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Gull-wing reflector design provides exceptionally wide, even, bright light pattern.

Lights behind itself—220° maximum vertical beam angle.

Delivers up to 150 fc at 10 ft., over a wide 90° square beam angle.

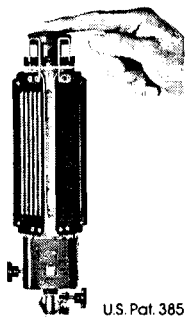
Reflector doors compensate for "fall-off" in cyc lighting.

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U.S. Pat. 3852582

Gel frame locks directly into Tota-Light.

Mounts atop doors, open or closed, as well as on stands and clamps.

Gaffer-tapes to walls and windows.

Up to 8 Tota-Lights stack on one stand or clamp for "single" source.

Tota-Light pans and tilts 360°

Snap on, flexible shafts attach small flags and reflectors to Tota-Light, clamps and other components.

Snap-together flags and reflectors "grow" for precise light control.

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for acoustical transducers such as loudspeakers. Unlike electronic equipment which has both electrical input and output terminals, the loudspeaker has an electrical input terminal but an acoustical output. This acoustical output is further complicated by the fact that a room is always interposed between the loudspeaker and the acoustical measuring device. With the human as the ultimate evaluation instrument, various measurement and interpretation questions arise regarding frequency response, variations among listeners, and effect of program material. The major question, however, is just what the frequency response of a particular sound reproduction system should be. In order to answer these questions, several psychoacoustical experiments were devised, based upon a listener's ability to detect differences. These experiments and their results are described in detail as they relate to the following types of sound reproductions systems; sound reinforcement systems; studio monitoring systems; and home high-fidelity systems.

TELEVISION

Color Signal Inphase and Quadrature Distortion Measurement and Evaluation, D. H. Pritchard and T. M. Wagner, *RCA Review* 38: 3-32, Mar. 1977.

The total transient response at a color transition in a color television system is a highly complex function involving a number of system parameters. This report enumerates these factors and provides a brief description of the cause and effects of chroma quadrature distortion. A variety of measurement techniques are discussed, coupled with the results of subjective

evaluation of practical limits of color edge distortion. A novel technique for describing color edge reproduction involving colorimetric analysis is included.

Optical Design for Underwater Television Viewing Systems, Joseph B. Hughes, *Opt. Eng.*, 16: 152-158, Mar./Apr. 1977.

This paper describes three lens designs which have been produced for three different underwater remote viewing applications: remote controlled underwater inspection vehicle for offshore operations; a miniature underwater camera for internal inspection of water cooled nuclear reactors; and an underwater camera for submersibles, search systems, and work vehicle application. A unique feature of these lenses is the ability to orient the line of sight by rotation of the optics rather than the camera. The added complexity of the optics in each case is more than offset by resulting advantages in the overall viewing system performance. The paper emphasizes the necessity for a system approach which coordinates the design of the optics, sensor and illumination with other elements of the system to achieve optimum performance.

Experimental Direct Broadcast Reception of 12 GHz Television Signals from the Canadian Communications Technology Satellite, K. G. Freeman, *Radio and Electronic Eng.*, 47: 234-236, May 1977.

In order to gain practical experience of reception of television from satellites, a long-term experiment has been set up in Canada. The ground receiving station equipment and the monitoring arrangements are described.

New Products & Developments



The Moviecam-3 a self-blinded compact 35mm mirror reflex camera has been announced by Neilson-Hordell Ltd., Central Trading Estate, Staines Middlesex, TW18 4UU, England. The movement is a dual-pin registered with a 4-pin transport system providing continuously variable speeds from 3 to 140 pictures/s as well as stop motion and synchronous 24 and 25 pictures/s. By use of an interlock coupled to the lens iris it is possible to alter the camera speeds while

shooting and automatically maintain correct exposure of the film. Drive is achieved by a built-in controlled printed circuit motor that can be powered by batteries or mains electric. The viewfinder is orientable throughout 360°. The camera incorporates a high-contrast television pickup tube which can feed television monitors and a videotape recorder. Other features include the built-in "Digiclapper" which prints in a dialled scene number onto the first frames. It also provides start, stop and synchronization pulse marks. The camera is 530 mm long; 310 mm wide and 360 mm high. It accepts a 120-m magazine and weighs 14 kg including the magazine. Price of the Moviecam-3 is \$32,400; the price includes the Moviespeed system, the Digiclapper, television pickup and carrying case. Also available is a 120-m magazine priced at \$2115; a computerized power unit, priced at \$2650; a complete set of cables priced at \$378; and the iris control system priced at \$1895.

The Thonnon-Pannaye lighting generator, a mobile film and television lighting generator vehicle providing an output of 25 kVA, 380/220 V, 50 Hz, has been announced by Neilson-Hordell Ltd., Central Trading Estate, Staines, Middlesex, TW18 4UU England. A built-in

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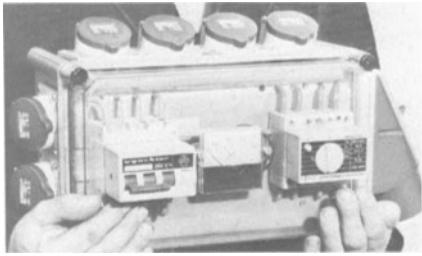
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electronic control giving a frequency stabilization of 1/4% under all load conditions makes the vehicle suited for television applications and HMI lighting. The direct-drive alternator is

