresponded with the bands of the fine structure of the absorption spectrum. The results are interpreted as showing that the sensitivity centers in emulsion grains are the silver impurity centers responsible for the fine structure in the absorption spectrum. The differences in behavior of the short-wave and long-wave absorptions and sensitivity as digestion of the emulsion is prolonged are ascribed to coagulation of the silver centers.—S.C.G.

**Some laws of the imbibition process** (in Russian), I. B. Blyumberg and I. M. Davydkin, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 31-37, Jan.-Feb. 1964.

A mathematical analysis of the transfer of dye in the imbibition process has given relationships by which the concentrations of dye in the matrix and in the positive can be determined. The equations are applied to some experimental cases.—S.C.G.

**A study of the hardening of emulsion layers. I. The mechanical strength and swellability of hardened emulsion layers** (in Russian), S. M. Levi, S. N. Kochneva and L. P. Shradchenko, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 51-53, Jan.-Feb. 1964.

The mechanical strength of a hardened gelatin falls on swelling in water, the extent of the fall depending on the duration of swelling and on the temperature and pH of the water. Electrolytes also had an effect on swelling and mechanical strength in accordance with the lyotropic series. The amount of glyoxal and monochloropropylene hydrin diglycyl ester which it is permissible to use for hardening an emulsion depends on their effect on the photographic properties rather than on the attainment of the desired mechanical properties.—S.C.G.

**A method for the simultaneous developing and fixing of exposed photographic silver-halide emulsions, a material for performing the method and a method of producing the material** (British 951,644), W. Limberger and R. Wendt; assigned to Lumoprint Zindler KG, filed June 17, 1960; 4 pp.

A water-repellant and heat-resistant base is coated with a thin film of a paste of polyvinyl alcohol and glycerin with some water, a substance yielding water of crystallization (e.g., sodium acetate) when heated, and the common components of a combined developer-fixers. This web is brought into contact with the exposed silver-halide emulsion under conditions of high temperature and pressure.—G.I.P.L.

**Improvements in or relating to a process for treating films before coating the films with gelatin containing light-sensitive substances** (British Pat. 948,619), K. Bratring; assigned to H. Rutgers, filed Feb. 2, 1960; 4 pp., 1 plate.

Thermoplastic organic polymers that are hydrophobic can be made readily and uniformly wettable by treatment in either alkaline or dilute acid solutions containing also certain oxidizing or reducing agents. As well as being readily wettable, the surface when coated with a light-sensitive emulsion gives firm adhesion after drying. As a modification of the invention, the simultaneous application of an aqueous protein solution (i.e., a gelatin subbing layer) results in good adhesion of an emulsion layer during later wetting of the film.—J.G.

**Fundamental factors which determine the resolving power of photographic materials** (in Russian), G. G. Gribakin and G. A. Istomin, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 57-59, Jan.-Feb. 1964.

Frieser's resolving-power equation,  $R = (A/k_1)\sqrt{\gamma/\Delta D}$  (where  $R$  is the resolving power in  $\text{mm}^{-1}$ ,  $k_1$  is a factor due to light-scatter in the emulsion and  $\Delta D$  is the threshold density difference recognizable at the limit of resolution), and the equation obtained by substituting the granularity  $\sigma_D$  for  $\Delta D$ , were compared with experimental results from 40 samples. A computation by the method of least squares gave the empirical equation

$$R = \frac{1200 \sqrt[3]{\gamma}}{k_1 \sqrt[6]{\sigma_D}}$$

as a better fit. [Abstractor's note: the two  $k_1$ 's are apparently not the same.] Photomicrographs show the influence of contrast, scatter and granularity on resolving power.—S.C.G.

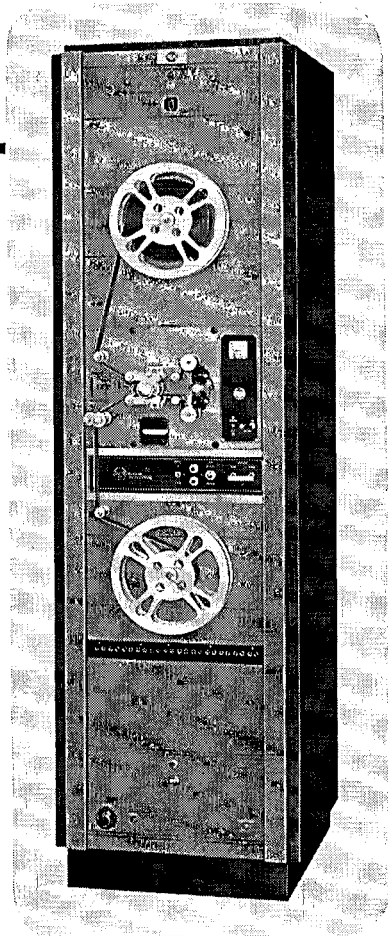
**Photographic developers** (British Pat. 948,294), G. C. Alletag; assigned to P. A. Hunt Co., filed Dec. 12, 1961; 7 pp.

This patent describes the preparation of liquid concentrate developers which contain 1-phenyl-pyrazolid-3-one as one of the developing agents. The known decomposition of this agent under adverse storage conditions is prevented by dissolving the pyrazolidone in a water-miscible organic solvent, e.g., a glycol monoether, 1,4-dioxane, etc. The resulting solution, packed in a separate vessel, is added to an aqueous solution of the remainder of the developer concentrate just prior to use. Under these conditions the developer is claimed to be indefinitely stable.—M.V.M.

**A new developer for the machine processing of black-and-white negative films** (in Russian), M. M. Shchedrinskii, *Tekh. kino i telev.*, 8: 10-15, Jan. 1964.

