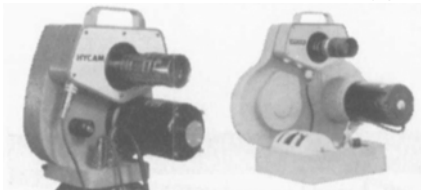


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among 16-mm high-speed motion-picture rotating-prism types



100-ft Model

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5 to 44,000 pictures per second

* HIGHEST RESOLUTION

Hycam pictures resolve 68 lines per millimeter both in the vertical and horizontal directions, giving the steadiest highest-quality images in the field.

* WIDEST SPEED RANGE

Various Hycam models have framing rates as low as 5 pictures per second and as high as 44,000 pps. 400-ft models have built-in electronic speed control for flat speed curves.

* GREATEST FLEXIBILITY

Full-frame, 1/2-frame, or 1/4-frame 16-mm quickly interchangeable with basic camera. Cine-oscillography, streak or time-lapse photography. Hycam can also be used as a motion-picture projector, uses c-mount lenses of all focal lengths.

* LOWEST COST

In spite of its superior performance, Hycam is about half the price of other 16-mm rotating-prism cameras.

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pictures on a conventional television receiver, or the taped pictures can be transferred to the grooves of a record and played back. Some 1,200 pictures and accompanying voice and music can be stored on a standard, 7-in. (1,200 ft) reel of narrow, slow-speed audio tape, or 400 still pictures and sound can be put on the two sides of a standard 12-in., 33 1/3-rpm record called a Videodisc. The pictures can be line drawings, charts, printed text or photographs.

The system consists of four components: a slow-scan television camera; an audio-tape recorder for recording pictures and sound; a scan converter to convert the taped pictures to standard TV signals; and a conventional TV receiver. The slow-scan camera uses a special Westinghouse vidicon which can store an image as an electrical charge for several minutes. A beam of electrons in the camera reads out the stored picture and passes it to the tape



Phonovid, a system for recording and playing back still pictures and sound on a television screen from an ordinary home tape machine or phonograph, has been announced by Westinghouse Electric Corp., 3 Gateway Center, Box 2278, Pittsburgh, Pa. 15230. The system displays the taped

machine where it is magnetically recorded. The tape recorder then plays the pictures directly through the scan converter to the receiver or it can be used to drive a lathe that cuts a master phonograph record. The Phonovid system is priced at about \$9,500.



Guston-Bacon Ultralite fiber glass blanket has been used for the acoustical treatment of the three television studios of Station WFIL in Philadelphia. (WFIL has been occupying its present headquarters in a modern and efficient circular building for about 18 months.) The television studios are 27 ft high and where there are no doors or windows Ultralite blanket covers the walls from floor to ceiling. The product is available with a factory-applied flexible vinyl covering. About 10,000 sq ft were required to treat the walls for the acoustical

requirements of the studios. The floors are concrete and the ceilings of acoustical plaster. The Ultralite blanket was applied with studs and washers, the washers being exposed on the vinyl surface.

An inspection light for use in continuous inspection of repetitive operations, such as roll and reroll printing of business forms, continuous strip packaging of components, etc., has been announced by Power Instruments, Inc., 7352 North Lawndale, Skokie, Ill. 60078. Called Model 860 Magna-Strobe, the lamp combines a magnifier with an auto-synchronized strobe lamp. The strobe lamp flashes at exactly the same point in each operation so that the fast-moving parts under the magnifier appear to be standing still. The strobe lamp is synchronized with the subject by means of magnetic or photo pickups feeding a pulse to the control unit. The unit weighs 3 1/2 lb and is priced at \$95.

