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The announcement revealed that among the firm's immediate plans is an expansion program for extended distribution of Lorraine arc light carbons and of the Cinemeccanica 35/70 projection systems, xenon light sources, and power supplies through the XeTRON Division.

New Patent Office Classification for Optics and Motion Pictures

A revised classification for the more than 8,000 patents relating to the fields of optics and motion pictures has been announced by U.S. Patent Commissioner Edward J. Brenner.

The project involved re-classifying 3,100 original patents, 3,421 cross references and a technical history and encyclopedia of the motion-picture art. Background of the project, including a brief discussion of motion picture, was given in the announcement.

Motion pictures are characterized by the display of a plurality of images, either photographs or drawings, in different attitudes of motion at such a rate that the images produce an illusion of continuous motion due to the property of the eyes, termed persistence of vision, of retaining sensory effect of a visual stimulation after the stimulus is removed.

Motion pictures grew to an art form and a vehicle for mass entertainment only as a result of the work of such great inventors as Thomas Edison, George Eastman and Lee De Forest, whose creative efforts made the wide use of motion-picture devices practical. The first commercial use was indicated at the World's Fair of 1893 held in Chicago, where Edison's Kinetoscope for the first time showed the public photographic pictures with the illusion of motion. Failure to file application in Great Britain cost Mr. Edison a great deal since the machine was copied in England and sold throughout Europe. However, Edison's American Kinetoscope Co. was the only supplier of finished film for exhibition, and from the company's studio at Orange, N.J., the motion-picture industry, as we know it today, was born. In 1892 a British inventor named Robert Paul developed an improved camera which avoided the Edison patents, and shortly thereafter, in February 1896, he developed the first motion-picture projector. Mr. Paul's devices were the first to employ the intermittent movement of the film which is now universally accepted. Mr. Paul licensed his invention freely, and thus set the international pattern that characterizes the industry today.

From these beginnings the motion-picture industry has grown to include uses other than for entertainment, such as speed measuring, teaching, and motion analyzing where the motion is either too fast or slow for direct observation.

The new class includes groups of subclasses relating to recording and exhibiting motion pictures with sound; motion-picture application; recording and exhibiting methods, such as the methods of making the popular cartoons and puppet displays; stereoscopic and three-dimension motion pictures; color motion pictures; panoramic motion pictures; apparatus producing special motion-pictures effects,

such as animation, wipes and dissolves; fire prevention and isolation, which was so necessary before the development of the less flammable safety film; motion-picture camera and projector structure details, such as drives, light sources, shutters, gates, housing and supports; and the structural details of the picture carrier or film. Provision is also made for novelty and for very early types such as the picture plate motion pictures, the book leaf type or mutotropes, and the drum and disc type motion pictures, as well as for the little used optical rectifier type on which many patents have been issued.

Re-classification was accomplished by S. B. Pritchard and W. T. Skeer, patent classifiers in Division 92, and J. N. Pedersen, a Supervisory Patent Examiner in Group 260.

Copies of the class schedule and definitions, Class 352 Optics, Motion Pictures can be obtained from the Commissioner of Patents, Washington, D.C. 20231, for a nominal charge.

The Patent Office has issued over 3,147,483 patents classified in 309 classes and 62,000 subclasses in every conceivable field of invention.

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 *Tekhn. 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. Golshtein, 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
Exposure Determining Devices
General, History, Training, Bibliography
High-Speed Photography

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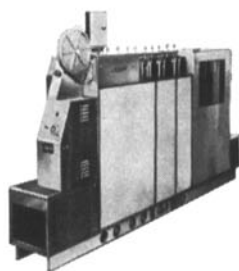
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CAMERAS

Agfa Movex Reflex 8mm (in German), Anon., *Fotohandler*, 14: No. 13, 764-765, 768, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 1.46.124, 1964.