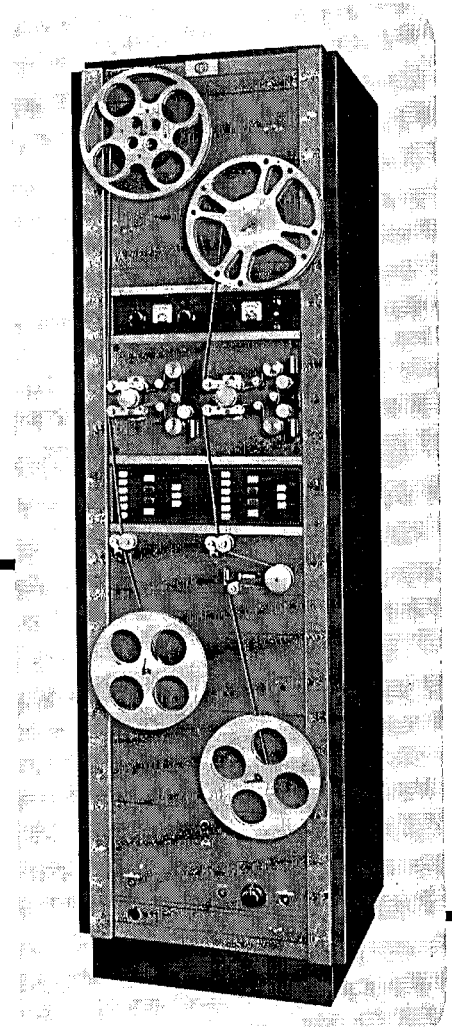
A developer contains, per liter, Phenidone, 0.06 g; hydroquinone, 0.25 g; sodium sulfite (anhydrous), 100 g; borax, 2.00 g; potassium bromide, 0.50 g; it has been devised for use in the Lenfilm Studios for the machine processing of black-and-white negative motion-picture films of

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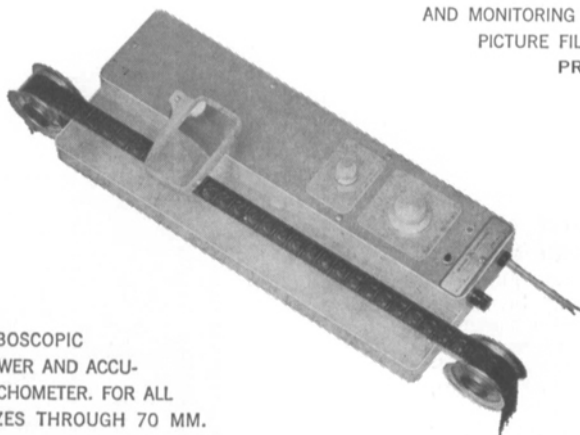


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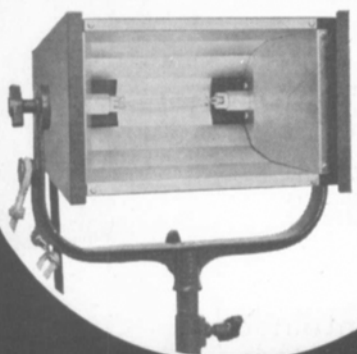
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various makes. Its sensitometric properties and advantages over other developers used in Soviet practice are discussed.—S.C.G.

**Combined developer and fixer compositions** (British Pat. 954,453), L. F. A. Mason and A. M. Sinclair; assigned to Ilford Ltd., filed Feb. 8, 1962; 2 pp.

The use of 1-phenyl-4-methyl-3-pyrazolidone in place of Phenidone in alkaline monobaths gives better keeping life of the solutions. Monobaths in the pH range of 10.8 to 13.0 are claimed, formulated within the following limits: 1-phenyl-4-methyl-3-pyrazolidone, 0.125 to 3.0 g; hydroquinone, 1 to 16 g; sodium thio-sulfate (anhydrous), 50 to 80 g; tribasic sodium phosphate (12 H<sub>2</sub>O), 30 to 70 g, or potassium aluminum sulfate, 5 to 30 g; sodium carbonate (anhydrous), 0 to 40 g; sodium sulfite (anhydrous), 15 to 30 g; sodium hydroxide, 0 to 10 g.—E.T.S.

**A study of the kinetics and mechanism of photographic development. I. Kinetics of regular growth of the silver nucleus in the development process** (in Russian), V. I. Sheberstov, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 46-50, Jan.-Feb. 1964.

