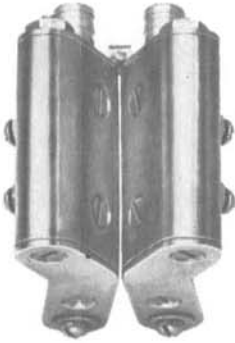


SQUEEZE



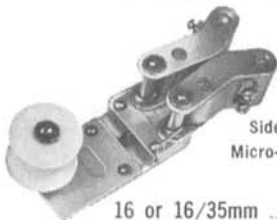
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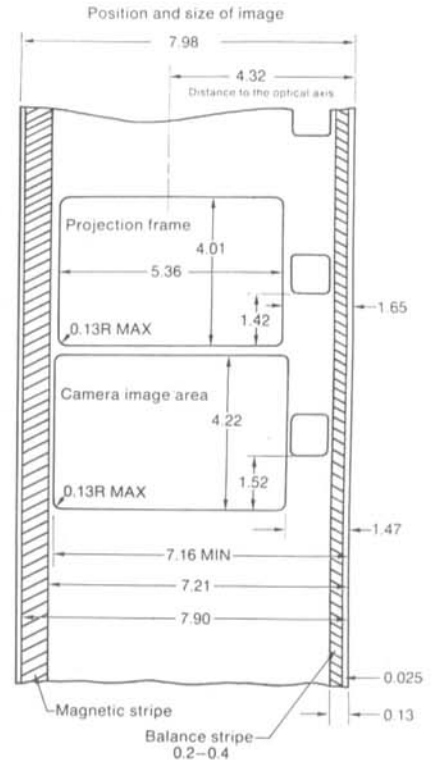
Micro-Squeegee — The World's Finest
Squeegee Device — Naturally, from Filmline

new products

(and developments)

.....
Further information about these items can be obtained direct from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement of the products or services.

An automatic 8mm camera that holds 50 ft of film yet weighs only 24 oz has been developed by the Fuji Photo Film Co., Room 3603, Empire State Bldg., 350 Fifth Ave., New York, N.Y. 10001. Called the Fujica Single 8 P-1 movie camera, it uses a new thin-base color or black-and-white film with a larger frame. The polyester base of the film is said to be only two-thirds as thick as conventional films, but with twice the tensile strength and more than 10 times the bending strength. Sprocket holes on the Single 8 film have been made smaller and moved closer to the edge of the film with a corresponding increase in the film image area. The image size of the film is 4.01 by 5.36 mm while the image size of conventional Double 8 film is 3.28 by 4.37 mm.



Dimensions of single 8 film.

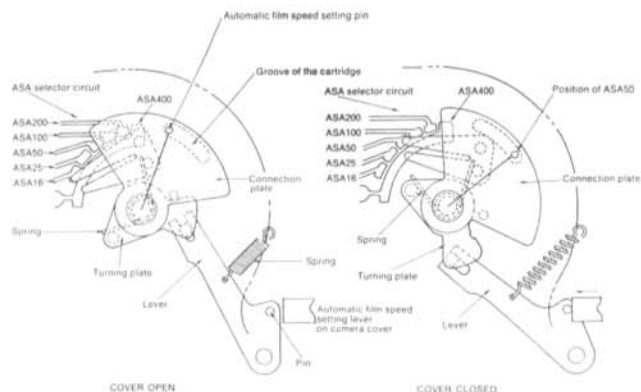
In operation, the 50-ft magazine is dropped in the camera (which measures 32 by 99 by 191 mm). The entire 50 ft can be used without any adjustments or the magazine can be removed when partially used and another magazine can be in-



Left — New Fujica Single 8 P-1 Camera.



Right — Fujica Single 8 P-1 Camera with back open showing magazine in place.



Fujica Single 8 P-1 Auto-Set Mechanism.

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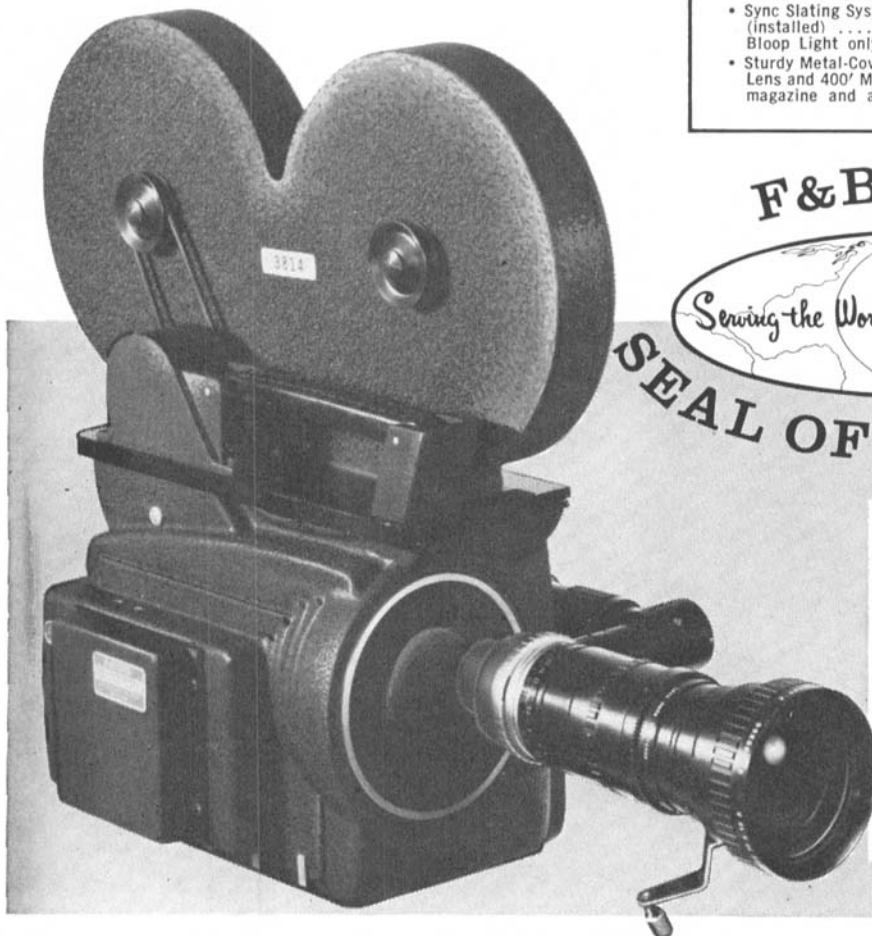
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(Conversion only—price does not include camera, magazine or lenses).