A new Agfa motion-picture camera for 2 by 8mm film is described. It comprises a Movestar 13mm objective in a nonfocusing mount (Curtav 0.5x) and a telephoto attachment (Telegonar 2), and also a 2-lens attachment for close-ups, focusing from 0.2 m to infinity. The variable attachment, together with the objective, forms a modification of the well-known Variogon objective from Schneider, especially designed for this camera, with a focal length that can be changed from 7.5 to 37.5 mm. The viewfinder is of the mirror type, about 50% of the light from the objective being passed through it with the aid of a dividing prism. A system of automatic diaphragm setting takes into account the frame frequency (8 to 48 frames/sec) and the sensitivity of the film being used (4 to 31 DIN); 3 Mallory elements are used for the power pack. The camera is loaded with a magazine in which ordinary cartridges are used; it is possible to load with cartridges. The spring motor allows 10 m of film to be shot with one winding. The dimensions of the camera (with the Variogon objective and hand-grip) are 260 by 195 by 95 mm and its weight is 2,100 g.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Bolex Zoom Reflex P2, N. Dyer, *Amateur Photographer*, 127: 968-969, June 24, 1964.

The P2 8mm cine camera is the least expensive of the new Bolex range. It has a 9 to 30mm *f*/1.9 Som-Berthiot Pan Arrior zoom lens and direct reflex through-the-lens viewfinder with adjustable ocular. A cadmium sulfide photocell gives fully automatic exposure control. This cell is mounted behind the lens and is retracted on pressing the release. Films with speeds from 5 to 400 ASA can be used. Seven running speeds from 12 to 64 frames/sec are provided by a clockwork drive, and the variable sector shutter gives facilities for fades, etc. A Berthiot Hyper-Pan wide-angle converter lens may be fitted.—N.W.

Camera for the photographic scanning of pistons (in German), M. Röhrle, *Motor-techn. Z.*, 24: 351-352, No. 10, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 3.46.34, 1964.

The working principle of a device made by the firm of Mahle KG (Federal German Republic) for the photography of the damaged surface of a piston is based on the rotation of the cylindrical body around its axis in front of a camera objective with a vertical slit in the focal plane, behind which is a rotating drum bearing the photographic material. The piston is centered before being photographed on a table which is rotated by means of a friction disc, driven from a roller which also rotates the cassette drum. The roller rotates at a speed of 6 rev/min and is driven by a d-c motor rotating at 3,000 rev/min, through a reducing gear. A Linhof Technika 9 by 12 model 4 camera is used; the subject is illuminated by means of two Nitraphot lamps placed at the side.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Camera for photographing the fundus of the eye (in Russian), R. M. Tamarova, *Trudy Vsesoyuz. Nauch.-Issled. Inst. Med. Instrum. i Oborud.*, 43-47, No. 2, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 3.46.236, 1964. (Title only.)

Chinon Facel 8mm Zoom (Test Report), N. Dyer, *Amateur Photographer*, 127: 796-797, May 27, 1964.

This 8mm cine camera has fully automatic exposure control using a selenium photocell. There is no manual override but under- and overexposure are indicated. An electric motor powered by four penlite cells gives a single running speed of 18 frames/sec. The front afocal portion of the 9.5 to 19mm *f*/1.8 Chinon zoom fixed-focus lens can be unscrewed to permit the main lens to be used as a 13mm fixed-focus lens.—N.W.

Cinematographic camera (British Pat. 962,746), W. Planert; assigned to VEB Kamera- und Kinowerke Dresden, filed Dec. 1, 1961; 3 pp., 2 plates.

A cinematographic camera has a separate motor to drive the film feed, shutter and film-winding mechanisms. In order to save the weight of extra batteries the additional motor is spring-driven, means being provided for winding the spring from the main, electric, drive.—S.C.G.

Control of speed and synchronization on cinematographic cameras (Office national du film, Canada) (in French), Anon., *Mesures et contrôle indust.*, 27: 1415-1417, No. 306, 1962; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 3.46.169, 1964.

In a method of controlling the speed of operation of a cinematograph camera the teeth of one of the main pairs of wheels in the driving gear move in the field of a magnetic pickup head and produce a signal in a feedback circuit which controls the current supply to the motor. A tachometric generator on the camera produces a signal which is used for the synchronization of a 6.25mm magnetic tape in a portable sound-recording apparatus, the motor of which is also controlled by the circuit.—S.C.G. (Abridged from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Eumig C6 camera (ACW Test Report), Anon., *Amateur Cine World*, 7: 768-771, June 4, 1964.