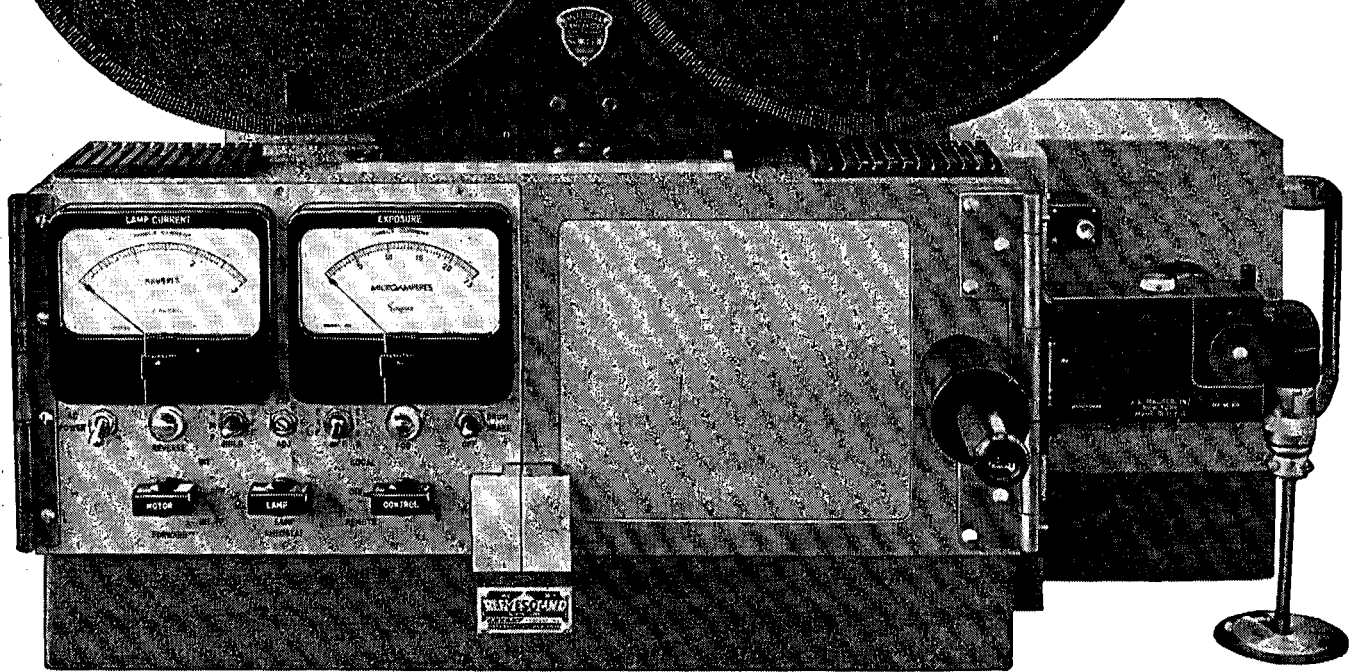
Equations for the rate of growth of a speck of developed silver on a silver-halide crystal in a developer are derived for the model in which the rate of growth depends on the perimeter of a circular speck (i.e., an autocatalytic reaction at the line of contact with the undeveloped silver halide), and for the model in which the rate of growth depends on the area of the speck (i.e., autocatalytic reaction at the area of contact with the developer solution). These equations are discussed in the light of observations from the literature. It is pointed out that the kinetics of development of a real emulsion grain will be more complicated because it will normally contain several nuclei at different stages of development.—S.C.G.

**A study of the rate of physical development with a *p*-hydroxyphenylglycin developer** (in Russian), Ya. M. Veprik, V. N. Sintsov and G. P. Faerman; *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 27-31, Jan.-Feb. 1964.

A physical developer containing *p*-hydroxyphenylglycin and silver nitrate is unstable, but its stability may be considerably improved by the addition of 0.5% gelatin. Curves have been obtained showing the dependence of developed density on the time of development and on the concentrations of developing agent and silver nitrate. Curves of the reciprocal of the time required to produce a density of 1 plotted against the log concentrations of silver nitrate and developing agent are straight lines. A developer solution recommended for the development of nuclear emulsions contains 0.005M *p*-hydroxyphenylglycin, 0.025M silver nitrate, 0.5% gelatin and 0.5N sulphuric acid. It is stable for 190 min in a quartz vessel at 20°C.—S.C.G.

**The relation between regression in a high-speed nuclear emulsion and the duration of digestion** (in Russian), K. M. Romanovskaya and K. S. Bogomolov,

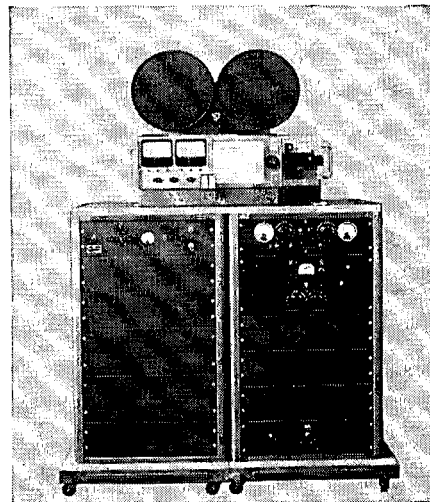
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*Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: No. 1, 53-55, Jan.-Feb. 1964.

Tracks of minimum-ionization particles in NIKFI Type-R nuclear emulsions are the more liable to regression on keeping as the duration of digestion is increased. Coupled with the fact that the speed of the emulsion reaches a maximum and then falls as digestion is prolonged, the evidence points to the necessity of avoiding any unnecessary prolongation of digestion.—S.C.G.

#### PHYSICS AND CHEMISTRY

**Benzoxazolylbenzimidazoles and cyanine dyes obtained from them** (in Russian), V. M. Zubarovskii, R. N. Moskaleva and M. P. Bachurina, *Ukrainskii Khim. Zhur.*, 30: No. 1, 80-82, 1964.

By condensation of 1-alkyl(or phenyl)-2-methylbenzimidazole-5-carboxylic acids with *o*-aminophenol, 1-methyl-, 1-ethyl- and 1-phenyl-2-methyl-5-(benzoxazolyl-2')-benzimidazoles have been synthesized, from the ethiodides of which cyanine dyes have been obtained—imidodimethinmerocyanines, rhodanine derivatives, and symmetrical imidocarbocyanines. The principal adsorption maxima of these dyes have been obtained.—S.C.G. (Translation of author's abstract.)

**Cyanine dyes from 2-methylacenaphtheno-4',5':4,5-thiazole** (in Russian), A. V. Stetsenko and L. I. Kravets, *Ukrainskii Khim. Zhur.*, 30: No. 1, 75-80, 1964.

Cyanine dyes have been prepared from the quaternary salts of 2-methylacenaphtheno-4',5':4,5-thiazole and from quaternary salts of 2-methylacenaphtheno-5',4':4,5-thiazole. Their absorption maxima have been measured and the connection between their structure and colors is discussed.—S.C.G. (Translation of author's abstract.)

**Cyanine dyes from 7-membered heterocyclic systems: IV, Dyes in the naphthothiazepine series** (in Russian), L. K. Mushkalo and N. K. Mikhaïlyuchenko, *Ukrainskii Khim. Zhur.*, 30: No. 2, 202-206, 1964.