The SX-10-RB Controller, designed especially for systems in which equipment

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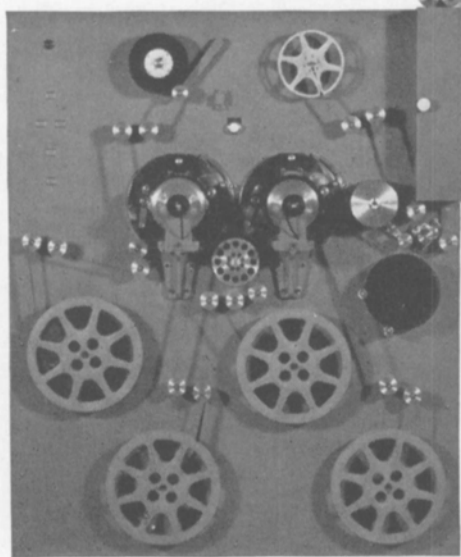
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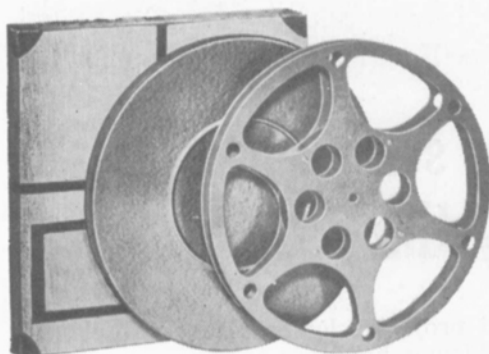
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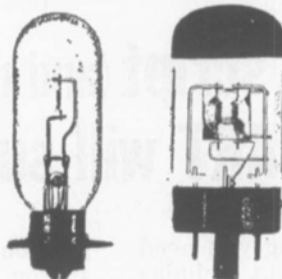
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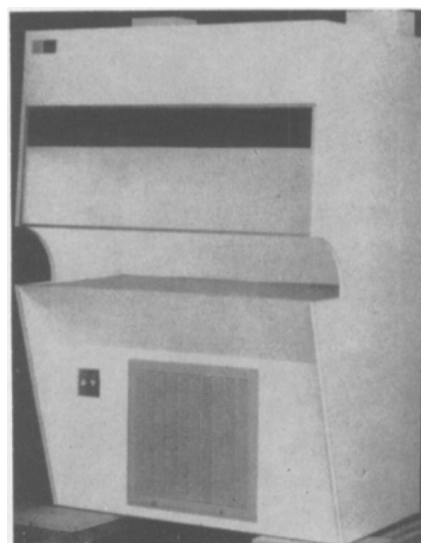
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is to run automatically under a programed set-up, has been announced by B & B Motor & Control Corp., 96 Spring St., New York, N.Y. 10012. The controller contains built-in relays for dynamic braking, automatic traversing and cycling, pushbutton control and foot control. Used with motors up to 1/50 hp, infinitely variable speed can be obtained with full torque available throughout the entire range. The motor can be started and stopped with the same speed setting and can be stopped with or without dynamic braking. The controller uses a silicon controlled rectifier. Constant field voltage and variable armature voltage are supplied to the motor by a silicon diode bridge rectifier. It is priced at \$80.



A Laminar/Flow Clean Fume Hood has been announced by Agnew-Higgins, Inc., 7532 Anthony Ave., Garden Grove, Calif. 92641. The unit is a complete, self-contained workstation with a Laminar/Flow air handling system, complete filtering and exhaust provisions. A Plexiglas window encloses the work area while providing complete visibility. Clean air flows downward from the blower and through the work chamber at 90 ft/min, forming an air curtain that prevents contaminated air from entering the room atmosphere and pitching up and exhausting fumes from the work process in its passage to the exhaust ducts. Exhaust duct connections project from the upper rear surface of the cabinet. The unit features a dynamically balanced blower capable of continuous duty. The blower and motor are mounted on a special Agnew-Higgins kinematic platform resting directly on the floor and independent of the main cabinet to provide virtually vibration-free operation. Several fume hoods can be aligned side by side to permit work to be passed from one station to the next without being exposed to room atmosphere. The fume hoods are available in two sizes, the FH42, 4 ft wide, and the FH62, 6 ft wide. The cabinet measures 51½ × 79 × 36 in., and the work chamber measures 48½ × 27½ × 24 in.