This 8mm cine camera has an 8 to 25mm *f*/1.8 zoom lens by Eumig which is adjusted automatically during the zoom for maximum possible depth of field, the far limit of the field always being at infinity. A selenium photocell gives fully automatic exposure control with facility for manual adjustment of up to 3 stops each way. A battery-driven electric motor gives running speeds of 16 and 32 frames/sec. The exposure meter can be used as a voltmeter to check the batteries. A power zoom piston grip with integral electric motor and a close-up accessory lens are available.—N.W.

Eumig S3 zoom (ACW Test Report), *Amateur Cine World*, 7: 875-878, June 25, 1964.

The S3 8mm cine camera has a 9 to 18 mm *f*/1.8 Eumigon Zoom lens with eight components. A selenium photocell gives

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fully automatic exposure control, the aperture setting being shown in the field of view of the nonreflex coupled optical viewfinder. An electric motor powered by four penlite cells gives a single running speed of 16 frames/sec. The film speed is set on a dial scaled from 11 to 23 DIN. A power zoom grip with an integral electric motor is available.—N.W.

The improved Polaroid MP-3 industrial view camera, G. W. Crawley, *Brit. J. Phot.*, 111: 616-618, July 31, 1964.

Some of the equipment displayed by Polaroid at the Photography in Action Exhibition in Manchester, June 30-July 3, 1964, is reviewed. The equipment described includes the new version of the MP-3 industrial view camera with interchangeable rolls and film-pack backs and the Polaroid optical screen (65-line) which is used in conjunction with the new type 510 film (10,000 ASA).—G.I.P.L.

Improvements in and relating to cinematograph apparatus (British Pat. 959, 197), D. K. Tole, C. Allies and S. V. Cronin; assigned to Specto Ltd., filed Sept. 22, 1959; 3 pp., 2 plates.

Improvements in and relating to cinematograph cameras, projectors and like apparatus (British Pat. 959,198), D. K. Tole, C. Allies, and S. V. Cronin; assigned to Specto Ltd., filed Sept. 22, 1959; 3 pp., 2 plates. (Divided out of British Pat. 959,197.)

The cine camera described will operate

either at normal or low speeds such as 1 frame every 15 sec. It is driven by an electric motor through an electrically operated clutch. At normal speeds the clutch is always engaged but at low speeds it is engaged once per frame by a pulse from a pair of commutators in the camera. The film-advance mechanism uses a crank and lever and is also a feature of the patent. There is also a facility for photographing the screen of a cathode-ray tube which is built into the camera.—R.A.W.

Magazine photographic camera (British Pat. 961,993), E. C. Woodcock; assigned to Williamson Manufacturing Co. Ltd., filed Apr. 7, 1961; 5 pp., 1 plate.

A spring-operated magazine camera is described, the main feature of which is the use of a controlled release of energy from the spring to move the sensitive material by the required amount and to wind up a secondary spring ready for the operation of the camera shutter. Various mechanisms and modes of operation are possible.—E.W.H.S.

Maxius CdS Compact Zoom Camera, N. Dyer, *Amateur Photographer*, 127: 763-764, May 20, 1964.

This 8mm cine camera is a compact version of the Max Autozoom 85E camera. The reflex viewfinder has a central matte glass disc for focusing and shows a red warning signal for underexposure. A cadmium sulfide photocell gives fully automatic exposure control with aperture indication at the side of the camera. Film

speeds, from 3 to 400 ASA, are set manually against mechanism speed, 16, 24 or 32 frames/sec. The Marius CdS 12 to 30 mm $f/1.8$ zoom lens focuses down to one meter by rotation of the front cell.—N.W.

Miniature automatic 8mm motion-picture cameras (in Russian), V. M. Gradoboev, *Tekhnika kino i telev.*, 8: 64-69, Mar. 1964.

A number of 8mm automatic motion-picture cameras made outside the U.S.S.R. are briefly reviewed.—S.C.G.

Nizo FA-3 (ACW Test Report), Anon., *Amateur Cine World*, 8: 148-152, July 30, 1964.

This 8mm cine camera, which is manufactured in Western Germany, has a choice of three zoom lenses. The two available in Great Britain are the Schneider 9-30mm zoom (which is reviewed) and the Schneider 8-48mm zoom. Wide-angle converter lenses are available for both. Other features are the reflex through-the-lens viewfinder with split-image range-finder and fully automatic exposure control, using a cadmium sulfide photocell with a facility for manual override. A Tensator-type spring-drive motor gives four running speeds with provision for cable release, single-frame exposures and backwinding. A variable-angle shutter is fitted.—N.W.