A study has been made of the condensation reaction of 2-amino-1-thionaphthol with mesityl oxide. It is shown that a 7-membered heterocyclic base is formed which is a derivative of naphtho-1,5-thiazepine. From the perchlorate of this base a series of cyanine dyes have been obtained containing hydrogen atoms on the nitrogen atoms. Their absorption spectra have been studied.

The solvatochromy of this *bis*-(2,2-dimethyl - 2,3,5H - naphtho - [2,3 - a]-1,5 - thiazepine - 4) - trimethin cyanine perchlorate has been studied. It is shown that the increase in color of a methanol solution of this dye had 53  $\mu$  in comparison with its benzene solution is explained by the presence of hydrogen bonds between the molecules of the dye and the alcohol.—S.C.G. (Translation of author's abstract.)

**Helical polymerization of pseudo-isocyanine**, S. F. Mason, *Proc. Chem. Soc.*, 119, Apr. 1964.

Salts of 1,1'-diethyl-2,2'-cyanine, mono-

meric in ethanol, give a fluorescent polymer, containing about  $10^6$  monomers, in water at concentrations of  $10^{-3}M$ . The structure, confirmed by x-ray diffraction, consists of a helix with 8 monomers/turn and a rise of 4.5 Å/monomer along the helix axis. Optically active polymers have been resolved.—E.A.M.

**The precipitation of silver chloride from homogeneous solution**, J. J. Black, M. J. Insley and G. D. Parfitt, *J. Phot. Sci.*, 12: 86-90, Mar./Apr. 1964.

The precipitation of silver chloride from homogeneous solution has been studied by conductance and light scattering measurements. The silver chloride was produced by the hydrolysis of allyl chloride in aqueous silver nitrate solutions such as to give a wide range of  $(Ag^+)/(Cl^-)$  ratio at the onset of precipitation. Monodisperse sols exhibiting Higher Order Tyndall Spectra were formed at silver nitrate concentrations furthest removed from the zero point of charge. The sols showed maximum polydispersity in size and shape with marked twinning. The growth in the initial stages was found to be controlled by an interface process.

#### PRINTING EQUIPMENT, ENLARGERS

**The 23LTO-1 optical printer for printing wide-screen copies from 70mm originals** (in Russian), N. I. Voronov, I. S. Golod, S. Ya. Golosinskiĭ, I. D. Bernshteĭn and S. V. Smirnov, *Tekh. kino i telev.*, 7: 1-5, Dec. 1963.

The printer described is for making 35mm prints for anamorphic projection directly from a 70mm negative. A prototype was designed and constructed by the Central Constructional Bureau of the Council of Ministers of the U.S.S.R. in collaboration with the NIKFI Laboratories; it was given operational trials at the Mosfil'm studios in 1962.—S.C.G.

**Improvements in and relating to photographic projection printing apparatus** (British Pat. 950,822), E. C. Woodcock; assigned to Williamson Manufacturing Co. Ltd., filed Dec. 9, 1958; 7 pp., 3 plates.

In en-primers both the magnification and the paper wind-on have to be altered according to the negative size and format. Reflex viewing of the negative with a visual indication of the wind-on setting help the operator to alter these correctly. Various mechanical and optical methods of achieving this are described.—R.B.C.

#### PROCESSING EQUIPMENT

**Equipment for cleaning films** (in Russian), I. M. Fridman and G. P. Kudryashov, *Tekh. kino i telev.*, 7: 66-71, Dec. 1963.

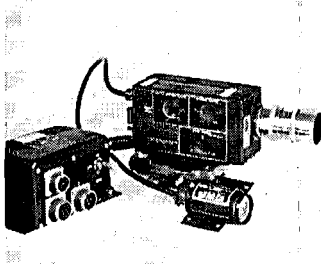
Apparatus manufactured outside the Soviet Union for cleaning film is described, with particular reference to ultrasonic cleaning of negative and positive films.—S.C.G. (Translated from *Tekh. kino i telev.*)

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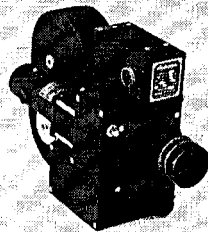
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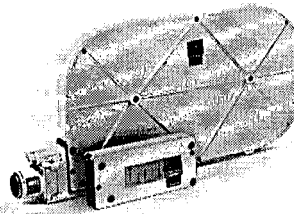
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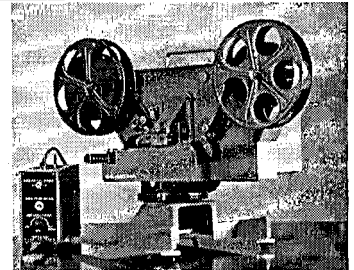
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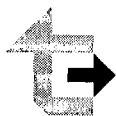
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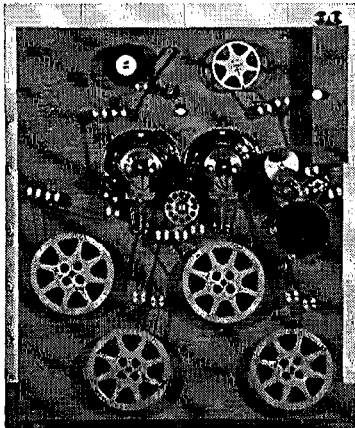
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Viscous processing of motion-picture film, B. J. Davics, *Brit. Kinematog.*, 44: 36-45 and 48, Feb. 1964.

The principles of viscous development and the design details of a viscous-processing machine are discussed and their application to a Hi-speed FA50 Spray Developing Machine is demonstrated.—G.I.P.L.

A rapid method of drying processed film (in Russian), F. A. Rozental', N. A. Vinogradova and Yu. A. Boltunov, *Tekh. kino i telev.*, 7: 5-12, Dec. 1963.