Photovolt Model 85, a pH meter designed for easy operation, has been announced

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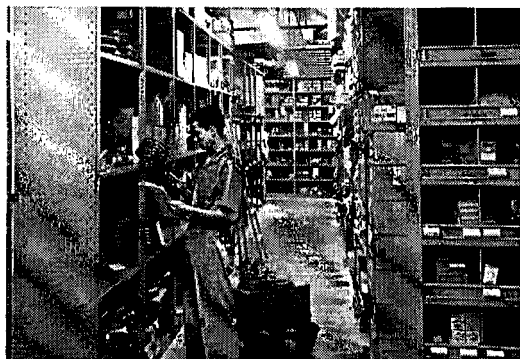
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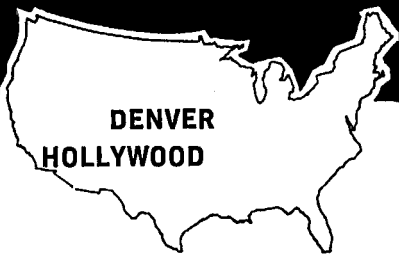
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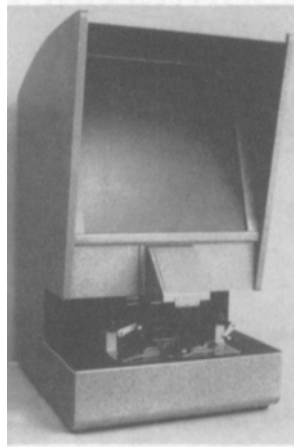


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by Photovolt Corp., 1115 Broadway, New York, N.Y. 10010. Intended for rugged use, the instrument is housed in a steel enclosure. A red pilot light indicates that the meter is operating. Model 85 is available either as a line-powered or combination battery and line-powered pH meter. It is priced at \$145.



The Robot Reader-Projector 36, a product of Karl Heitz, Inc., 979 Third Ave., New York, N.Y. 10022, is used to evaluate 35mm slides, filmstrips as well as microfilm, and can accommodate negatives up to 24 X 36mm. The unit is equipped with an 80 mm f/3.5 adjustable projection lens and uses a low-voltage projection lamp system with variable intensity to permit viewing in fully lighted rooms. The 8½ X 8½ in. screen is said to give a sharp and clear distortion-free image of 10X magnification for 24 X 36 mm images. The film carrier can be rotated 360°. An interchangeable 25mm f/2.8 lens and spools are available for 16mm film to provide 30X magnification. The unit converts into a projector by removing a back plate. It is priced at \$559.

XR Film (*Journal*, p. 765, Sept. 1963) can now be developed by local commercial processors using standard ECN (Eastman Color Negative) process, according to Edgerton, Germeshausen & Grier, 160 Brookline Ave., Boston, Mass. 02215. Previously users were sending the exposed film to EG&G's Boston facility for C-22 processing. XR is a multi-layer film developed for scientific and industrial photography for use over an extreme range of light conditions.

Unibath one-step photographic chemicals are produced by Townley Chemical Corp., 32-14 Greenpoint Ave., Long Island City, N.Y. The line is comprised of several one-step chemicals, each for a special photographic requirement. For example, CC-1 is a combined developer and fixer for black-and-white miniature, roll or sheet films. Other one-step chemicals include CC-2 for fast speed films; CC-7 for negative microfilm; CC-9 for Metalphoto plates and CC-11 for waterproof phototypesetting papers. The chemicals are packaged in both liquid and powder form. The firm also produces Townco Monobath chemicals and Monoquik, a rapid film drying and conditioning solution with antistatic, hardening and conditioning agents.

Two chemical solutions called, respectively, Magna-Sec PRK and Magna-Sec SRK, have been developed by Reeves Soundcraft Division of Reeves Industries Inc., Great Pasture Rd., Danbury, Conn., to permit users to view the magnetic track on video, instrumentation and sound recording tape. The PRK is for video and instrumentation use and the SRK is for sound recording use. The solutions are said to provide a fast and accurate means of checking such critical factors as head alignment, track uniformity, balance and head wear, as well as for discovering drop-out areas and the magnitude of drop-outs. Special kits are available containing a half pint of the solution, plastic bath, eyepiece magnifier for close track inspection, a roll of pressure-sensitive tape and 5 glass slides. The kits are priced at \$12.00 for either type of solution.