Photogrammetric camera for road construction and engineering works (in French), Anon., *Bull. trimestr. Soc. belge photogramm.*, No. 61, 21-38, 1963; *Referativnyi Zhur.*, *Fotokinetekhnika*, Abstract No. 1.46.71, 1964.

A description is given of an aerial photogrammetric camera for obtaining cartographic material in projecting the course of roads and other engineering works. Apparatus is also mentioned for non-terrestrial stereophotogrammetric photography and the processing of the stereo pairs so obtained.—S.C.G. (Translated from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

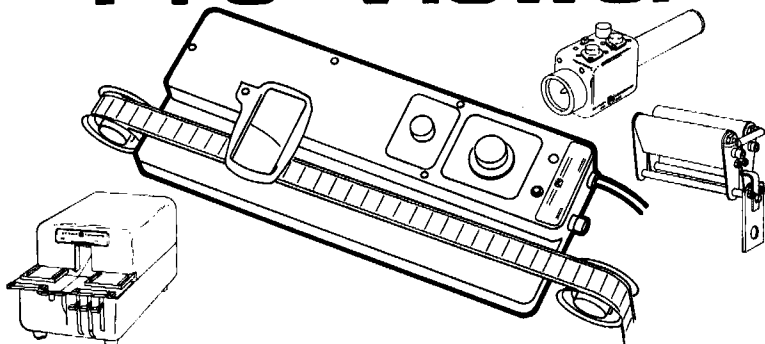
A safety switch for time-lapse cinematography with normal cameras (in German), G. Hummel, *Forschungsfilm*, 4: No. 5, 468-471, 1963; *Referativnyi Zhurnal*, *Fotokinetekhnika*, Abstract No. 1.46.127, 1964.

When an ordinary motion-picture camera is used with slow frame speeds, the operation of the friction take-up spool is interfered with, leading to the formation of camera buckle, and sometimes to damage to the camera. In investigating this phenomenon in the Askania Z camera, a safety device was elaborated, consisting of a microswitch placed in such a position that it is operated by any buckle forming in the film. The motor is switched off when warning signals are given.—S.C.G. (Abridged from *Referativnyi Zhur.*, *Fotokinetekhnika*.)

Sankyo 8 CM camera (ACW Test Report), Anon., *Amateur Cine World*, 7: 802-804, June 11, 1964 and 843-846, June 18, 1964.

This 8mm compact cine camera has an upright design with film spools one above the other. A cadmium sulfide photocell gives fully automatic exposure control but manual aperture setting is possible. Four

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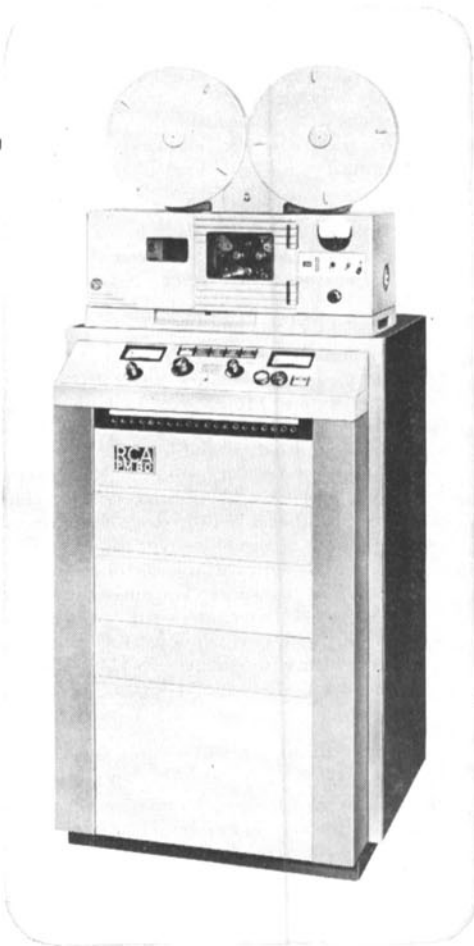