An experimental study of the drying of photographic film shows that it takes place in three stages. During the first stage the emulsion and base are heating up and the rate of evaporation increases with time until it becomes constant in the second stage. The first stage can be accelerated by improving the heat transfer to the film, e.g., by infrared heating, whereas the second is better dealt with by improving the aerodynamics of the system. In the final stage the rate of evaporation falls off, being greatly influenced by the rate of diffusion of the remaining moisture to the surface of the film. Infrared heating helps to increase this diffusion. Two models of drying units based on these principles are described. Each is divided into three sections corresponding to the different stages of drying. Each dries 3,000 m of black-and-white positive film per hour, and the second model dries 1,200 m of color multilayer positive.—S.C.G.

**PROJECTORS AND VIEWERS**

**Agfa Movector G** (A.C.W. Test Report), Anon., *Amateur Cine World*, 7: 489-491, Apr. 9, 1964.

This 8mm cine projector from Western Germany has an *f*/1.3 20mm Movenar lens and an 8-v, 50-w integral mirror lamp. A 150-v induction motor gives a running speed of 18 frames/sec. The unusual framing mechanism uses a worm and peg arrangement. Rapid rewind is possible after fitting a separate drive belt. Other features include pushbutton switching and adequate heat protection for the film during still-picture projection.—N.W.

**Bell & Howell 652 Sound Projector** (A.C.W. Test Report), Anon., *Amateur Cine World*, 7: 572-576, Apr. 23, 1964.

The new Bell & Howell 16mm sound projector is reviewed in detail. It is the first 16mm projector to have entirely automatic threading, the soundhead being included. Sound reproduction is by the optical method only and the running speed is fixed at 24 frames/sec. The machine works straight from the mains, using a 1000-w lamp, and no separate transformer is needed. The main improvement shown is in light output.—N.W.

**Technical details of the Luch-2 motion-picture projector** (in Russian), S. G. Babushkin; *Tekhnika kino i Telev.*, 8: 67-69, Jan. 1964.

The Luch-2, details of which are given, is an 8mm motion-picture projector made in Leningrad. It is intended for use with



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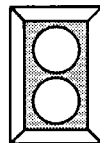


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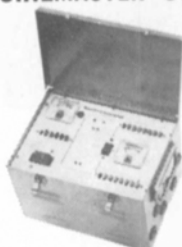
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**Improvements relating to optical projection systems** (British Pat. 953,440), A. P. Castellain; assigned to Associated Electrical Industries Ltd., filed Jan. 12, 1960; 2 pp., 1 plate.

The system of ellipsoidal and spherical mirrors which is described enables more of the light output from a concentrated source (e.g., a Xenon discharge lamp) to be collected and directed toward the film gate in a projector, for example.—A.E.S.

**Improvements in or relating to methods of constructing curved screens and screens obtained therewith** (British Pat. 953,295); assigned to J. Hourdiaux, filed Dec. 11, 1962; 3 pp., 1 plate.

In the method of constructing curved screens which is described, the screen is made from a series of overlapping L-section elements arranged vertically. The element is held by the leg of the L and the screen surface is on the foot. The elements are arranged with the screen surface of each element approximately normal to the projection axis, to reduce light scattered to other parts of the screen.—R.A.W.

**8mm sound in a cassette**, K. Moreman, *Film User*, 18: 247-248, May 1964.

The Cinephonic Mark IV 8mm Sound Repeat Projector made by the Fairchild Camera & Instrument Corp. in the U.S.A. gives rear-projection viewing of 8mm striped film on an 11 by 8-in. screen, with sound reproduction from a transistor amplifier giving up to 3-w output. The projector has an  $f/1.4$  lens of focal length 7.5mm and high efficiency 8-v, 50-w pefocus lamp. The Fairchild FM-400 cartridge holds up to 400 ft of color or black-and-white film with a running time of 22 min and gives immediate operation on insertion into a slot. During projection the film is rewound onto the cassette ready for automatic reprojction.—N.W.

**Cinematographic projectors** (British Pat. 955,012), H. Mayfarth, G. Cisar and R. Jacob; assigned to Veb Kamera-Und Kinowerke Dresden, filed Nov. 14, 1961; 2 pp., 3 plates.

A soundproof housing for a cine projector is designed to permit the conducting away of heat. This is necessary as a result of the enclosure on all sides.—H.J.L.

**Perkeo Automat N. 150** (Projector Test), N. Maude, *Amateur Photographer*, 127: 462-463, Mar. 25, 1964.

The new Voigtlander N.150 slide projector resembles the Automat N, but has a 24-v, 150-w lamp, giving better illumination. Three  $f/2.8$  Talon lenses, with focal lengths of 50, 85 and 100mm, are available. By changing to the 50mm lens, half-frame transparencies can be projected. Control is by three keys on the side, or by remote-control lead with a focusing switch. Other features include optional reduction in lamp voltage for economy, a socket for the use of a tape recorder and synchronizing device, prewarming of slides and a warning signal for badly bent slides.—N.W.

**The Consul animated viewer** (A. C. W. Test Report), *Amateur Cine World*, 7: 396-397, Mar. 19, 1964.

The Consul film editor has facility for front-projection as well as the usual rear-projection onto a ground-glass screen. The 400-ft spool arms fold in, and the right hand-arm has a 2:1 reduction gear. The optical system is conventional, using three surface-aluminized mirrors and a rotating four-sided glass block. Illumination is by a 10-w, 6- to 8-v lamp fed by a transformer.—N.W.

**Mosaic photography** (British Pat. 949,764), P. S. Smith; assigned to Smith-Dieterich Corp., filed Jan. 18, 1962; 4 pp., 2 plates.

Some wide-screen ciné systems use three projectors to cover the whole screen. It is very difficult to prevent the joins in the image from being visible. A method is described which reduces this defect. Wedges of reduced transmission are printed on the edge of the positive film and the projectors are arranged so that these regions overlap, special mention being made of the effect of vignetting. Several methods of producing these wedges are described.—R.W.