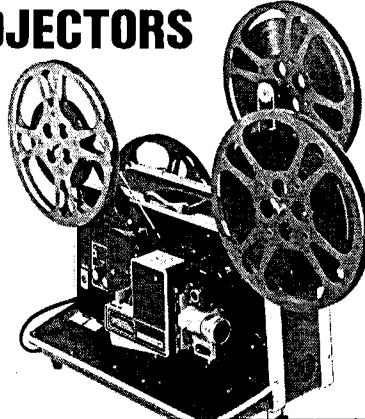
mounted in a standard long-base diesel or petrol Land Rover with tropical top. Either right-hand or left-hand drive can be supplied. Incorporated into the vehicle dashboard is a control panel containing the main on-off switch; main fuse; three ammeters; one voltmeter and phase selector switch; digital frequency meter; digital running-time meter; two output sockets; and a two-way intercom to the distribution box (shown above). Recovery time in the event of engine falter is reported to be less than two seconds. A lightweight (4 kg) unbreakable distribution box with carrying handle is supplied, plus 100 m of interconnecting cable of attachment to the vehicle socket. The 32-A distribution box contains

10 balanced lamp-output sockets, 16 A, 220 V; a main on-off switch; a voltmeter; a two-way intercom to the vehicle; and a safety differential cutout with a sensitivity of 30 mV to ensure security against shocks in the event of water penetration or equipment malfunction. The vehicle has room for carrying a variety of lighting units, stands and other equipment. Price of the Mobile Lighting Generator Kit for customer installation on his own Land Rover with power take-off is £4350. If the complete vehicle is to be supplied fully installed the cost of a long-base Land Rover with power take-off should be added (current price about £6000) making the total price about £10,350.

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This exclusive new feature allows picture and magnetic track relationship to be adjusted while the projector is running. Palmer interlocks are dependable, easy to operate, and gentle on all kinds of film. There are four new models for single and double system playback and studio quality recording. Write for full details.



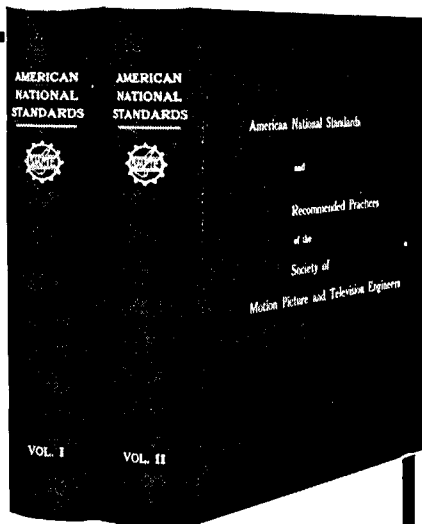
W. A. PALMER FILMS, INC. 611 HOWARD STREET - SAN FRANCISCO, CA 94105



The EMI 2008 portable television camera has been announced by EMI Sound and Vision Equipment Ltd., 252 Blyth Rd., Hayes, Middlesex UB3 1HW, England. The camera was developed jointly by EMI and Commercial Electronics, Inc. (USA). It is a self-contained system containing an integral, lockable synchronizing pulse and coder. The electronics unit can be fitted with a harness and used as a man-pack or it can be mounted on a trolley with other equipment that may be required to provide mobility and independent operation. The camera can be linked to the electronics unit by up to 400-ft of cable. It can use either Saticon or lead-oxide pickup tubes and has been designed for ease of handling and to lessen operator fatigue.

A low-light television camera system, the 7400 Series Single-Tube Color Isocon, has been announced by Cohu, Inc., Box 623, San Diego, CA 92112. Designed for color applications at extremely low light levels, the system has high sensitivity and provides NTSC color output. The system consists of a camera, a camera control and a color control. Applications include specialized medical research where the camera is interfaced with a high-powered microscope. The system can also be used for videotaping live theatrical productions using the available light in the theater, as well as for a number of industrial applications. The price of \$35,000 includes the camera, color Isocon image tube, camera control, color control and pulse module for ex-

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Imagine a meter that's able to give you readings in light so dim it requires an 8-minute exposure at f1.4 with ASA 25 film! That can go from there to the brightest snow scene... and read both instantly, with utmost accuracy!

This is one measure of the capabilities you command with the new Spectra Series II meters. Built with silicon blue cells and solid-state electronic circuitry, they offer total accuracy from 0.004 to 100,000 footcandles—a twenty-five-million-to-one lighting ratio!