The Viking 235 tape duplicating system has been announced by Viking of Minneapolis, Inc., 9600 Aldrich Ave. South, Minneapolis, Minn. 55420. Designed on the modular plug-in concept for flexibility, the system can accommodate up to 10 slaves. Master and slave transports are of heavy duty industrial design with 2-speed hysteresis synchronous capstan drive, separate reel drive motors and differential braking. Photoelectric run-out and speed selector are included on all transports. The master unit has a digital counter. A single a-c power switch turns the entire system on and off. The system is operated from the master transport pushbuttons when recording, duplicating and it stops automatically at the end of a duplication. All tracks of a master tape can be copied simultaneously in one pass. The basic system is priced at \$1,995.

Pyrotrak, a magnetic tape specifically designed for use in extreme environmental conditions, has been announced by Lash Laboratories, 6152 Mission Gorge Road, San Diego, Calif. The tape consists of a metallic magnetic coating on Kapton Type H, Du Pont's ultra-high-temperature plastic film. The tape is said to withstand temperatures from 500 F to -40 F with a signal loss of less than 1 db. The tape is also said to be unaffected by the presence or absence of moisture. It is used for such applications as data recording where environmental extremes of temperature and/or moisture are expected.

Eastman Kodak Co. is trade testing video tape in New York City "as part of a continuing investigation of a complete range of magnetic tape products," according to a recent announcement. The limited trade testing at CBS in New York is part of a continuing video and computer tape development program; however, there are no definite plans for marketing a videotape product at this time. In 1961, when Kodak announced that it would manufacture tape for professional and amateur sound recording (*Journal*, p. 224, Mar. 1961), the firm said its research scientists were investigating a complete range of magnetic tapes for varied applications. The sound recording tapes were first marketed in March 1962, and the manu-

ARRIFLEX at work — ONE OF A SERIES *



Photographer Leonard M. Hart adjusts camera and lights to patient's eye.

ARRIFLEX® records retinal circulation via new fluorescence cinematography technique

The paper, recently published in The Journal of Laboratory and Clinical Medicine, bears five signatures and the imposing title, "Fluorescence motion picture photography of the retinal circulation, a description of technique and normal retinal blood flow." To both physician and medical cinematographer, the article is of tremendous professional interest. To the team of five—Leonard M. Hart and M.D.'s Albert Heyman, J. W. Linhart, Henry McIntosh, and N. J. David—it represents the successful culmination of many months of untiring research and experimentation towards developing "a safe, convenient and reliable means for observing the hemodynamic changes in the retinal circulation and studying the alterations in retinal blood vessels in a number of disease states affecting the optic nerve and retina."

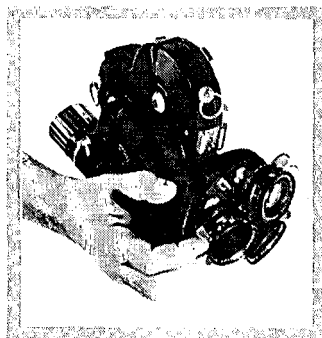
Mr. Leonard M. Hart, Chief of the Medical Illustration Service of the Veterans Administration Hospital in Durham, N. C., and Instructor of Medical Photography at Duke University Medical Center is the guiding hand in the new retinal fluorescence cinematography technique.

"Our retinal motion picture camera consists basically of a 16mm

Arriflex with a wide aperture lens and a binocular ophthalmoscope," he related. "The camera is focused on the retina, through the ophthalmoscope. Fluorescein dye, injected into the patient's arm, is photographed in its passage through the retinal vessels, providing a dramatic and detailed visualization of the blood flow in retinal arteries, capillaries, and veins."

Films are taken at a rate of 10 frames per second for a period of 1 to 2 minutes after the dye is injected. Arriflex's mirror shutter reflex viewing system enables the cinematographer to continuously observe the ocular fundus (the part of the eye opposite the pupil) so that the retina can be kept in focus and glare eliminated by adjusting the illumination. To date fluorescence motion pictures of the retinal circulation have been made in over 100 subjects.