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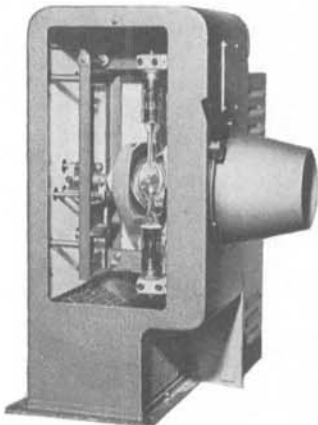
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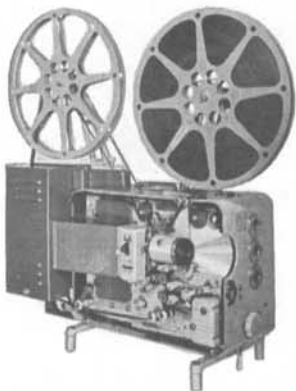
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XeTRON Silicon POWER SUPPLIES

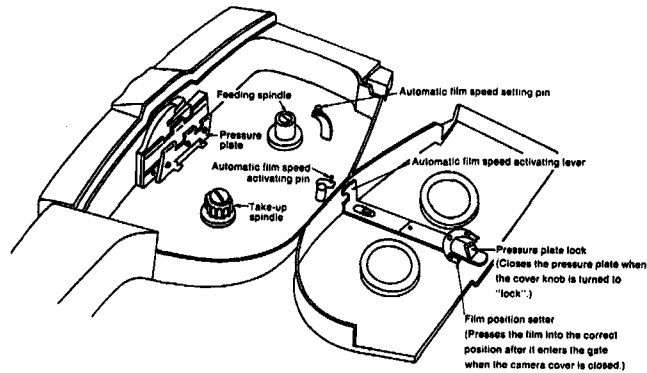
The XeTRON power supply is sold as an important adjunct to the CX and JX type XeTRON units and are used to insure maximum light output and extended life of bulb.

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Details of Fujica Single 8 P-1 Magazine Chamber.

serted, making it possible to intermix color and, black-and-white if desired. The magazine also has a built-in feature that enables the film to be run in reverse.

Innovations in sound have also been provided. The Fuji Single 8 sound striping is a broader than usual band on the opposite edge from the sprocket holes to avoid the possibility of distorted reproduction caused by sound striping close to the perforations. On the projector the flexible film hugs the sound drum for better fidelity in playback.

The camera is completely battery operated. A mercury battery powers the Cds electric eye and four 1.5-v dry cells power the film transport. All five batteries fit into the hand grip. The automatically

set lens opening readings are indicated by an electric eye bar visible in the viewfinder. A red marker at both sides warns of over- and underexposures. A window on the side of the camera makes visible the side of the magazine on which appears the film type and its ASA speed.

In addition to the 8 P-1 camera the firm has designed a camera called the Single 8 Z-1 which operates in three speeds and reverse, manually or on automatic, and has also designed a compact projector combining projection and sound recording and sound reproduction, including microphone and speaker based on the Fuji Single 8 system.