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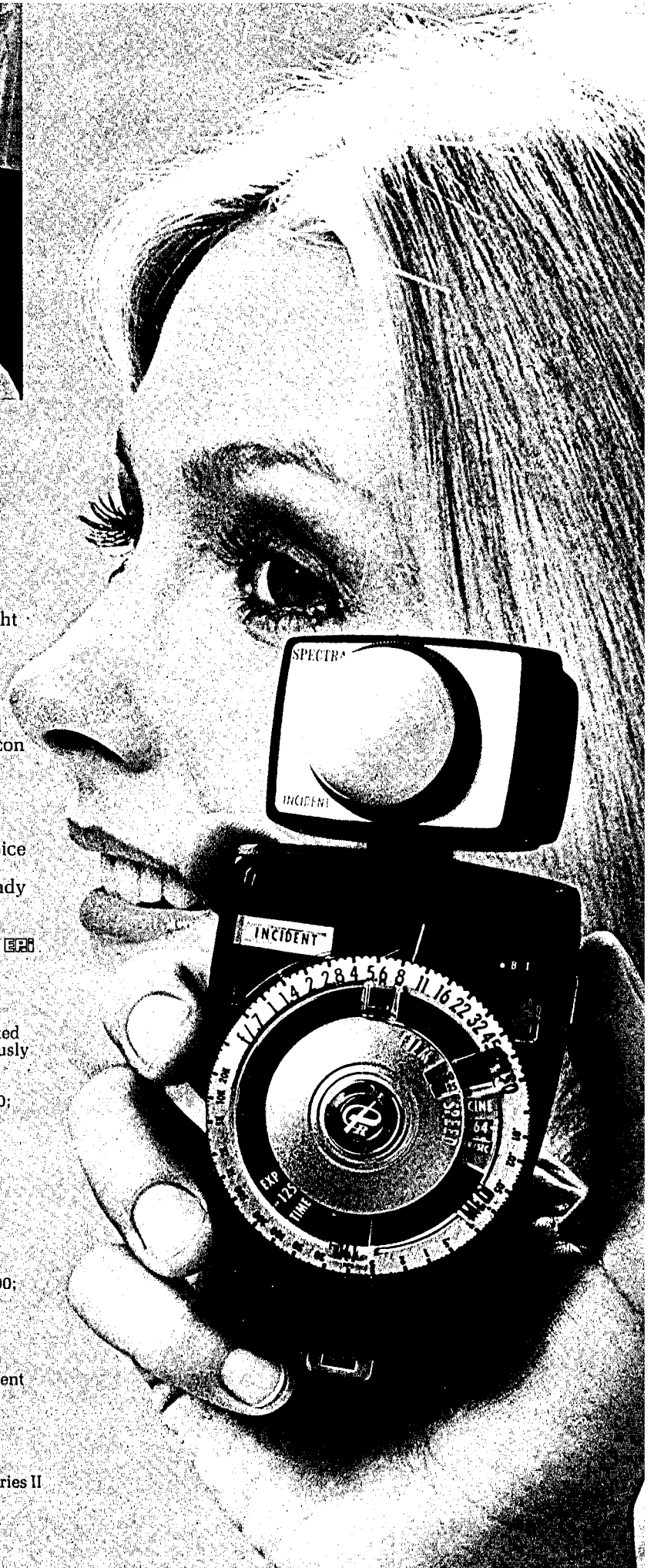
- Widest sensitivity range: EV minus 6 to plus 18.5 with ASA 100.
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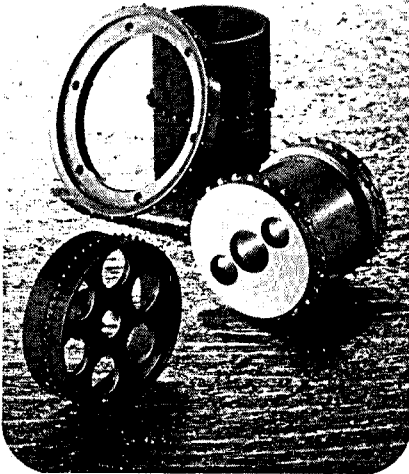
- Sensitivity range EV minus 5 to plus 18.2 with ASA 100.
- Incident or reflected measurements without accessories.
- Easy-to-read scales: exposures 8 hrs—1/8,000th sec., 1—256 fps; apertures f0.7—f90; footcandles 0.008—80,000; ASA 0.1—25,000.
- Pointer "memory" lock.
- Accepts same accessories as Combi™ II.

New Spectra® Lumicon™

- Silicon-cell footcandle meter (for illuminance measurement only)
- Three measuring ranges: 0.004—10 fc, 0.4—1,000 fc, 40—100,000 fc.
- Pointer "memory" lock.
- Accepts accessory 1° spot attachment for direct Foot-Lambert (luminance) readings, plus all other Spectra Series II accessories.



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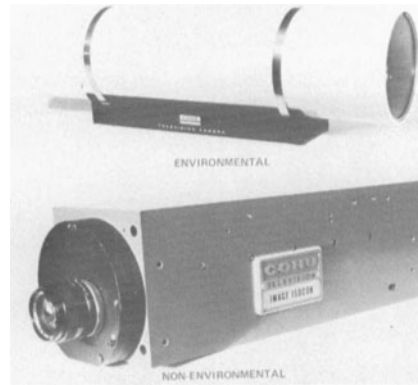
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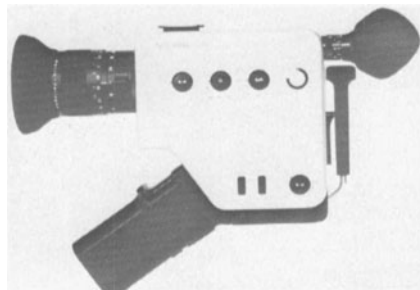


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ternal drives. The camera head, which can be located up to 10 ft from the control units is available in both an environment-resistant model and non-environmental model.



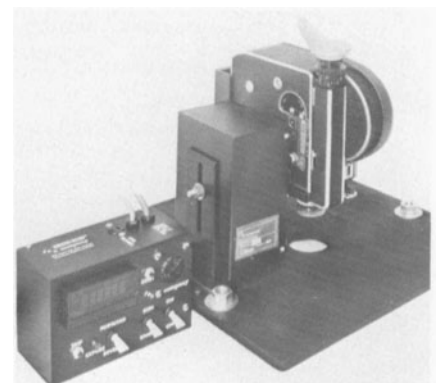
Two new Braun-Nizo super-8 sound cameras have been announced by T.A.G. Photographic, Inc., The Alpha Group, 800 Shames Dr., Westbury, NY 11590. The Nizo 2056 (shown above) is equipped with a Schneider 7mm to 56mm (1:8 zoom ratio), $f/1.4$ Macro Variogon motorized zoom lens and filming speeds from 9 to 36 frames/s. The 1048 has a Schneider 8 to 48mm (1:6 zoom ratio), $f/1.8$ Macro Variogon motorized zoom lens and filming speeds of 18 and 24 frames/s. Both models offer a "red dot" automatic system for simplifying the filming process. The filmmaker first drops a sound film cartridge into the camera then sets the exposure, frames-per-second, run button and sound recording controls at the red dots. All that is left for the filmmaker to do is to compose the scene in the reflex (through-the-lens) viewfinder, focus, and film. Everything is automatically adjusted for normal speed, lip-synchronized motion pictures. Other features include four different motors, all electronically controlled, an electromagnetic shutter release for virtually instantaneous running speed, seven integrated circuits comprising 30 transistors, 33 diodes and three special thick-film circuits. Price of the 2056 is \$1150. The 1048 is priced at \$875.