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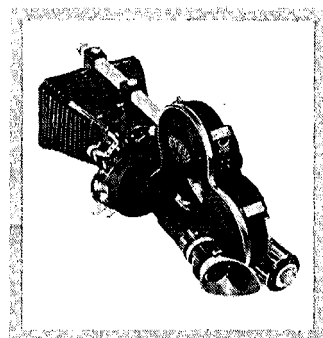


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facture of a series of tapes for instrument recording was announced in July 1964 (*Journal*, p. 613, July 1964).

A StoryBoard Pad and a transparent Film Template for producing filmstrips for use on DuKane VistaSell Projectors and Powerhouse and Gold Plate Projectors are available upon request on company letterhead from Norman Bebell, President, Bebell & Bebell Color Laboratories, Inc., 108 W. 24 St., New York, N.Y. 10011. The StoryBoard Pads are precision scaled with accurate cropping for picture and type and centering lines useful for story conferences, as well as detailed instructions for artwork and headlines, captions and text matter. The Film Template is correctly scaled, with cropping

lines for picture and type for the most commonly used transparency sizes.

A new 250-w quartz-iodine 2,000-hr (3,000 K) globe for use with the Mini-Mole Solarspot and Midget Solarspot has been announced by Mole-Richardson Co., 937 N. Sycamore Ave., Hollywood, Calif. 90038. The new globe is described as nonblackening, single-ended with a double-contact bayonet base. It can be used in either lamp without the need of an adapter. The price is \$4.00 for a single globe.

The Foba C-40, a versatile tripod manufactured in Switzerland, has been introduced by Paillard Inc., 1900 Lower Road, Linden, N.J. 07036. Pushbutton triggers

located at the top of the tripod's legs are used to adjust each leg separately or all three legs together. Each leg may be locked separately. The tripod can be telescoped to a minimum of 16 in. The maximum height of the basic unit is 5 ft 1 in. but as many Combi-Tubes as needed, in 16- and 32-in. lengths, can be added to the legs, the announcement stated. Special ball-and-socket feet with large, serrated surfaces are available to supply added surface grip. The tripod is made of sturdy steel tubing. The basic unit weighs 14 lb and is priced at \$250.

The ABC Crab Dolly, introduced by ABC Camera Corp., 352 W. 44 St., New York, N.Y. 10036, weighs 62 lb yet collapses into a suitcase. Used on location as well

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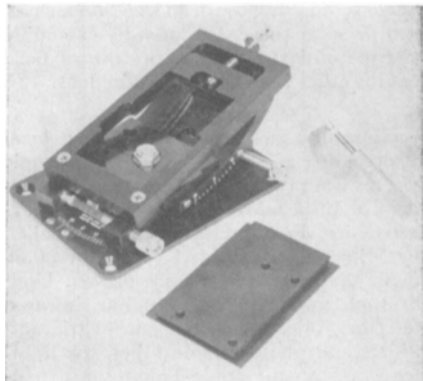
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as in the studio, the portable crab dolly is designed to support a BNC Mitchell Camera and cameraman. Complete with four sets of balloon tires, it locks for dolly tracks. Priced at \$1,275, it is also available for rental at a rate of \$25 per day.



Winter camera mounts and lens supports, manufactured by Winter Engineering Co. and distributed exclusively by D. B. Milliken Co., 131 N. 5th Ave., Arcadia, Calif. 91006, are designed for precision photoinstrumentation applications where severe environments may be encountered. The mounts are rugged, positive-locking universal fixtures for positioning 16mm, 35mm and 70mm cameras and are capable of supporting up to 600 lb. Two basic types are available: dovetail, designed to permit fast mounting, removal and repositioning; and fully adjustable mounts which provide accurate control of both azimuth and elevation. In the dovetail mounts, a dovetail baseplate mounted on the camera fits into a slide-block receptacle. A positive screw lock with safety-wire hole holds the camera firmly in the direction of the optical axis.