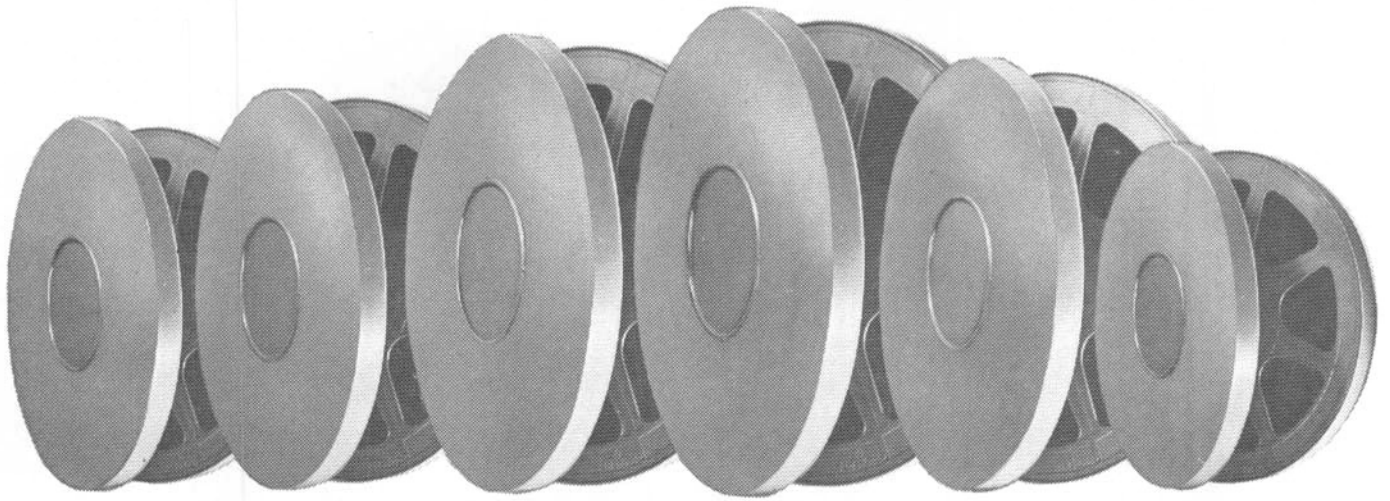


The Norelco PC-60 Plumbicon Color TV Camera has been announced by Visual Electronics Corp., 356 W. 40 St., New York, N.Y. 10018. The new camera is greatly reduced in size and weight through the use of solid state circuitry and the small Plumbicon pickup tubes, the announcement stated. The Plumbicon tube is a photoconductive pickup tube in which image lag is greatly reduced. The tube has good sensitivity and a remarkable low "dark current" which eliminates shading problems. It is 8 in. long and slightly over 1 in. in diameter. The photoconductive layer is of a specially deposited lead oxide material which results in uniform pictures. The tube has a low noise level and its linear light transfer characteristic makes it suitable for color cameras as well as black-and-white. (The Plumbicon Camera is described in two papers which were presented at the Society's 97th Technical Conference in Los Angeles: "Plumbicon Monochrome Broadcast Cameras," by Thomas J. Ray, Richard Q. Dunn and Donald Pounds, of North American

Philips Co., Mount Vernon, N.Y., and "Plumbicon Color Broadcast Cameras," by E. F. De Haan and A. G. Van Doorn, of N. V. Philips Gloeilampenfabrieken, Eindhoven, The Netherlands.)

The Magna-Tech 1000 Series Master Magnetic Recorder; Sync Tape Console; and Type 9C Film Footage Counter are new equipments recently announced by Magna-Tech Electronic Co., 630 Ninth Ave., New York, N.Y. 10036. The 100 Series recorder features "pickup" recording for making insertions, corrections and additions with no audible indication where the insertion was made. The recorder includes selective erase for any or all tracks and forward/reverse operation in interlock and utilizes interchangeable head assemblies on prealigned plug-in mounts for single or multitrack operation. It is available in 35mm and 16/35mm combination.

The footage counter adds or subtracts footage in interlock with sprocketed film equipment. Projection readouts with 3 or 4 digits indicate film footage for 16mm or 35mm. Dubbers, recorders and a projector can be started, stopped and reversed any number of times while the footage reading remains true. The counter also feeds out information to start and stop the rotating sprocketed equipment at preset footages. The numbers can be remotely reset to zero. The complete system employs no moving mechanical parts except a small disc in the shaft encoder. In operation, the information signal comes from a photocell shaft encoder, timing belted to a distributor or one of the sprocketed machines.



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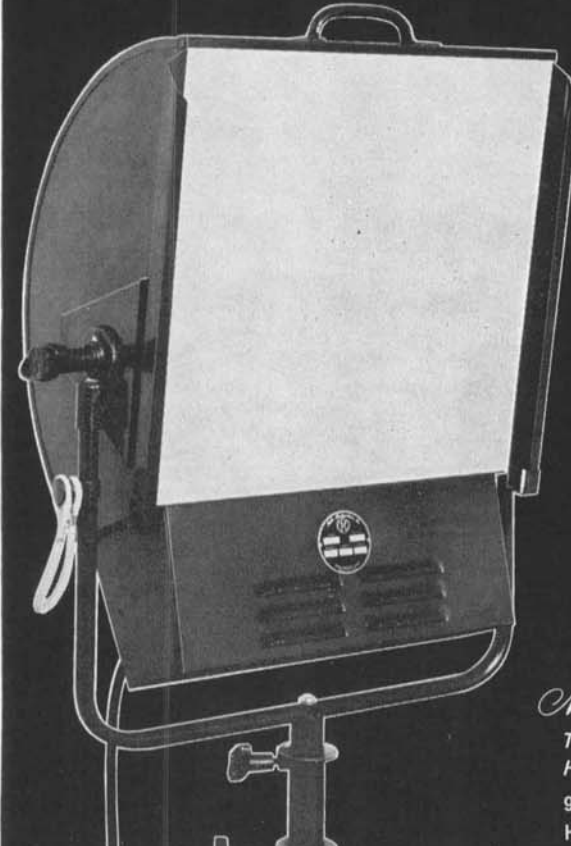


Tape Sync Transfer and Record Console.

A transistorized electronic counter converts the signals from the rotating encoder and feeds numerical footage data to the projection readout units. A 16-frame readout is also available.

The tape console is used to record and reproduce tape in sync with sprocket-driven film. The tape transport is the Ampex 351 equipped with a sync head for recording and playing back the sync signal. The playback synchronizer is the MTE Type 92B. Features include 60-c and 14-kc carrier sync signal inputs; speed correction range $\pm 20\%$; continuous oscilloscope display of sync signal; framing control for manually advancing or retarding tape; memory circuit to maintain speed if the signal drops out; and manual speed control for special effects. It is priced at \$3,875.

A color television projector designed for large-screen showing to audiences of up to 2,000 has been built by the Marconi Company, Ltd. It is distributed in the United States by Ampex Corp., 401 Broadway, Redwood City, Calif. The projector, called the 6710, can also be used for monochrome projection. It is adaptable to a range of picture sizes, the largest being 20 ft by 15 ft. The 6710 is said to have excellent picture quality with no observable misregistration in the center zone and excellent corner registration. Schmidt optics and 5-in. projection tubes operating at 50 kv are used to produce a high level of picture brightness. Resolution is reported to be high, due to a spot size of only 0.004 in. and comparably high standards of optical precision. Picture quality is maintained by mounting the three Schmidt optical systems on a rugged common mount. All tubes except the projection tube are rated for 10,000 hr. The