The Bauer Slimline S-50XL super-8 camera, an all-electronic-component camera with direct-sound filming feature, has been announced by AIC Photo, Inc., 168 Glen Cove Rd., Carle Place, NY 11514. Features include a Neovaron $f/1.2$ lens and 220° shutter. Other features include exposure control with a through-the-lens CdS cell that reads available light and automatically sets the correct f -stop. The full aperture range is from $f/1.2$ to $f/4.5$ and there is a manual override. Focusing to 5 ft and with a speed of 18 frames/s the camera also has a 5X zoom lens with power and manual zoom control as well as controls for automatic fade, backlight compensation, manual override of the lens ap-



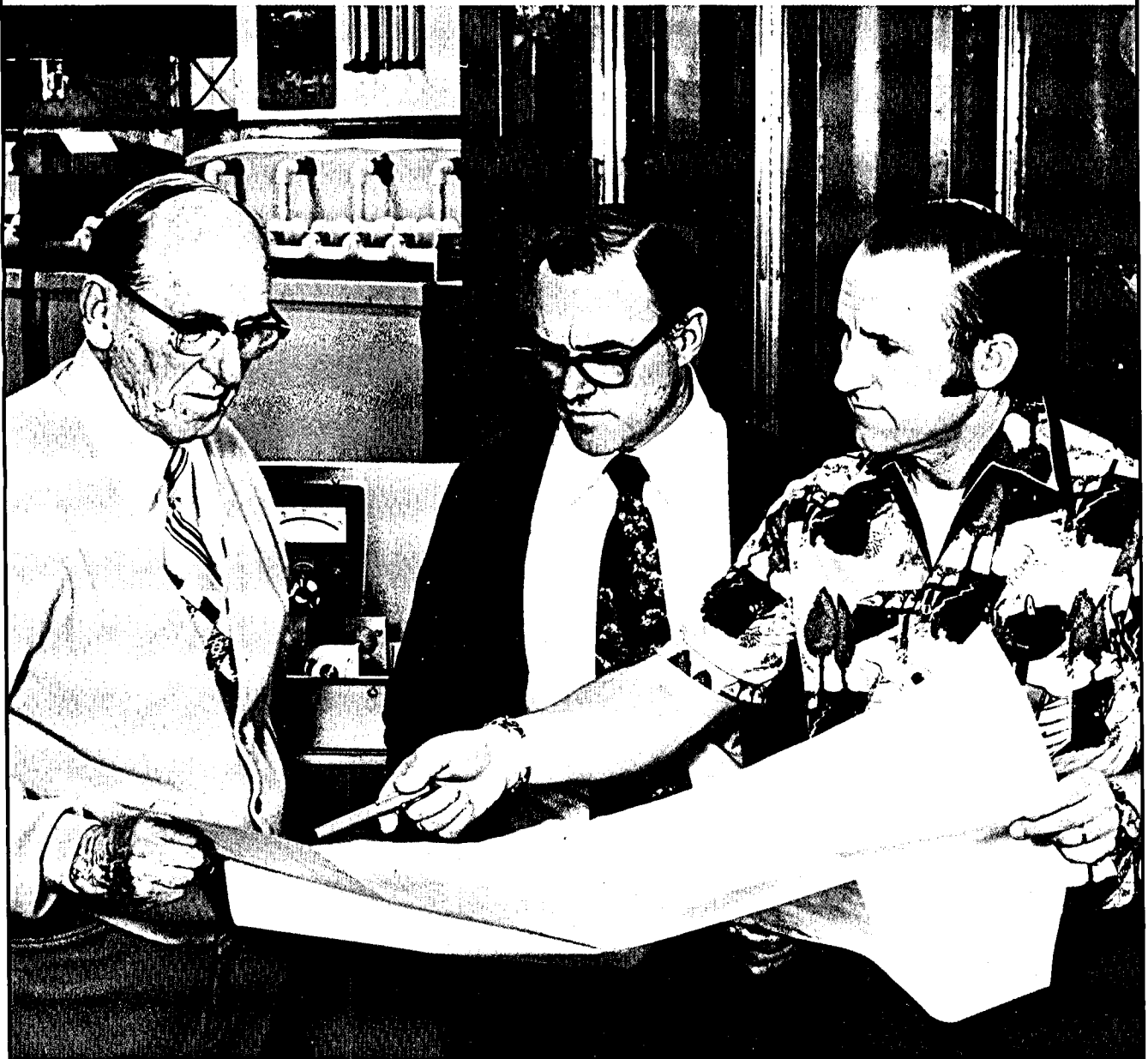
erture, high-low volume gain sound control and information windows to indicate film type, film footage counter and red filming light. The price is about \$474.25.