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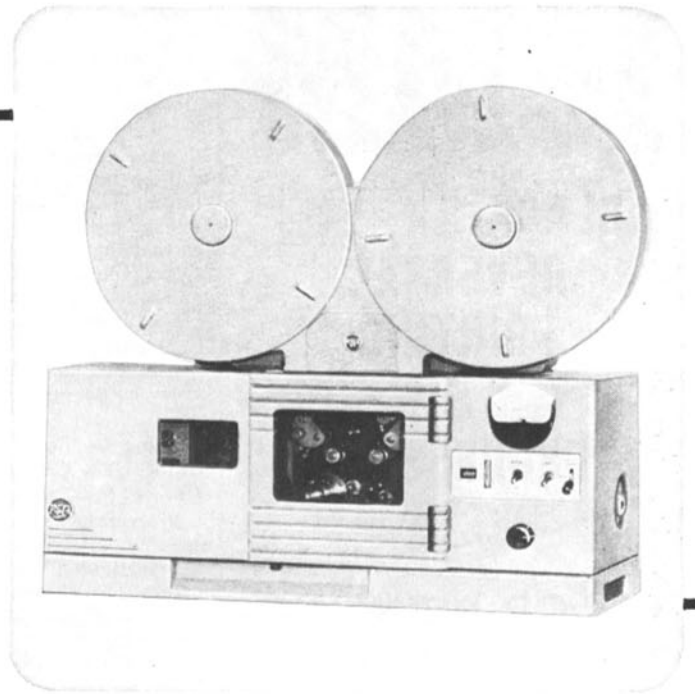
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penlight batteries, housed in the hand-grip, power an electric motor giving three running speeds. The $f/1.8$, 8.5 to 26mm Pronon focusing zoom lens can be unscrewed from the front of the camera, which can then be used with just the 13mm fixed-focus prime lens or with a wide-angle or telephoto converter. A special monocular attachment gives the equivalent of a 95mm telephoto lens. The through-the-lens reflex viewfinder is effective for any lens combination. Other accessories include a supplementary lens for close-up filming, a miniature title frame for ultra-close-up filming and a fader of the polarizing type.—N.W.

A small aerial camera and the possibilities of its use (in Russian), E. P. Arzhanov *Izvest. Vyssh. Uchebn. Zavedeniñ Geod. i Aerofotos'emka*, No. 5, 75-78, 1962; *Referativnyñ Zhur.*, *Fotokinetekhnika*, Abstract No. 1.46.70, 1964.

The aerial camera is provided with a Russar-25 IM wide-angle short-focus objective. A band shutter is set in the camera, giving exposures from $\frac{1}{250}$ to $\frac{1}{1000}$ sec. The large angle of view does not allow glass to be used for flattening the film and therefore the film is held flat with the aid of a vacuum. It should be noted that a fall in pressure of 30 to 50 mm water gage is sufficient for flattening under good conditions, and in the given case, owing to the small format, it ensures planarity of the film under the conditions of flight. In the complete absence of vacuum, sagging of the film does not exceed 0.3 mm. Distortion of the objective is within the limits ± 0.3 mm. Since the hyperfocal distance of the objective does not exceed 1 mm, the camera can be used for exposures at small distances. The duration of the cycle is 0.5 to 0.7 sec, which allows photography to be carried out at a comparatively high tempo. Experimental work by the different organizations has concerned the effectiveness of using this camera for fixing traverses in geophysical photography.—S.C.G. (Translated from *Referativnyñ Zhur.*, *Fotokinetekhnika*.)

"Seeing by heat." The Pyroscan Electronic Heat Camera, P. Delius, *Brit. J. Phot.*, 111: 278-283, 290, Apr. 10, 1964.

Progress has been made in Great Britain recently in the diagnosis of disease by infrared methods. Variations in the body's natural heat output are detected by using Pyroscan electronic heat cameras. These variations are used to diagnose cancers and assess damage from burns and frostbite. Many industrial applications of this technique are possible, for example, the detection of hot-spots in blast-furnace linings. The Mark II Pyroscan camera is made in Great Britain by S. Smith & Sons, and is claimed to be twenty times faster than any comparable machine on the market. It has a wavelength response extending to 5.5 microns. Technical details are given. The camera provides black-and-white pictures on electrochemical paper, and an output suitable for a pen-recorder. The absolute temperature of the heat source can be measured with a comparator unit.—N.W.