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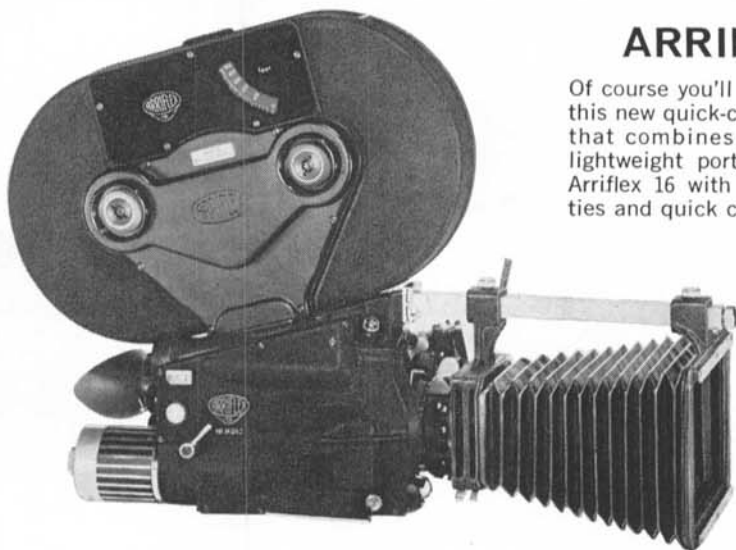


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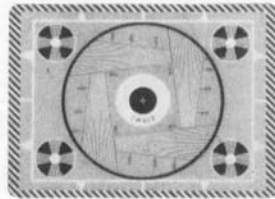
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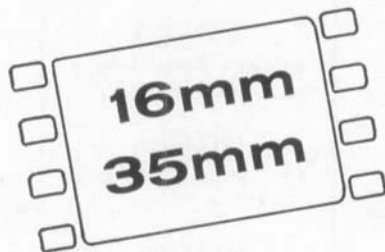
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- scanning beam illumination



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projector may be separated into units of less than 200 lb weight without necessitating realignment after reassembly. It is priced at \$47,000.



An electronic editing accessory for the VR-660 portable broadcast Videotape recorders has been announced by Ampex Corp., 401 Broadway, Redwood City, Calif. The device is designed to permit pushbutton editing of tapes for broadcasting without cutting or splicing. It can also be used to add material from any video signal source, such as live action, film, tape or slide.

A new closed-circuit television camera system designed for ultra-high resolution combined with minimum size and weight has been announced by Du Mont Laboratories, Divisions of Fairchild Camera and Instrument Corp., 750 Bloomfield Ave., Clifton, N.J. The solid state vidicon camera, called Type TCS-950, uses Fairchild's exclusive silicon Micrologic integrated circuits to achieve picture sharpness. The camera is said to produce center horizontal resolution in excess of 1,000 lines at all scan rates and vertical resolution of 700 lines using a 1029 line/frame format. At 525 lines/frame, video signals produced are in conformance with EIA standard RS-170. Signals produced at other rates (such as 625, 875, 945 and 1029 lines/frame) conform to the RS-170 format. The new system utilizes a 25 mc/sec band-pass to achieve corner-to-corner optical quality displays. Typical signal-to-noise performance is said to be 36 db at 1.0 ft-c faceplate illumination and 30 db at 0.5 ft-c faceplate illumination using a fully transistorized preamplifier.

The camera head is 2½ in. in diameter and 13 in. long and weighs 5 lb. The camera control unit (including the integral power supply and the Micrologic EIA sync generator) measures 3½ by 6½ by 14½ in. The camera head may be remotored to distances up to 1000 ft from the control unit. The TCS-950 has been designed especially for precise alpha-numeric data transmission, microscopic analysis, critical medical applications, space simulation and environmental testing and microfilm reading. The system (without lens and monitor) is priced at \$4,500.

Inspect every foot before it leaves your plant with the HFC High Speed Heavy Duty Inspection Projectors -- 16mm & 35mm models now available.

NEW

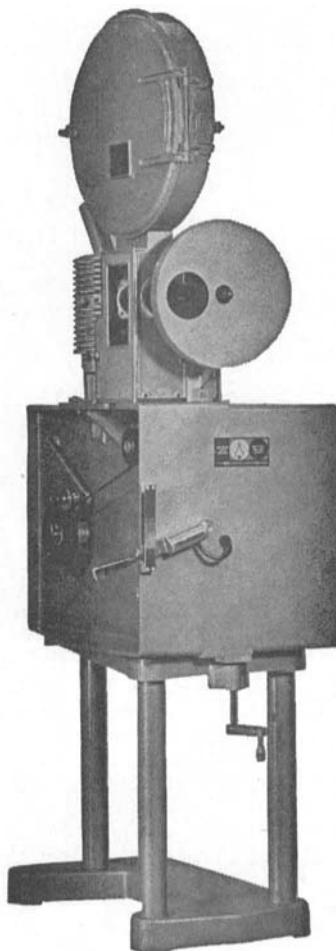
The projector is a converted front shutter Simplex with a two pin intermittent. 16mm or 35/32 film runs at a speed of 144 ft. per minute while 35mm film runs at a speed of 165 ft. per minute.

1. A variac controls the light intensity.
2. A 500 watt lamp is used for 16mm and a 1,000 watt for 35mm (a blower is used to cool the lamphouse).
3. A 2½ Inch projection lens is furnished with each unit.
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'éclairage.
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.



HOLLYWOOD FILM COMPANY

REELS / CANS / CASES

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 avvolgitrice.
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.