A synchronous phase lock and/or remote speed select add-on module for the Photo-Sonics 16mm-1PL high-speed camera has been announced by Instrumentation Marketing Corp., 820 South Mariposa St., Burbank, CA 91506. A sensor in the camera simultaneously permits synchronization and out-of-phase modes between two cameras; for example two cameras running at the same speed can also be operated 180° out-of-phase with each other. When three cameras with 160° shutters are phased 120° an event can be continuously recorded. The module provides several options in controlling one or more cameras. It can be used for phasing the shutter from an external pulse to an event which simultaneously makes the camera run synchronous to the input pulse. The shutter correlation pulse in a camera can be used as an input pulse to other 16-1PL cameras equipped with this module which will make them run synchronous to the master camera. The remote speed-select module is available or the electronics can be incorporated into the same module as the phase-lock electronics providing the additional capability of changing the frame rate from a remote location. Price of the phase lock is \$750.



A stop-motion unit with a Slo-Syn motor has been added to the animation equipment produced by Fax Company, 374 South Fair Oaks

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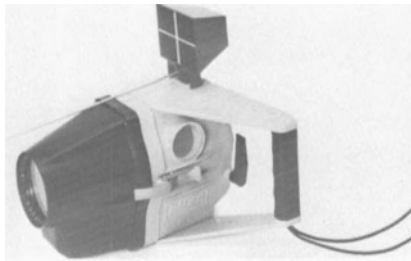
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Ave., Pasadena, CA 91105, according to a recent announcement. The solid state unit (SS-25) is primarily designed for use on 8mm and 16mm cameras having an external 1-1 drive shaft. The unit is mounted on a separate pedestal opposite the camera pedestal. A flexible shaft between the stepping motor drives directly in to the 1-1 shaft. Other types of mounts are now under development, the announcement stated. The SS-25 is basically a stop-motion drive incorporating a control unit and a motor unit. The remote motor unit is intended to be attached to the camera to provide one complete shaft revolution per command. The control unit is composed of the various controls (on-off, forward/reverse, single and run, trip, reset and remote) and the counter. The counter is a solid state 4-digit, up/down device with a manual reset. The counter automatically records the number of shaft turns, counting up for forward and down for reverse direction which may be clockwise or according to the direction of rotation of the motor shaft. It will be furnished according to the user's specifications. The trip switch can advance the motor one full revolution in the direction selected, each time it is pressed. The SS-25 operates with 105 to 120 V ac at about 1/2 A. The dc voltage for the counter is generated by an internal power supply. Price of the SS-25 is about \$585. Shown above is an earlier model. On the SS-25 the control panel is separate from the driving unit and has a foot pedal for remote control.

A television-format viewing frame for Bolex 16mm cameras has been announced by the Photo Products Division of Ehrenreich Photo-Optical Industries, Inc., 101 Crossways Park

West, Woodbury, NY 11797. Designed for use with Bolex reflex models H 16 RX, H16 SBM, H16 EBM and EL models, all of which have a viewfinder magnification of 13 or 14 times, the television safe-action-area frame marks off a portion of the subject to coincide with the image seen on the screen. The television frame is placed in a vacuum-sealed plate and inserted between the ground glass and the first viewfinder collector lens. It is then at practically the same level as the ground glass. The television frame accessory outlines within the 9.60 x 7.16mm viewfinder image an 8.40 x 6.30mm area. By centering the subject image within the safe-action frame no portion of the subject is lost during subsequent television transmission. Price range of the viewing frame is from \$182 to \$215.



The Aquarius underwater housing for Bauer C107 XL and C50 XL super-8 cameras has been announced by AIC Photo, Inc., 168 Glen Cove Rd., Carle Place, NY 11514. The housing can be used with either the right or left hand. It has four stabilizers, two side-mounted handgrips and twin release features. A plexiglass front window allows distortion-free filming because it has the

same optical refraction as the water. A crosshair type of viewfinder holds the subjects in the frame whatever the depth and currents. The unit has a depth capability of 50 m (165 ft) and has been designed for variable ballast with a weight that can be inserted or removed for either depth or surface use. The Aquarius is priced at \$225.90.



A new videodisc recorder, the TRAX RX, has been announced by Teknckron Records Automation, 2020 Milvia St., Berkeley, CA 94704. The new recorder permits independent record and play on one to four channels. It is available in two series with up to 300-frame capacity, offering full-frame or single-field modes plus multiple heads on independent steppers. Sync is reportedly tighter and cleaner since the heads do not write or read while moving. Pressure pads have been eliminated to lengthen track life and inexpensive, easily replaceable discs are used for minimum maintenance inventory. Of low-mass construction, the discs are shock-resistant during operation. The recorder features four or six MHz bandwidth, a computer interface adapter, line-lock or servo-control and a choice of rotational speeds. Possible applications include fast-access storage and retrieval of computer-generated images; recording of transient phenomena in scientific experiments; medicine and surveillance; inexpensive storage of reference images for automatic inspection systems; and free-framing for photographic recording of important images. Prices range from about \$10,000 for single-channel monochrome units suitable for storing graphic stills to more than \$30,000 for multiple-channel units capable of dynamic imaging and slow motion.



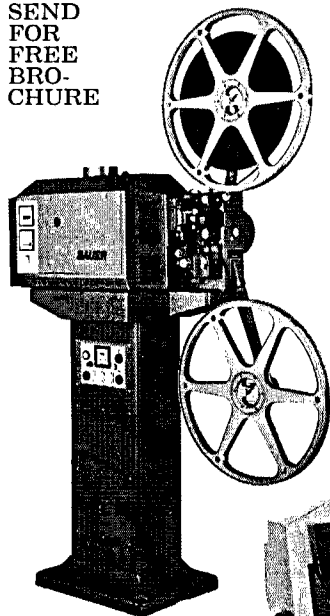
The BVR-1000 remote control unit for use with the BVH-1000 videotape recorder (*Journal*, p. 123, Feb. 1977) has been announced by Sony Corp. of America, 9 W. 47 St., New York, NY 10019. All basic functions of the BVH-1000 can be controlled from a screening room or master control room as far as 330 ft away. Status indicator lamps reflect mode, timer and servo functions. In addition, the BVR-1000 permits simple automatic editing capability. A preroll button sets the BVH-1000 at stand-by at five seconds before the cue point. From there the operator may choose either automatic live edit or automatic on air. Price of the BVR-1000 is \$3000.