A split-cassette attachment for recording all the reflections on the upper level

Weissenberg photographs as elongated or as contracted spots, S. N. Vaidya, *J. Sci. Instr.*, 41: 501-502, Aug. 1964.

A split-cassette arrangement has been incorporated in the Weissenberg camera for recording all reflections on the upper level photographs either as elongated or as contracted spots. This arrangement employs two semicylindrical cassettes which are separated by a horizontal plane. These half-cassettes are translated in opposite directions. A suitable split-cassette attachment has been constructed for the Unicam Weissenberg goniometer S-35. The subject of the "displaced-film" Weissenberg photograph is also discussed. (Author's abstract.)

Thinking motion-picture cameras (in German), Anon., *Sehaja Foto-Mitt.*, 31: No. 2, 23-26, 1963; *Referativnyñ Zhur.*, *Fotokinetekhnika*, Abstract No. 1.46.126, 1964.

The chief characteristics are set out and special points are noted for six 8mm motion-picture cameras—Bauer 88R, Nizo FA3, Movex Reflex, Movexoom, Leikina, Bolex-Zoom Reflex Automatic. Each of these is provided with variable-focus objectives and has a system of automatic diaphragm setting and several filming speeds. The Bauer 88R has a motor drive for varying focal length of the objective; the Nizo FA3 has a shutter with variable sector angle, and reverse film transport. The spring motor of the Movex Reflex camera will transport 10 m of film with one winding; the camera is loaded with a magazine.—S.C.G. (Translated from *Referativnyñ Zhur.*, *Fotokinetekhnika*.)

Twenty-thousand frames per sec, Anon., *Amateur Cine World*, 8: 241, Aug. 20, 1964.

A range of high-speed cine cameras and accessories developed by Hitachi Ltd. of Tokyo (in collaboration with Tokyo University and the Japanese Government) is reviewed. One camera is capable of a film speed of 20,000 frames/sec with synchronized flash. The 16M camera has running speeds in the range from 100 to 2,000 frames/sec. The 16H and 16HB both have a speed range of 500 to 10,000 frames/sec, but the 16HB also has a facility for simultaneously recording an oscilloscope trace.—N.W.

DATA RECORDING

Improvements in or relating to line-by-line data-recording apparatus (British Pat. 957,407), G. D. Royle and T. H. Elliott; assigned to The English Electric Co. Ltd., filed Feb. 13, 1959; 4 pp., 1 plate.

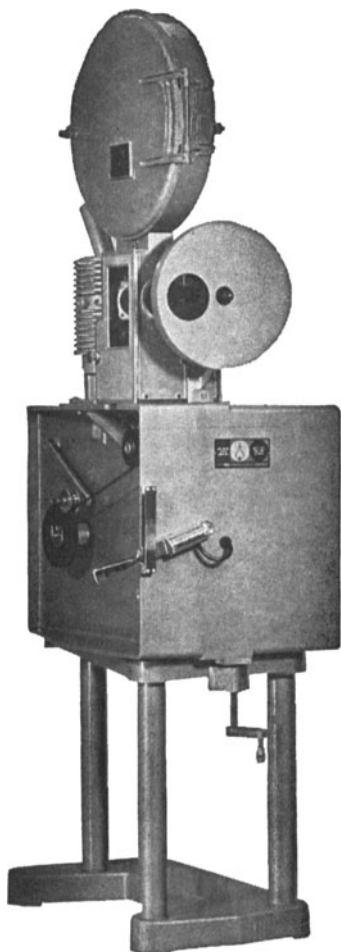
The apparatus comprises a cylindrical opaque screen with character forms on its circumference in axially extended rows, the characters being similar in each row but different in each column. The screen is rotated at constant speed about its axis and surrounds a row of light sources and detectors arranged behind the character forms. The position of the screen, relative to the light sources, is detected by electromagnetic or photoelectric means and the information is transmitted to the data-processing computer which in turn energizes the light sources to produce a photographic image on a roll of film situated tangentially to and outside the screen. The film is

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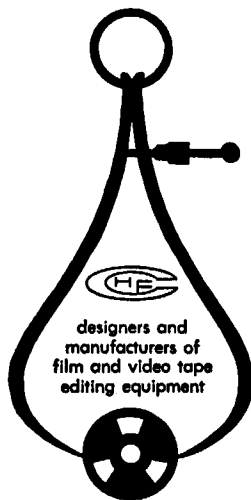
1. A variac controls the light intensity.
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4. A start-stop lever controls the power to the lamp and motor.
5. The magazine and take up core takes up to 3,000 ft. of film.
6. Upper guide rollers are made to handle the film from either direction of the feed reel.
7. A free wheeling take off flange is provided in the magazine.
8. A lamp near the takeup reel permits hand inspection of the film prior to takeup.