### RADIOGRAPHY AND NUCLEAR PHOTOGRAPHY

**Photographic aspects of the definition attainable in radiographs**, R. Halmshaw, *J. Phot. Sci.*, 12: 110-118, Mar./Apr. 1964.

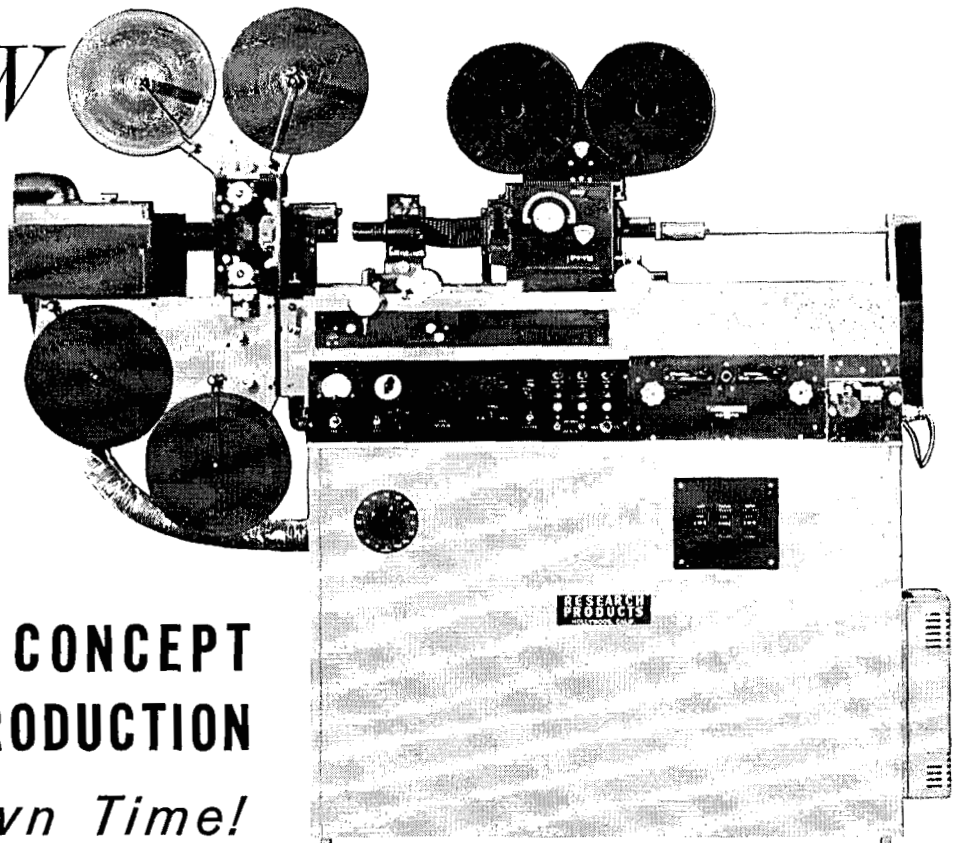
The definition attainable on a radiograph is conveniently measured in terms of the "unsharpness" of the image of a physically sharp edge. There are four main causes of radiographic unsharpness—geometric, movement, intensifying screens, and film—but in industrial radiography only geometric and film unsharpness are significant, except when salt intensifying screens are used. With x-rays of energy up to 200 kv the film unsharpness of nonscreen x-ray film is c.0.1mm and geometric unsharpness is usually predominant. With high-energy x-rays however (above 1 mv) the film unsharpness has been measured to be from 0.2 to 0.8 mm and becomes the dominant factor. Methods of measuring this film unsharpness are described and its significance in limiting the sensitivity attainable in radiography is discussed. The magnitude of film unsharpness can be predicted from a knowledge of electron ranges in film emulsions, and a possible relationship between film unsharpness, graininess and the number of x-ray quanta adsorbed during an exposure is discussed. An attempt has been made to relate radiographic unsharpness and resolving power of films and its seems probable that recent work on frequency response curves can also be related. The experimental difficulties in making frequency response curves with high-energy x-rays are discussed.

### SOUND RECORDING AND REPRODUCTION

**Synchronized sound for amateur film** (in German), F. Frese, *Funkschau*, 35: No. 2, 37-38, 1963; *Referativnyi Zhur.*

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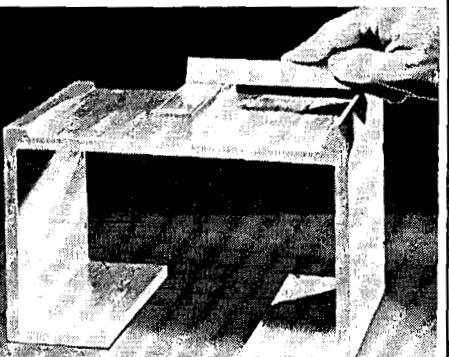


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Fotokinetekhnika, Abstract No. 12.46.152, 1963.

A popular method of adding sound to an 8mm film is to record the sound on a separate film which is synchronized with the picture film. The synchronizing devices put out by a number of firms are briefly described. The advantages and disadvantages of the method are discussed.—S.C.G. (Abridged from *Referativnyi Zhur., Fotokinetekhnika.*)

The measurement of soundtrack densities in the range 0 to 4.0 on the TsD-7 (TsD-4) densitometer (in Russian), Z. A. Belorusets, L. K. Krupenin and Yu.

N. Lelyukhin, *Tekh. kino i telev.*, 7: 26-28, Dec. 1963.

A new Russian negative sound-recording film has a higher working density (3.0 or above) than the present densitometers used in the Soviet film industry can cope with. Modifications to the TsD-7 and TsD-4 densitometers are described by which they can be used over a range of 0 to 4.0, using small apertures.—S.C.G. (Translated from *Tekh. kino i telev.*)

Comparative results of measurement of peak and effective values of pitch-variation coefficients of motion-picture

apparatus (in Russian), E. A. Besschetnov, I. I. Malakhova and V. V. Epshtc'n, *Tekhnika kino i telev.*, 8: 16-24, Jan. 1964.