The ServoLock Synchronizer, a device for electronically interlocking two 35mm film projectors

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Note drive sprocket at right; notched flywheel at left; maltese cross, center.

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In the Selecton Geneva movement, the film is advanced by a sprocket-wheel that engages four sprocket-holes. The positive gear drive engages a maltese cross in an oil bath. Large metal-to-metal surfaces, no play.

Horizontal Xenon, cold-light mirror.

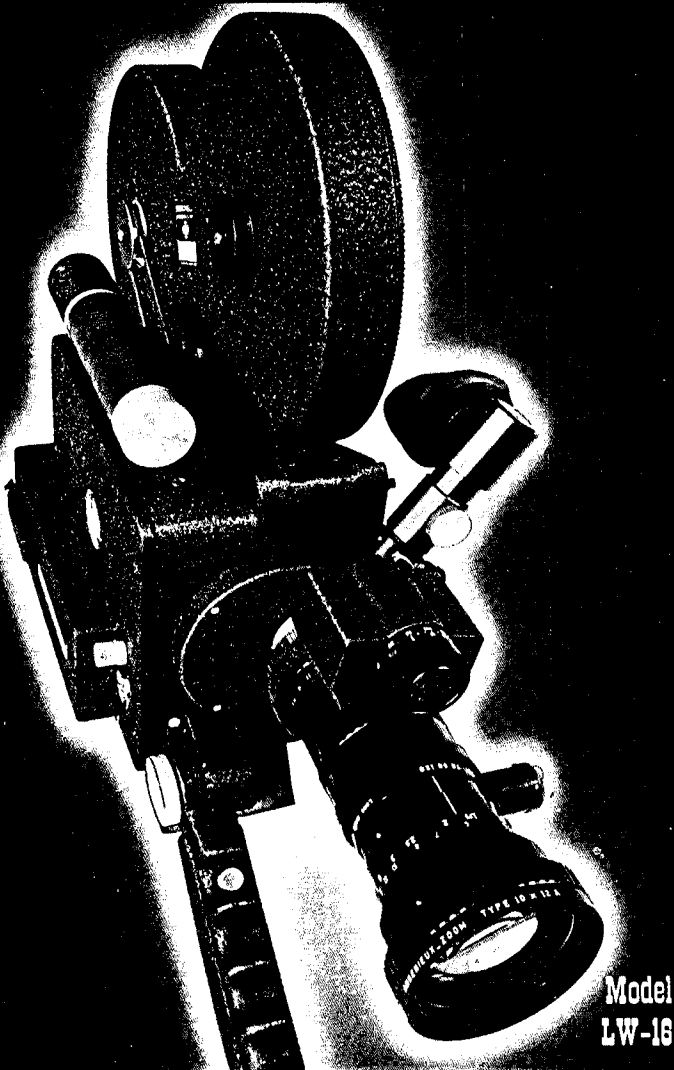
The Selecton's horizontal Xenon lamphouse module accepts 900 and 1600 watt lamps. The cold-light mirror reduces heat at the aperture, reflects 15% more light than metal mirrors.

Other features: accepts 5,000 ft reels; weight-regulated takeup; plays optical and magnetic tracks with built-in pre-amp; silicon solar cell; adjustable slit lens; easily accessible factory-aligned exciter lamp; adjustable film-gate runner bands smooth film path for longer print life; easily cleaned swing-away film gate; controls on one centrally located panel.