NOUVEAU

Le projecteur contient un obturateur Simplex antérieur transformé avec deux clavettes intermittent. Les films de 16mm ou 35/32 tournent avec une vitesse de 144 pieds à la minute, tandis que les films de 35mm tournent avec une vitesse de 165 pieds à la minute.

1. Le regulateur de voltage d'intensité d'eclairage.
2. La lampe de 500 watt est nécessaire pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mise pour rafraichir la chambre de la lampe).
3. L'objectif de 2½ est installé.
4. La manette de mise en marche et d'arrêt controle en meme temps la lampe et le moteur.
5. La boîte de films avec noyau peut contenir 3000 pieds du films.
6. La roue supérieure est construite de manière de recevoir le film dans les deux directions, nourrie par la bobine centrale.
7. Une roue est installée pour libérer rapidement le film de la boîte.
8. La lampe se trouve pres de la bobine recepteuse, et donne toute facilité pour inspecter le film a main dans le projecteur.



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October 1964 Journal of the SMPTE Volume 73

NUOVO

Questi proiettori sono Simplex trasformati, otturatore al fronte, meccanismo di scatto di due punte. La velocità di proiezione in 16 o 35/32mm è di 144 piedi per minuto, e in 35mm, di 165 piedi per minuto.

1. Controllo manuale della luminosità della lampada.
2. Lampada di 500 watt per 16mm e di 1000 watt per 35mm.
3. Obiettivo di proiezione di 2½".
4. Maniglia per controllo di motore e lampada di proiezione.
5. La cassetta porta pellicola può contenere 3000 piedi.
6. I rulli superiori di guida sono costruiti per operare con film proveniente di ambedue i lati della bobina svolgitrice.
7. Disco con montatura sporgente nel magazzino.
8. Una lampadina illumina la bobina avvolgitrice, permettendo l'ispezione manuale del film prima che si avvolga nel proiettore.

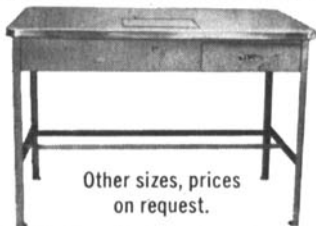
NUEVO

Esta máquina es un proyector simplex convertido, obturador al frente y movimiento intermitente a doble grifa. Para 16mm o 35/32mm, la velocidad fija de proyección es de 144 pies por minuto, para 35mm es de 165 pies por minuto.

1. Un reostato controla la intensidad de la lampara de proyección.
2. Para 16mm se usa una lampara de 500 watt, y una de 1000 watt para 35mm (un chorro de aire ventila las lámparas en ambos casos).
3. Cada unidad está provista de un lente de proyección de 2 pulgadas y media.
4. Una palanca de control opera el motor y la lampara simultáneamente.
5. Capacidad de proyección: rollos de hasta 3000'.
6. Los rodillos de guía superiores operan con la película en ambas direcciones.
7. La tapa de la bobina de carga es desenroscable.
8. Una lámpara ubicada junto a la bobina de toma permite la inspección manual de la película antes que se rebobine en la bobina superior del proyector.

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moved intermittently by the computer so that rows of characters are recorded. Light detectors enable the characters to be checked against the output data of the computer.—P.T.P.

EXPOSURE-DETERMINING DEVICES

Exposure measurements control of lighting in color cinematography by using the TsYa-1 color brightness meter, A. M. Kurytsin, *Tekhnika kino i telev.*, 8: 6-19, Feb. 1964.

The TsYa-1 color brightness meter measures subject brightness in the blue, green and red over an angle of 1°. Studies have been made on the use of the meter in conjunction with the sensitometric characteristics of the three-color negative film to determine exposure in cinematography. A method of obtaining the connection between the three-color exposure measurement and the sensitometric values of the film is described. Results of investigations of the accuracy of two methods of exposure control, based on photographing a color-gamut test object, are given. An estimation is made of the possible range of subject colors that can be photographed.—S.C.G.