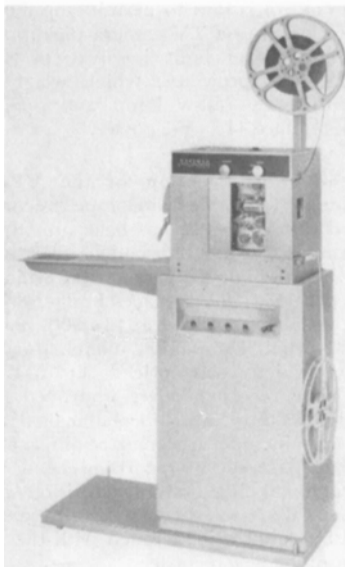
The fully adjustable mounts have a single, self-locking nut to lock the camera in position, and ample metal-to-metal surface contact to prevent slippage. Angular scales enable the operator to make changes accurately and to return to a previous setting, thus eliminating the need for re-boresighting. Three models of the fully adjustable mounts are available. Model 1610 is used for airborne and other applications with size and weight limitations. Model 8416 has 360° azimuth control, 60° elevation rise and 15° depression. Model 8415 is similar to Model 8416 but it is made of heavy-duty steel and handles up to 600-lb loads.

The lens supports are designed to withstand the severe environmental conditions encountered on high-performance aircraft and at close proximity to static rocket engine firings. Design considerations include optimum ease of use together with positive adjustment and locking features.

A **d-c power switching unit** announced by Strong Electric Corp., 79 City Park Ave., Toledo, Ohio 43601, is used to permit emergency operation of two arc lamphouses from a single power source. Designed for simple installation on the Strong Bi-Powr rectifier, the unit can also be used for installation with two separate rectifiers, or for rectifier to generator or generator to rectifier operation. All electrical con-

nections are made within the Bi-Powr case without the need to change any existing power leads between the lamphouses and the rectifier.

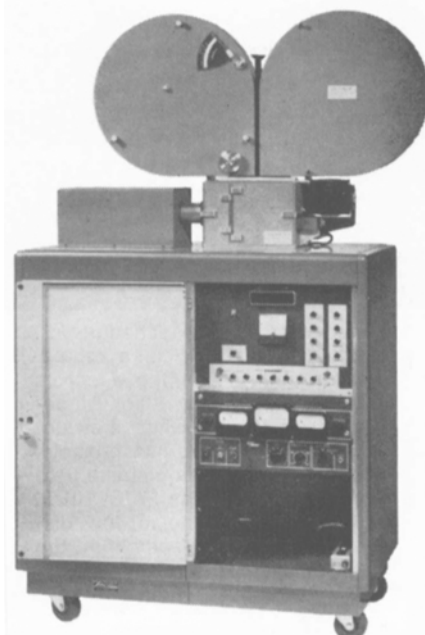
A **zoom lens** for use with the Graflex 16 line of 16mm projectors has been announced by Graflex, Inc., a subsidiary of General Precision Equipment Corp., Graflex, Inc., 3750 Monroe Ave., Rochester, N.Y. 14603. The new lens has a speed of $f/1.5$ with focal lengths ranging from 35mm to 60mm. Magnification range is three times the area while light transmission remains equal throughout the zoom. The lens is priced at \$89.



Two new 16mm projectors, designed especially for large auditoriums, universities and colleges, professional viewing rooms and industrial laboratories, have been announced by Motion Picture and Education Markets Div., Eastman Kodak Co., Rochester, N.Y. 14650. The projectors, Models 30 and 40, succeed Eastman Model 25C projectors. The new projectors can accept 100-ft to 5,000-ft reels. Major design features include a special synchronous 1,440-rpm motor for driving an intermittent mechanism, separated from the main film transport unit to isolate intermittent shock forces and keep them from entering the main mechanism and sound system. The design eliminates belts, gears and chains. The Model 30 projector (without lens, amplifier and speaker) is priced at \$8,725. The Model 40 (without speaker, lens, amplifier, rectifier and lamp-house) is priced at \$8,750. Model 30 is designed for tungsten illumination and the Model 40 is constructed for arc illumination with either carbon or xenon lamps.