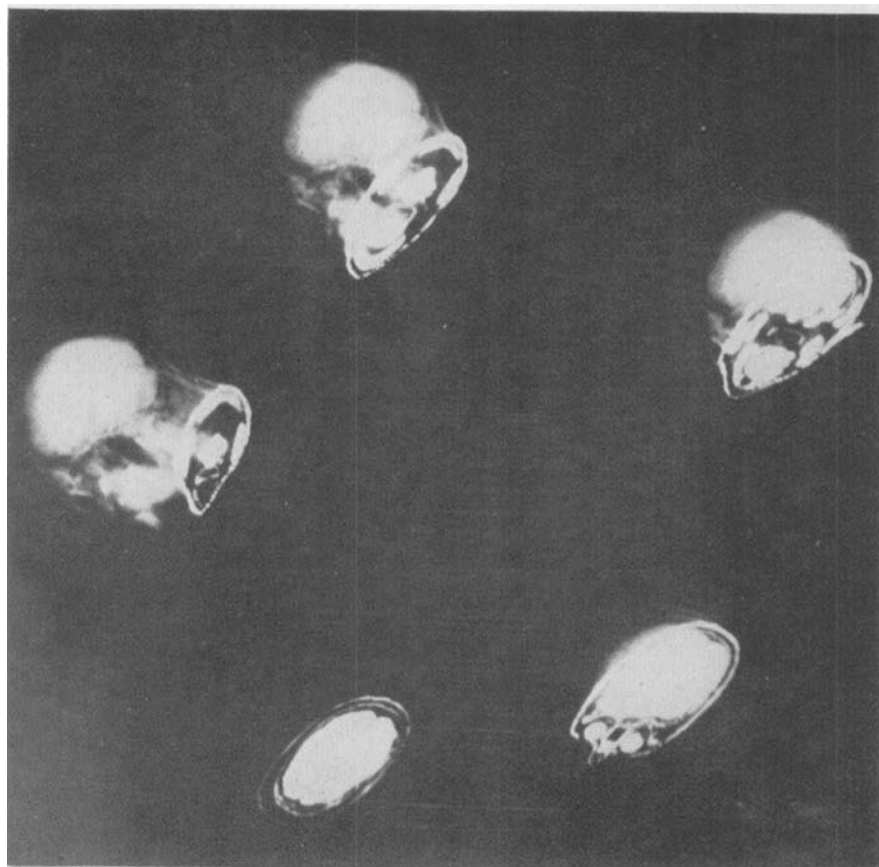
NUEVO

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.

The Tomos Synthalyzer (synthesis-analyzer), a new photooptical device designed to permit 3-dimensional and controllable reconstructions and analyses of sectioned specimens, has been introduced by RLM Research Corp., 901 Nepperhan Ave., Yonkers, N.Y. 10703. The device, as explained by its inventor, Roger L. de Montebello, "consists of optically displaying in space, sequentially and in their natural spatial relationship, the images of a series of sections of a given specimen in a cycle having such high frequency that a 3-dimensional image is formed by conversion of the time coordinate into a space coordinate. The 3-dimensional image may be directly observed, from all around it, without the refractive distortions and other limitations which are characteristic of physical stacking of sections or slides."

In operation, serial sections of a specimen are recorded on successive frames of a 16-mm film. The film strip is made to revolve at high speed as a continuous loop and is projected with a high-frequency multiple microflash tube in sync with the film. The duration of each flash is of the order of a microsecond, short enough visually to "stop" each successive frame. The projection is made from below by means of folded optics on the translucent edge of a drum composed of several identical spiral segments. The spiral segments are so oriented that, as the drum rotates, the spiral surfaces are constantly rising; any



Photographs of the transparent 3-D reconstruction of a human head, shown at various stages of optical dissection with the Tomos Synthalyzer.

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1/100, 1/1000, 1/10,000 sec exposures

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- Light for films rated ASA 1 and better.
- Mark VII Sensitometer provides additional exposure time of 1/100,000 and 1/1,000,000 sec.

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one complete film sequence coincides with the travel of one spiral segment and the flash-projected frames are successively stopped or "frozen," on successively higher levels of each of the spiral segments. Since the cycle is repeated with high frequency, the cerebral cortex, owing to retinal image retention, perceives the sequential projection as if it were a 3-dimensional continuum composed of layers (the separate sections) simultaneously present in their natural order and spacing.

A redesigned camera, the Model K2 Hycam 16/8mm High-Resolution High-Speed Motion-Picture Camera, based on a new optical system, has been announced by Red Lake Laboratories, Inc., 2971 Corvin Drive, Santa Clara, Calif. The camera is said to have an optical resolution of 68 lines/mm both vertically and horizontally at the center of the picture and 56 lines/mm at the edges. Major changes in the camera include the substitution of right-angle prisms for all front-surface mirrors; two field lenses in place of one field lens; and a completely redesigned relay lens capable of transmitting more light, giving higher resolution, and providing a flatter surface on the film. The new optics can be added to modernize previous Hycam models for about \$250 at the factory.

The redesign is contained in the detachable optical head so film transport sections of the cameras are not affected. The improvements are applicable to eight existing versions of the 100-ft and 400-ft Hycam models. The 100-ft cameras reach 8,500 pictures/sec with full-frame 16mm format

ARRIFLEX at work — ONE OF A SERIES *



Photographer, Roger Ruhlin (right) and director, R. Brinkman filming bad weather sequences.

ARRIFLEX® goes on the road for ALLSTATE INSURANCE CO.



Arriflex spans point of view from driver's seat.

Allstate Insurance Companies of Skokie, Illinois, has put Arriflex 35's in the driver's seat and on the road. As a result, this year alone, some 60,000 students in high schools, colleges and military bases throughout the country will receive realistic behind-the-wheel driver training within the confines of their classrooms.

Constant travel companions in these film assignments are Film Director Richard C. Brinkam, Cameramen Roger Ruhlin and John Peterson, and two Arriflex 35mm motion picture cameras, equipped with Ultrascope anamorphic lenses for wide-screen filming. As illustrated in the production stills, one Arriflex spans the point of view from the driver's seat. A second Arriflex, mounted on the tower of a following truck, records "snatches" of the road behind the car, reproducing the quick view a driver gets in an over-the-shoulder glance or through his rear view mirror.