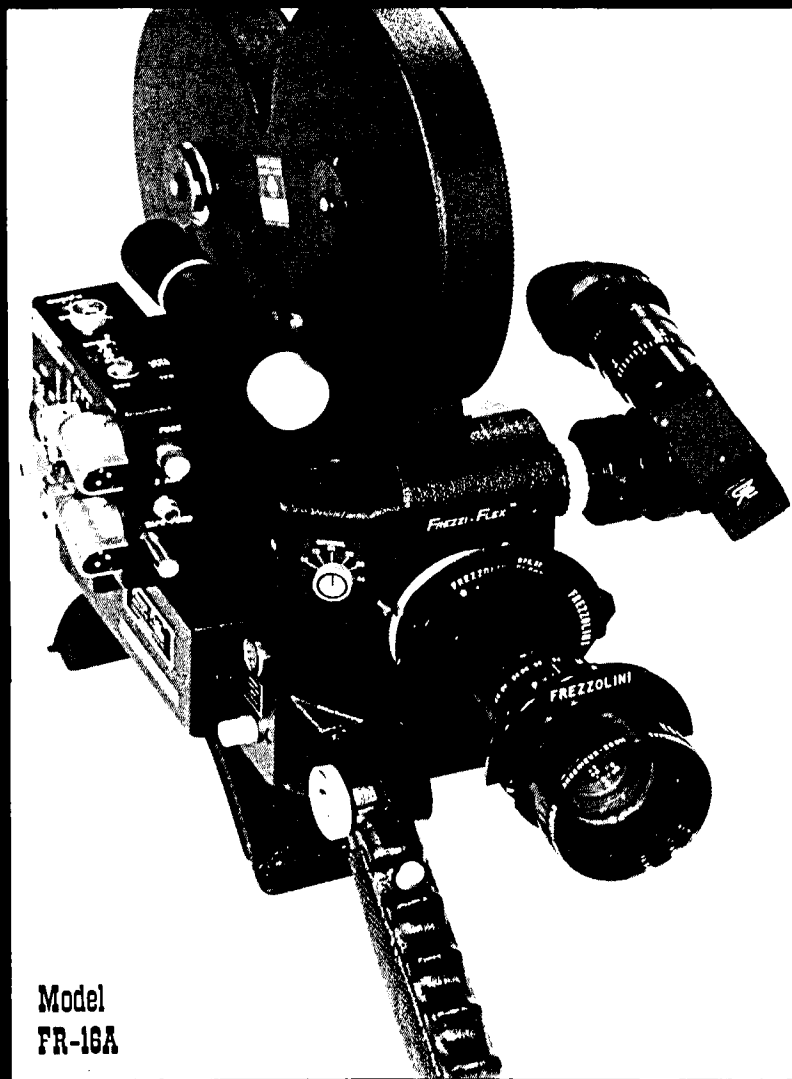
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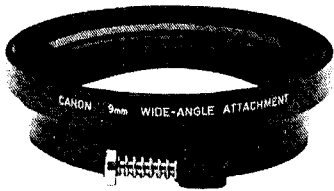
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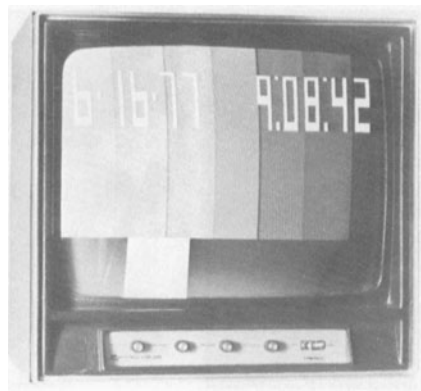


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Canada (416) 678-2730.

during post production editing operations to produce a videotape from two 35mm films, has been announced by RCA Photophone Systems, 2700 West Olive Ave., Burbank, CA 91505. The system interlocks two RCA FR-35 projectors, one a master and one a slave. The two interlocked projectors can be used to compose and record a composite videotape directly from two similar or dissimilar films. Special effects can be added to the program during the videotaping operation. The device has application in animation where one projector plays the background scene while the other projects the animation sequence. The animation is overlaid on the background in the taping operation. The dual projector system also can be used to title feature films and to create special optical effects. A complete post production system using the ServoLock Synchronizer would consist of two FR-35 projectors and two telecine chains tied into a video switcher with optical effect capabilities. The output of the video switcher is then routed to a videotape recorder. As an additional option the RCA PM-86SL sound recorder/reproducer can be added to the system for Sep-Mag sound from each projector. Price of the ServoLock Synchronizer is \$3000.

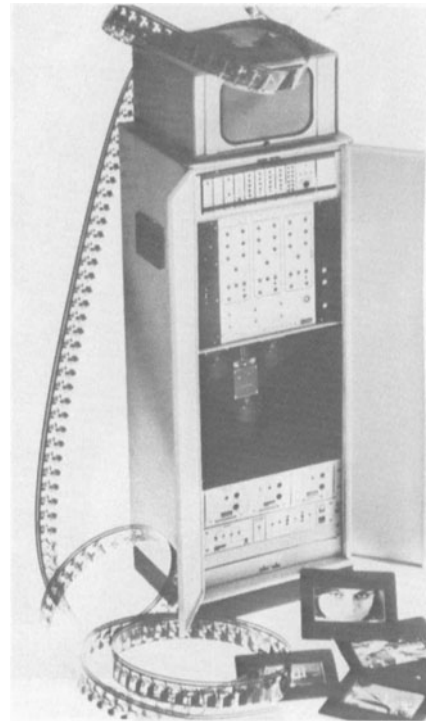


The QSI Television Clock System, designed to display time and date digitally on many television scenes simultaneously, has been announced by QSI Systems, Inc., 993 Watertown St., West Newton, MA 02165. The system consists of a master clock/calendar, the QSI600 and any number of slave clocks. Standard television signals are looped through the master and slaves to pick up the exact time and date. The signals may be synchronous or nonsynchronous, relative to each other, originating from any source. The television video is independent in the master and each slave with only the time-date data being common to all units.

The master clock (QSI600) is a video time and date generator designed to add numerical clock and calendar information to any standard video signal. It displays the time and date in 12 seven-segment digits—month, day, year, hour, minute, and second—across the television screen. Time may be set by selecting one of the six times and holding a fast or slow advance control until the required time appears on the television monitor. Once placed in the run mode, time and date functions occur automatically throughout the year. The time base is controlled by the 50/60 Hz power input. Automatic time correction occurs whenever the power frequency is updated. Loss of power resets all digits to zero. Characters are matte shaded from black through white. Price of the QSI600 is \$995.

The Slave Clock Frame, QSI600-SCF is normally rack mounted adjacent to the master where coaxial cable brings in video and yields video with time. The price is \$595.