Weston Master V Exposure Meter (ACW Test Report), Anon., *Amateur Cine World*, 7: 700-702, May 21, 1964.

Several features introduced in the Master IV meter have been omitted from the Master V. A pushbutton is depressed when a reading is required. When the button is released the needle is clamped. The button can be locked in either position. The calculator dial can now be operated by the hand that holds the meter. A full series of ten shutter speeds from $\frac{1}{8}$ to $\frac{1}{250}$ sec is marked on the dial and stops are marked in one-third stop intervals over a range from $f/1$ to $f/32$. An arbitrary serial numbering of the needle scale from 2 to 16 is used, one unit representing a difference of one stop. The meter case is no longer "ever-ready" and must be removed to take readings. An Invercone incident light attachment with case is supplied with the meter.—N.W.

GENERAL, HISTORY, TRAINING, BIBLIOGRAPHY

To ensure the most rapid development of the cinephotochemical industry (in Russian), S. A. Bongard, *Tekhnika kino i telev.*, 7: 1-6, Mar. 1964.

In the Soviet Union the photographic film industry is regarded as part of the chemical industry and falls within recently announced plans for increasing the output of the latter. The Soviet output of film, which started in the 1930's, increased by four times between 1950 and 1963 and is now claimed to be the second largest in the world. It is planned to double the present output by 1970. Emphasis will also be placed on increasing the variety and improving the quality (photographic, physical and mechanical) of the film. The introduction of high-speed and precision methods of manufacture is an important objective, and the difficulties of the introduction of triacetate base are to be overcome. The work of the research center, NIKFI, and

its branches and the problems at present receiving attention are discussed.—S.C.G.

The dimensions of motion-picture film and frame in a normal motion-picture system (in Russian), E. M. Goldovskii, *Tekhnika kino i telev.*, 8: 15-24, Mar. 1964.

In spite of the introduction of wide-screen, panoramic, etc., forms of cinematography, the normal system based on 35mm film and the smaller sizes has still a large part to play. The possibility of increasing the usefulness of 35-, 16- and 8mm film by alterations in the dimension of the picture area and by the provision of magnetic soundtracks is discussed.—S.C.G.

The use of mathematical methods in the study and optimization of photographic processes (in Russian), N. I. Kirillov, *Tekhnika kino i telev.*, 8: 25-29, Mar. 1964.

A number of papers are reviewed in which photographic problems have been solved by mathematical analysis or by modern statistical methods in the design of experiments. (Bibliography of 20 references.)—S.C.G.

HIGH-SPEED PHOTOGRAPHY

The stereoscopic photography of rapid processes by two independently operating motion-picture cameras (in Russian), V. V. Garnov and A. S. Dubovik, *Zhur. Nauch. i Priklad. Fotografii i Kinematografii*, 9: 116-121, Mar.-Apr., 1964.

With large optical bases it becomes difficult to synchronize two motion-picture cameras by a direct link in order that simultaneously exposed frames can be used as stereoscopic pairs. A method of using two independent cameras is described, in which the taking frequencies of the two cameras are different, a "beat-frequency" effect being used to obtain suitable stereoscopic pairs. The conditions for obtaining suitable pairs of frames are discussed mathematically. In order to simplify the recognition of simultaneously exposed frames, recognition marks can be put onto the film by means of lamps which light up only when both camera shutters have opened simultaneously.—S.C.G.

High-speed photography of the combustion of small drops of liquid fuel, M. T. Monaghan, *Ind. Comm. Photographer*, 4: No. 1, 46-49, May 1964.

A new technique has been devised to record photographically the combustion of small single drops of liquid fuel. A modified drum camera is employed, with an external optical system incorporating a strong light source to show the drops in silhouette and a spinning disc image-cutter to give intermittent illumination on the recording material. Filming speeds between approximately 8 and 1,000 pictures/sec are obtained for drops with initial diameters ranging from 2,000 to 150 microns and burning times from over 3 sec to approximately $\frac{1}{50}$ sec. Valuable information about the influence of initial drop diameter on burning rate was obtained, using the simple and inexpensive technique described here. The technique should also be applicable in many research exercises where photographs of small objects are required at similar filming speeds.—(Author's abstract.)



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