Pitch variations in a number of items of Russian sound-recording and reproducing equipment have been made with a Gaumont-Kalee flutter-meter and a similar instrument made by the Leningrad Institute of Motion Picture Engineers.—S.C.G.

Scoring of 16mm films for television (in Russian), O. E. Belov, *Tekhnika kino i telev.*, 8: 64-66, Jan. 1964.

A short description is given of apparatus

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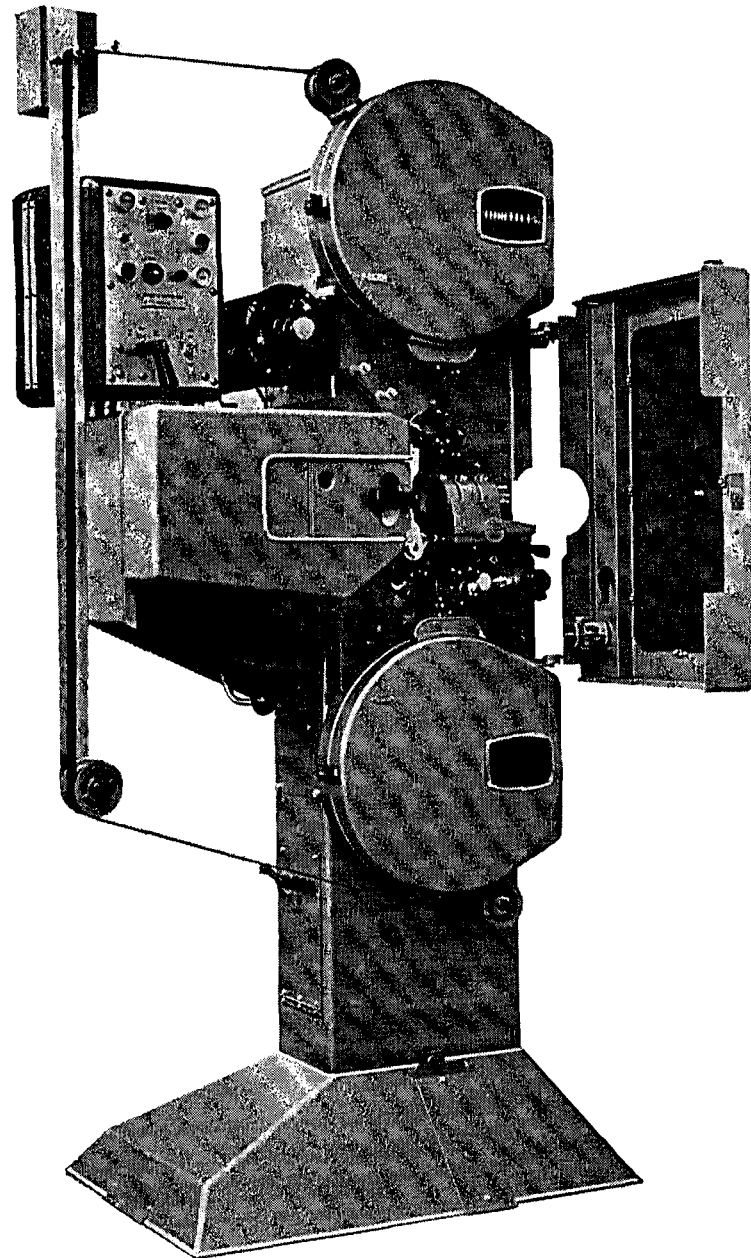
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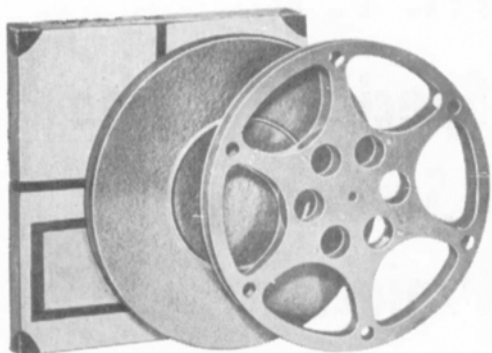
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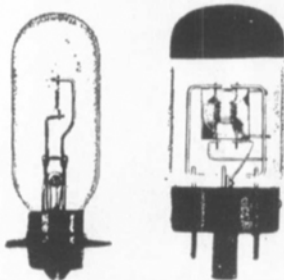
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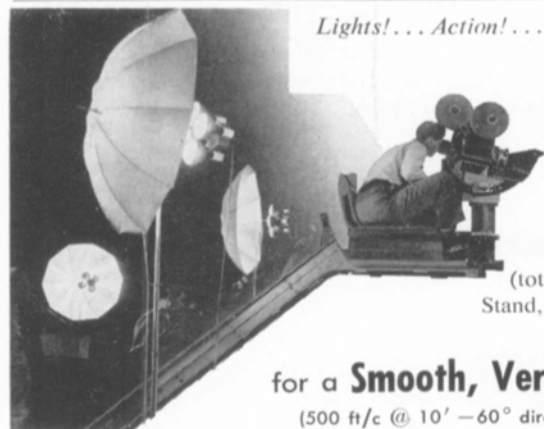


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used at the Sochinskii television studios for making a synchronized magnetic sound track for 16mm films.—S.C.G.

The introduction of magnetic soundtracks into standard 35mm film prints (in Russian), V. L. Trus'ko and A. V. Chernoochenko, *Tekhnika kino i telev.*, 8: 25-34, Jan. 1964.