"Filming full color wide-screen movies within the close confines of the driver's position requires extreme maneuverability which the compact anamorphic lens equipped Arriflex 35 permits," Director Brinkham reports. "It enables us to get the wide sweep necessary to simulate the driver's field of vision, to record exactly what he sees in any and all driving

situations. The scenes shot in full color 35mm were reduced for 16mm projection with resulting unparalleled breadth, depth and clarity."

The films are used in the classroom in conjunction with the Allstate Good Driver Link Trainer — a machine simulating the behind-the-wheel appearance and operation of a modern American automobile. The student "drives" the machine with his eyes "on the road," as it is visualized on the screen. He accelerates, steers, turns, stops, brakes, responding to the filmed situation. His reactions are electronically matched with the ideal response for each situation and his performance scored. Allstate's driver education films are regarded as the finest ever made. That's what happens when you put Arriflex in the driver's seat.

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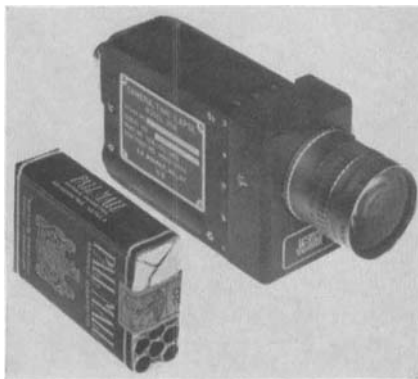


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or 17,000 pictures/sec with half-frame 16mm or true 8mm. The 400-ft cameras reach 10,000 pictures/sec with the 16mm format, or 20,000 pictures/sec with half-frame 16mm or with 8mm. Price range of the eight models is from \$1,295 to \$2,730 depending on the combination of options.



The Bio-Satellite Time-Lapse Camera, a small (3 by 4 by 2½-in.), lightweight (less than 24 oz), low-power (26 ± 5 v d-c with a peak current of 2.0 amp) camera has been introduced by J. A. Maurer, Inc., 37-01 31 St., Long Island City, N.Y. 11101. Designed for use in a closed ecological system in an earth-orbiting satellite, the camera is intended for use as an in-flight data-gathering device for plant physiology and biological rhythmic growth experiments.

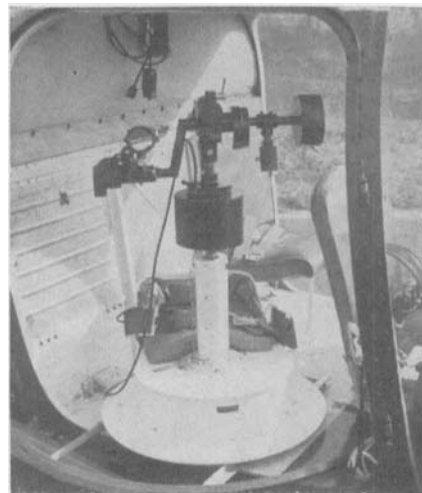
The camera utilizes standard 16mm film which is darkroom loaded. Operation is

automatically controlled by two electrically independent command pulses separated in time. Shutter opening time is controlled by the leading edge of the first pulse, while shutter closing time, followed by film transport, is controlled by the leading edge of the second pulse. The minimum exposure time, corresponding to the minimum time between the leading edges of the "open" and "close" pulses, is 1/50 sec and the maximum exposure time is 100 min. However, as long as power is available to the camera the exposure time is virtually unlimited. The minimum cycling interval, corresponding to the minimum time between consecutive "open" pulses is ¼ sec.

Electronimation is a new all-electronic full-animation cartooning system announced by Westworld Artists Productions, Inc., 41 W. 57 St., New York N.Y. 10019. Invented by Leon H. Maurer who also invented Animascope and Colormation, the new device has been patented in the United States, Japan and Canada. The new method starts with specially costumed live actors on an empty stage. The live action is photographed with standard color television cameras and instantaneously transmitted to solid-state electronic processing circuits. The separate color signals are then rearranged to produce the cartoon outline (inked) and flat-color (opaqued) images. The derived color and line images are then electronically "matted" and combined with conventional hand-drawn or photographic background cards which are simultaneously picked up by another television camera. In addition, each scene or character can be electroni-

cally "squeezed" or "squashed" for any type of cartoon special effect.

Costs of Electronimation are expected to be very low in comparison with methods which require hand labor and film production. Although the process methods, circuitry, and hardware have been fully developed for the patents, the design of the final prototype "equipment packages," has not yet been completed, the announcement stated.



Aero-Vision, a system for stabilizing a motion-picture camera in a helicopter to ensure successful picture making, has been developed by Doi Works, Ltd., No. 9, Kawazoe-cho, Nakano-Ku, Tokyo, Japan. The weight of the camera and its accessories is distributed on a horizontal bar in such a manner as to maintain perfect balance irrespective of the motion of the helicopter. A balance weight is used to hold the camera's center of gravity on the axis of



the horizontal bar. A circular base made of duralumin holds both the cameraman's bucket seat and a rotatable duralumin shaft which holds the bar on which is mounted the balanced camera. In operation, the cameraman can rotate the base in a turntable effect so as to direct the camera toward any chosen objective. Smoothness of operation is ensured by "inertia" wheels and a friction drive which minimizes re-



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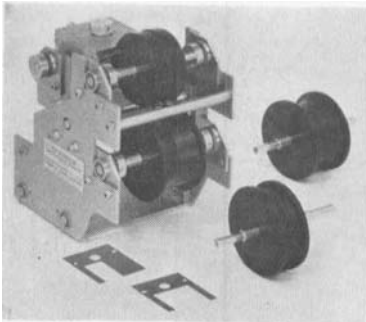
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sistance at the start and stop of camera operation. The shaft is enclosed in a sheath and held by axial slide bearings. At the top of the shaft a stabilizing device holds the horizontal bar. The system can be adjusted for use with various makes of cameras with long-focus and zoom lenses.