A **new series of 16mm projectors** with magnetic sound has been introduced by Graflex, Inc., a subsidiary of General Precision Equipment Corp., 3750 Monroe Ave., Rochester, N.Y. 14603. There are two models in the new series. The first provides magnetic record and playback and the second provides magnetic playback. Both are equipped with optical sound and silent film capabilities. Features of the new projectors include automatic

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soundhead loading; pushbutton color-coded controls; adjustable film gate to provide correct pressure on any type of film regardless of condition; and single-lever controls to reverse operation without stopping projector. Prices start at \$735.

A 16mm projector specially designed for television projection has been announced by L-W Photo, Inc., 15451 Cabrito Road, Van Nuys, Calif. The projector, designated Model 224-A-TV, features flickerless operation at all speeds from 1 to 30 frames/sec. It incorporates a television-type shutter, a heavy-duty synchronous motor and a timing-belt drive. A handheld remote control unit is included. The continuous-hold control is said to permit stop-motion projection onto a TV camera pickup tube without loss of light intensity or color values. The projector, which weighs 30 lb, utilizes a 750-w lamp and operates with standard 115 v a-c power.

An advanced version of the VR-660 broadcast portable videotape recorder, called the VR-660B, has been announced by Ampex Corp., 401 Broadway, Redwood City, Calif. The new recorder, which is priced at \$11,500, replaces both the VR-660, which was priced at \$14,500, and its closed-circuit companion model, the VR-1560, which was priced at \$11,900. The new recorder offers improved electronic circuitry and mechanical design. Features include a second audio channel and a spare set of recording heads. An instructional closed-circuit television workshop in Redwood City, with all expenses paid by Ampex, is included with the purchase of the new recorder.

A Preselect Switcher for Video, Audio and Transitions (VAT) has been announced by Visual Electronics Corp., 356 W. 40 St., New York, N.Y. 10018. Described as compact and inexpensive, the system provides for a "take" bar to run off a series of preset events with the inclusion of cuts, automatic laps, fades or supers. The system is designed to facilitate presetting a number of events, utilizing compact, simple thumbwheels for control, storage and readout of preselected information. Audio is selected to follow video or can be from a separate source. The system features viewing immediately before broadcast so that last-minute changes can be made by means of a pushbutton. A "Take" or "Pre-roll" button activates each succeeding event. The transition selection is retained in the previously selected mode until a non-synchronous signal is involved which automatically causes the "cut" mode to be selected. Incorporated with the switching system are simultaneous audio-follow-video features. Simultaneous audio is provided for all inputs with the exception of the black and the camera inputs. In addition, 7 separate audio select buttons are provided on the panel for audio break-away feeds.

The Adtrol Timing Pulse Generator, Model TPG, the Vanguard VP-100 35mm stop-motion projector, and the Maurer 220, a 70mm pulse, sequence camera, are among products recently announced by Traid Corp., 777 Flower St., Glendale,

Calif. 91209. The pulse generator is used to supply accurately timed pulses to drive neon bulbs normally used in cameras for edge time marking of motion-picture film. The VP-100 is basically intended for film presentations to small groups. The Maurer 220 is used for data recording situations which require the use of a large film format. It supersedes the P-2 camera by extending its capabilities to permit the use of focal lengths other than the basic 3-in. lens.

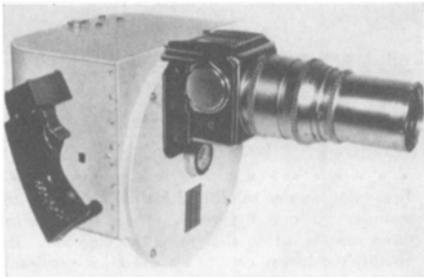
A miniature gas liquifier for rapid local supercooling of components in electronic systems is a product of Mymatic Engineering Co. Ltd., Glover St., Redditch, Worcestershire, England. The liquifier, called the Minicooler MC 8 is 1.73 in. long, 0.28 in. in diameter and weighs 0.2 oz. Used for such applications as cooling infrared detectors, injection lasers, parametric amplifiers and photocathode tubes, the liquifier works on the Joule-Thompson expansion principle, converting high-pressure clean gas to its liquid phase with the corresponding reduction of temperature down to 77 K.