An analysis is made of the possibilities and advantages of changing over from optical to magnetic soundtracks in the mass production of standard 35mm film prints under Soviet conditions. The authors believe the time is right for such a change.—S.C.G.

The use of the magnetic soundtrack in 35mm film prints of standard size (in Russian), A. F. Veklenko, *Tekhnika kino i telev.*, 8: 35-41, Jan. 1964.

The discussion opened by Trus'ko and Chernoochenko (see previous abstract) is continued. Reasons are given for retaining optical soundtracks on standard 35mm prints. It is concluded that optical soundtracks have not yet reached the end of their capabilities.—S.C.G.

### SPECIAL APPLICATIONS

Color photography using single and multiple optical sections. A preliminary report, P. G. Galvao and R. A. Moura, *Amer. J. Ophthalmol.*, 55: No. 4, 818-820, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 12. 46.160, 1963.

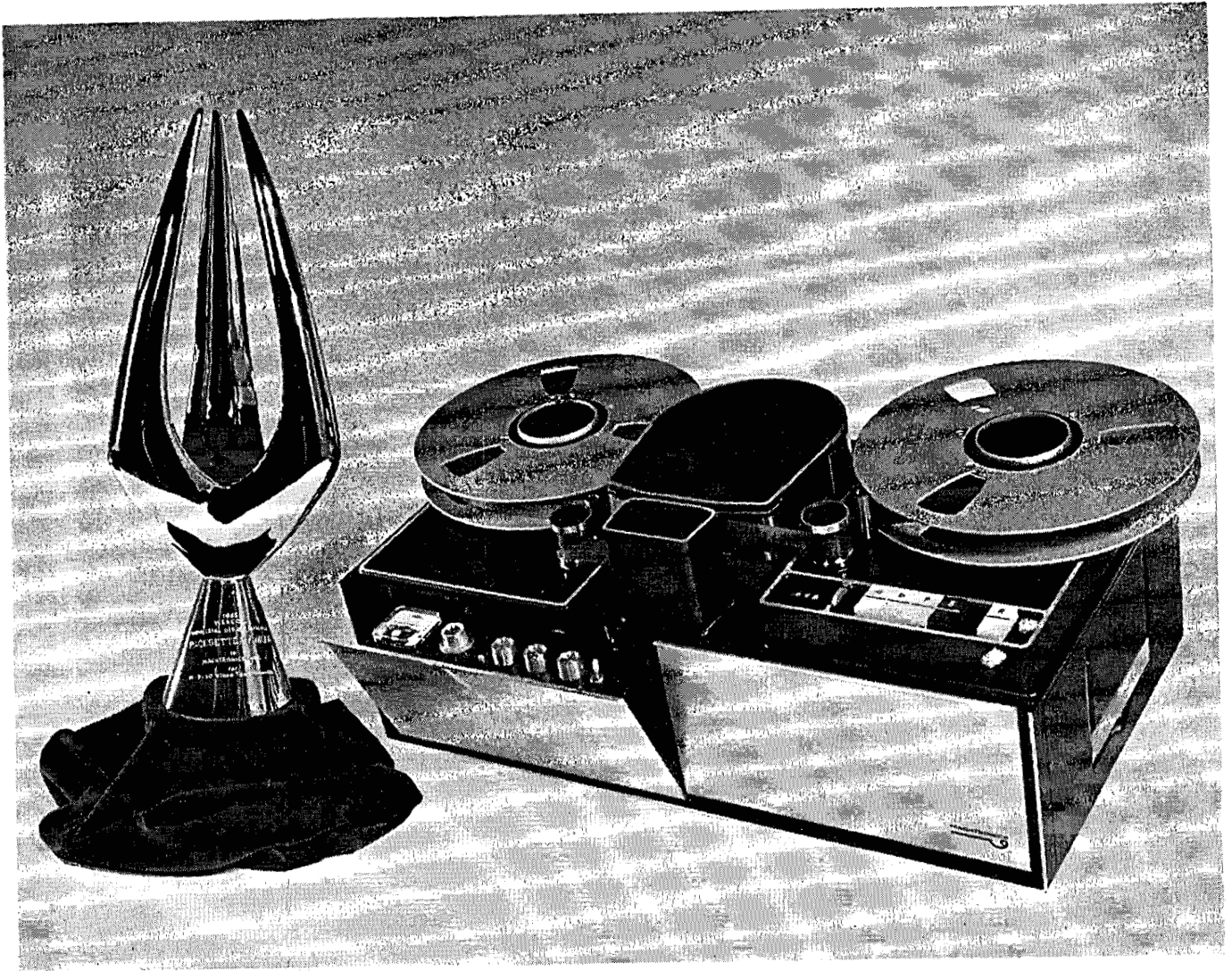
An improved method is reported for the diagnosis of eye diseases with the aid of a lamp with a slit and color photography. The improvement consists in the use of a simple method of splitting the light beams with the aid of an ordinary microscope slide. The separation of the rays depends on the index of refraction and the thickness of the glass, and also on its angle of inclination to the primary ray. It is possible to use several slides and to obtain in this way a large number of optical sections of the eye.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Retinal cinematography using modified Zeiss camera, *Arch. Ophthalmol.*, 69: No. 6, 770-772, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 12. 46.161, 1963.

A method of cinematography of the retina is described in which a 16mm Arriflex motion-picture camera is adapted for use with the standard Zeiss apparatus for still photography of the retina, replacing the normal 35mm contax camera.—S.C.G. (Abridged from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Pictorial Recording of body temperature, K. Lloyd Williams and C. Maxwell Cade, *Med. & Biol. Ill.*, 14: No. 2, 105-112, Apr. 1964.

Methods and applications of recording infrared radiation emitted from the skin surface are described. The conditions are outlined which make it possible to differentiate between temperature variations as small as 0.2 Centigrade degree, but spurious results, artifacts and other limiting factors are duly stressed. (Author's abstract.)



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