The Quad-8 Optical Sound Printer, latest in a series of Debric Optical Printers, has been introduced by André Debric of New York, distributor for the Paris equipment manufacturer. Printing in the "Maurer" 8mm format, the machine is a combination 8mm picture and sound printer. It utilizes 35/8 mm-5R stock and prints four 8mm pictures simultaneously from a 16mm original and four 8mm tracks simultaneously from a 16mm track negative. In a single passage through the machine the raw stock is printed with both picture and track. Both picture and track are multiplied optically by the machine so that each exposure of a frame of the original results in four images on the receiving stock. Further information on the printer is available from Robert J. Harrington, General Manager of André Debric of New York, 14-29 112th St., College Point 56, N.Y.



A new viscous solution applicator called Eastman Viscous Solution Applicator, Model 2, has been announced by the Motion Picture and Education Markets Div., Eastman Kodak Co., Rochester, N.Y. 14650. The new applicator is said to be the key component in converting commercial motion-picture processing machines to viscous-layer processing and is also the basic unit for constructing automated machines expressly designed for the viscous method. The device enables viscous-layer processing of Eastman Color Internegative and Color Print Films as well as a complete range of black-and-white camera films which are processed at normal temperatures. It will also handle black-and-white duplicating materials. The applicator is designed to apply to the film a smooth coating of developer or other processing solution having a honey-like viscosity. In development, for example, the solution is allowed to remain undisturbed on the emulsion surface of the film until the reaction is completed. Then a water spray removes the used developer. The same process can be used for fixing the film. Alternatively, fixing can be done conventionally.

The applicator incorporates a coating hopper that will accommodate 16mm, 35mm or 32mm film. Interchangeable guide rollers are provided for the different film widths. It is also equipped with a bracket which supports the coating hopper and a back-up coating roller. Micrometer

adjustment is provided for spacing the hopper in relation to the back-up roller and the hopper is pivot-mounted to allow film splices to run through it.



The Lustig Recorder, a specialized recorder designed to permit on-the-spot dubbing of sound effects during editing, is distributed by Gordon Enterprises, 5362 N. Cahuenga Blvd., North Hollywood, Calif. The recorder is designed for use with 35mm Moviolas. The unit incorporates a Nortronics recording amplifier and a recording attachment and head that attaches directly to the soundhead of the Moviola. Minor sound effects as well as vocal or comedy effects can be added by the re-

recorder. Dummy narration tracks for commercials can be made with the recorder and it can also be used to record the final print on the film with the narrator dubbing-in from a sound-proofed room. The recorder is priced at \$250.

The HRP-400 is a new aerial film continuous contact printer announced by Houston Fearless Corp., Westwood Div., 11801 West Olympic Blvd., Los Angeles, Calif. 90064. Heart of the new photographic printer is a large transparent drum, allowing four simultaneous prints. The drum, revolving around a fixed opaque drum with a light source at the center, contacts four small rubber rollers encircling it. Original film and print stock are fed between the transparent drum and each of the rubber rollers. Main drive for the printer is through the transparent central printing drum. Each of the four rubber contact drums is driven by surface contact with the transparent drum. Film reels are driven through a standard film reel adaptor assembly permitting film reel sizes from 70mm to 9½ in. wide.

The NoisEx recording system announced by EMT Wilhelm Franz GmbH, 94 Seminarstrasse, Wettingen, Switzerland, is designed to improve the quality of tape recordings, especially when re-recorded, by substantially reducing such drawbacks as hiss, nonlinear distortion, inter-modulation, print-through, etc. In operation, the modulation level is continuously controlled by the signal itself, in the sense of a com-

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pressor operating according to a fixed operating characteristic. A portion of the compression is used to reduce the full modulation level on the tape and the rest to increase the magnetic modulation during the soft passages. The first portion is used to provide a substantial reduction of every type of distortion and the second to provide a substantial increase in the signal-to-noise ratio. The system is designed for use with any conventional recording machine, such as a tape recorder. The amplifier contains two fully transistorized amplifier units; a compressor section for recording and an expander section for reproduction. Each section contains a plug-in control element designated "9-6."

A new electrooptical light switch said to offer much greater sensitivity than a standard photoelectric cell has been announced by Bausch & Lomb, Rochester, N.Y. 14602. Used in conjunction with a readout or warning system, it can serve as a counter, a tachometer, a detector, or a safety device. The light switch consists of a standard conduit box which houses its electronic circuitry and a light source, plus a "light wire" extending from the front of the box. Half of the light-wire fibers carry light from the internal source to the designated working area. The remaining fibers serve to return the reflected light (or light from an external source) to the circuitry of the instrument. Basically, the function of the light switch is to detect

variations in reflected or direct light. When variations occur, electrical impulses are sent from the light switch to trigger the readout or warning device to which it is attached. Since the light coming from the end of the light wire is cold the instrument can be used in highly explosive atmospheres. Only the light wire itself enters the atmosphere and the electronic circuitry is positioned at a distance. The unit is priced at \$100.