A new Lens Analyzer System (LAS), designed to measure automatically lens resolution with a precision of $\pm 2\%$, has been announced by Newtek, Inc., 39-25 62 St., Woodside, N.Y. 10077. The LAS measures the sinewave modulation transfer function of a lens and is said to produce in four minutes a continuous and complete curve that requires no interpolation. This is said to be about 60 times faster than the usual practice of hand-plotting a number of individual points and connecting the points with an interpolation curve. The system can accept lenses with apertures from $f/1$ to $f/100$ and focal lengths from 0.5 to 20 in. and can provide a complete modulation transfer function curve for any point in the field of the lens from zero to 45° . LAS systems are available within a price range of \$40,000 to \$55,000.

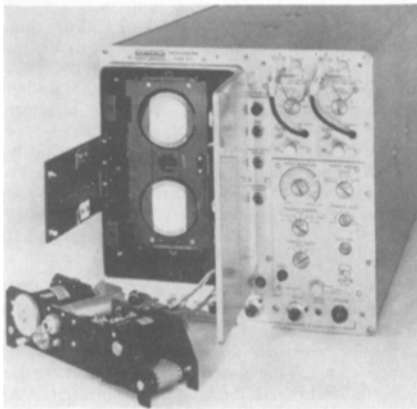
An improved high-voltage pulse generator, designated model PG-010, has been designed specifically for laser control and light modulation applications by Kappa Scientific Corp., 4416 Hollister Ave., Santa Barbara, Calif. The unit supplies a wide variety of high-voltage waveforms (up to 40 kv) for opening and closing Kerr cells. The generator, which is portable and compact, utilizes a special high-voltage hydrogen thyratron in a low-inductance coaxial configuration for controlling hydrogen pressure, in addition to a high-voltage resistor in order to achieve the fastest possible thyratron operation.

A new solid state pulse timer, designated Series C2252, has been announced by Electro-Seal Corp., Des Plaines, Ill. The timer may be programed locally or remotely by resistances for time sequences, or by limit switches for mechanical control. Internal solid state logic provides a fixed, minimum 100 msec pulse. The pulse rate (from 0.2 to 60 sec) is controlled by either the timer's contained potentiometer or by using the remote control facilities. The pulse is used to energize the coil of the timer's relay for 100 msec minimum. This

electrical event causes closure of the timer relay's contacts for 100 msec thus providing time to operate solenoids or to lock control circuits.



A high-speed hybrid camera for special applications in commercial and industrial photography has been developed by Gordon Enterprises, 5362 N. Cahuenga Blvd., North Hollywood, Calif., by combining a Hulcher-102 70mm rapid-sequence camera with a Hasselblad 500-C. The new camera combines the single-lens reflex, through-the-lens viewing system and the wide-angle, normal and telephoto lens interchangeability of the Hasselblad with the fast exposure rates of the Hulcher. The hybrid camera can expose up to 100 ft of 70mm perforated film with one loading, producing 400 2½ × 2¼-in. frames per roll at 5 or 10 frames/sec or at single-frame rates. The camera operates at shutter speeds from 1/25 to 1/2,000 sec. The Hulcher-102 can be modified to accept the Hasselblad system and either the 500C or 1000F Hasselblad can be used, the announcement stated. A 100 w/sec Sequi-Strobe repeating electronic flash unit can be attached to the hybrid camera. It is powered by a high-torque motor operated by a portable 12-v Hulcher battery. Standard 115-v a-c in conjunction with a 12v-transformer may also be used.



A fiber optics recording oscilloscope, termed type 977, has been announced by Fairchild Instrumentation, a division of Fairchild Camera and Instrument Corp., 750 Bloomfield Ave., Clifton, N.J. 07015. The oscilloscope is specifically designed for direct contact photography of transients. Amplifier risetimes exceed 3.5 nanosec with a bandwidth of d-c to 100 mc. The cathode-tube resolution has been optimized for a spot size of nominally one and one-half thousandths of an inch. This results in a resolution of better than 350 lines in the signal axis and 450 lines in the time axis. Recording is possible in excess of 5×10^{10}

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