A lumped-element, transistor amplifier in the gigacycle range has been developed at Bell Telephone Laboratories. Operation of lumped-element circuitry at such high frequencies was made possible by the use of thin-film deposition to form extremely

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stable and reproducible resistors, inductors and capacitors. The new integrated-circuit amplifier gives an insertion gain of 15 db over a range of 400 mc to 1400 mc. In the fabrication technique, a 1000-Å coat of tantalum nitride is sputtered onto a thin 4-sq-in. glass substrate, followed by depositions of nichrome-copper for circuit connections and palladium for protection against corrosion. Three microwave transistors are soldered to the substrate land areas in common-emitter arrangement with local R-L shunt feedback in the first and third stages. Inductors in the feedback circuits are deposited directly onto the substrate. The thin-film elements are extremely stable and can be reproduced with uniformity since the same set of masks will reproduce the elements very precisely. For this reason parasitics can be minimized in the design through controlling the geometry of the layout and can be expected to be low in the amplifier. The resistors are trimmed to tolerances of 0.1 %.

An amplifier that operates at the highest frequency and with the widest bandwidth achieved so far with integrated circuits has been developed by engineers at Bell Telephone Laboratories. The amplifier operates at frequencies from 500 mc to 3000 mc with a bandwidth of 1000 mc. The development is possible because of advances in circuit design, improved transistors and thin-film techniques. The wide-band performance was made possible by a "balanced" amplifier design. The circuit consists of a pair of electrically-similar transistors for each amplifier stage with their input and output signals combined by means of a 3-db directional coupler. This design matches the impedances at the input, output and interstages and thus eliminates the need for tuning adjustments. It also permits operation at lower noise figures and higher output powers than are obtainable from conventional designs. The amplifier design lends itself readily to circuit integration without sacrificing electrical performance. Experimental integrated amplifiers have been built on thin ceramic substrates using passive components compatible with tantalum thin-film technology. The circuits are lightweight and can be powered by small batteries.

A portable ultra-high-frequency wattmeter that measures modulation depth of a transmitter's output as well as sideband and carrier wave power has been announced by Conway Electronic Enterprises Ltd., 88-90 Arrow Road, Weston, Ont., Canada. The instrument is manufactured by Airmec Ltd., Cressex, Coronation Road, High Wycombe, Buckinghamshire, England. Frequency range of the device is 10 to 1000 megacycles and the power range is 10 to 300 mw, which can be extended to 30 w by using attenuators. No power source is needed for carrier wave measurement; for sideband power and modulation measurements there are two internal dry batteries totaling 12 v. These have an operating life of several hundred hours. Carrier and sideband powers are indicated directly on a 3½-in. scale meter in one of two ranges, 10 to 100 mw and 30 to 300 mw, selected by a front panel switch. In modula-

tion measurement, the carrier power is first noted, then a selector switch brings the meter needle back to its original reading by using a calibrated potentiometer. Percentage modulation is indicated on the potentiometer scale. The instrument is 10 in. wide, 7 in. high and 10 in. deep. It weighs 6½ lb.

The Model 126 pH Meter is a portable unit with sealed construction enclosed in a cast aluminum, vinyl-finished housing. Announced by Photovolt Corp., 1115 Broadway, New York, N.Y. 10010, it is said to be splash-proof and shock and fume resistant. It has been demonstrated in a fish tank to show the reliability of its sealed construction. Although designed as a rugged industrial instrument, it is said to have excellent precision of 0.02 through the entire pH range. The unit can be used to measure Redox potential and a 0 through 100 C manual temperature control is provided. The sealed modular power system ensures more than 1000 hr of continuous operation. The unit, complete with glass-and-reference electrode and batteries, is priced at \$335.

A portable solid state sine and square wave generator, called Model 511A, has been announced by Waveforms, Inc., 333 Sixth Ave., New York, N.Y. 10014. The device is 6 in. high, 4½ in. wide and 6 in. deep and weighs 5 lb. The generator has a frequency range of 10 c to 12 mc and an accuracy of ±3%. Square wave rise time is 0.5 μsec. The 511A is priced at \$720 rack mounted or \$710 panel mounted.

Two new plug-in units for use with oscilloscopes have been announced by Tektronix, Inc., P.O. Box 500, Beaverton, Ore. 97005. The Type 3T4, designed for use with the firm's Type 567 and RM567 Digital Readout Oscilloscopes and with Type 561A and Type 564 conventional oscilloscopes, is a programable sampling sweep unit. Sweep speeds, delay and samples per sweep can be remotely programed by 17-wire cable connecting through a front-panel jack. Grounding various combinations of these leads determines the operating conditions for the plug-in. In addition, single displays for real-time measurements can be programed. (Triggering is not programable.) Calibrated sweep speeds cover the range from 200 μsec/cm to 1 nanosec/cm, with a 10X magnifier extending the fastest sweep speed to 0.1 nanosec/cm.

Type 10A1 is a differential slide-back plug-in unit designed for use with the firm's Type 647 oscilloscope. It has a d-c-to-35 mc passband at a sensitivity of 1 mv/cm, and a d-c-to-45 mc passband at a sensitivity of 5 mv/cm. In addition, it has an effective 6000-cm slide-back scale and 10,000:1 common-mode rejection ratio up to 1 mc. The slide-back system utilizes comparison voltages of 0 to ±6 v; accuracy is ±0.1% + 5 mv and may be set to closer tolerances if accurate reference standards are available.

Products recently announced by B & K Instruments, Inc., 3044 W. 106 St., Cleveland, Ohio 44111, include the Model

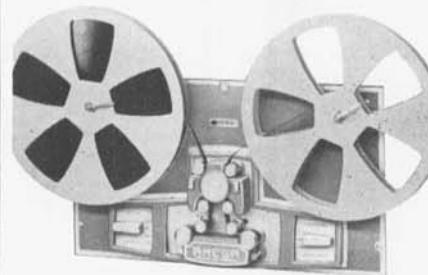
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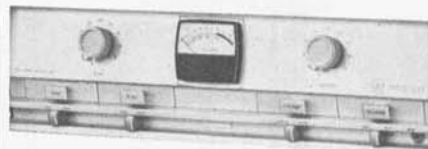


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