The Omnicom™ Shading Corrector, a device compatible with most television cameras, is designed to remove gray level offset and to compensate for variations in camera response across the entire field of view. Announced by Bausch & Lomb, Analytical Systems Div., Rochester, NY 14625, the accessory increases, to a considerable degree, the camera's ability to resolve fine differences in shades of gray in an image. The Omnicom Shading Corrector compensates for basic types of shading by digitally storing across the entire field of view two sets of information. One set relates to the shading due to offsets to the gray values at every point in the field and the other relates to the shading due to variations in sensitivity. The two sets of information are then used to correct the video signal received from the scanner by separately removing the two basic types of shading. The device, a self-contained module occupying only 5¼ in of rack space in a 19-in rack, has two push-button controls. It calibrates both optical and video systems to known gray levels, brightness or intensity at both the black and white ends of the range and corrects for shading in images derived from any type of optical system and corrects for shading due to variations in illumination, glare and vignetting in optics, sample defects and spatial variations in response of scanner or television camera. Price of the Omnicom Shading Corrector is \$5900.



The Auto-Gamma Balance, a system designed to correct film colorimetry errors, caused by exposure errors and fading, has been announced by Cohu, Inc., Box 623, San Diego, CA 92112. The system was developed as an option for the Cohu 1550 series telecines (shown above). The Auto-Gamma Balance employs variable differential gamma correction and can be remotely controlled. Manual gamma balance is provided with Cohu's Gamma Paint. Also offered is Color Comp Variable Masking which allows the operator independent selection of hue and saturation in six color spectrum segments. Automatic black-and-white balance, two-level automatic or manual horizontal and vertical detail enhancement and vertical interval reference in-

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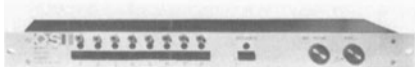
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sertion are standard on all Cohu 1550 Telecines. The encoded color signal meets applicable NTSC, EIA and FCC specifications. Other features of the 1550 Series include automatic black level and automatic sensitivity control, a dichroic beamsplitter optical system, breech loading yokes for easy retubing and modular circuitry design. The Auto-Gamma Balance is priced at \$1500 when purchased initially with the 1550 telecine and installed at the Cohu factory.



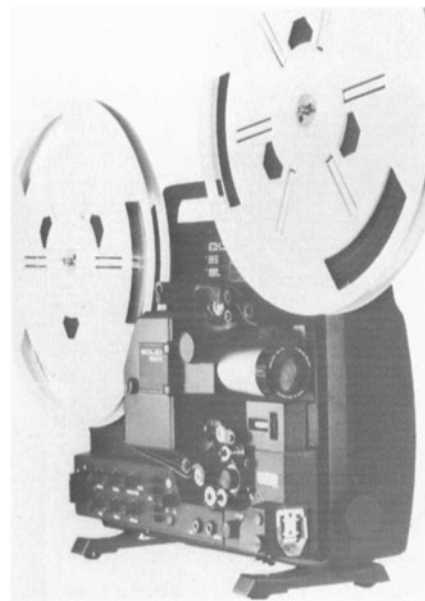
The QSI-800BC test monitoring switcher (TMS), a laboratory device designed to sample automatically color television video beams for quality control monitoring, has been announced by QSI Systems, Inc., 993 Watertown St., West Newton, MA 02165. The device is an automatic sequential vertical 8-input video switcher with an inserted seven-segment numerical character identifying each input. Sequencing dwell time may be varied from 1/2 s per input to over 30 s or any input may be held at the output by momentarily selecting that input. The eight inputs may be individually programmed to be in or out of the sequencing operation. A simple flip of a front panel switch can either add or delete any input to the sequencing program. If any input should fail or be permanently deleted from the switcher it would be ignored and bypassed automatically. Remote control switching and sequencing may be accomplished at any rate by

momentarily bringing the triggered input to ground. The QSI 800BC is priced at \$895.

Unikit, a kit designed to modify Sony Trinitron Receivers into color television monitors has been announced by Unimedia, 222525 Kingston Lane, Auburn, CA 95603. Features include external audio and video in and out; an 8-pin videotape recorder connector; pulse cross with auto bright-up; power line isolation; dc controlled logic; television audio and video out; and MOS circuitry. The kit can be easily installed. The price is \$225.

A line of passive L-C delay lines in 75Ω designed specifically for the video industry has been announced by Allen Avionics, Inc., 224 E. 2 St., Mineola, NY 11501. The units have toggle and rotary switches as well as terminals for strapable delay variations. The series contains 10 variable delay units, the lowest delay being from 0 to 10.5 ns in 0.5 ns steps. The longest available delay is from 0 to 2075 ns in 25 ns steps. Features include amplitude flatness to 5.5 MHz, low insertion loss and low signal distortion. Single units are priced from \$55 up.

The Bolex 521, a 16mm sound projector for either optical or magnetic sound or for silent films has been announced by the Photo Products Div. of Ehrenreich Photo-Optical Industries, Inc., 101 Crossways Park West, Woodbury, NY 11797. Additional sound may be added magnetically by direct sound mixing or by super-



imposition. Sound dissolves are also possible and sound can be magnetically added to silent films. To prevent sound saturation a threshold compression device is activated as soon as critical recording levels are reached. The amplifier has an output of 25 W. Standard sound/picture separation for the optical track is 26 frames; magnetic sound/picture separation is 28 frames. A single safety switch controls the choice of magnetic, optical sound or silent film projection. The switch also activates a mechanism which retracts the magnetic recording head during silent or optical film projection.

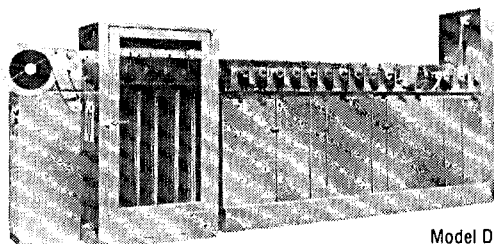
The 521 accepts all standard film spools up to 2000 ft. A separate motor drives the ventilation fan. The user has a choice of three color-corrected lenses — 50mm, f/1.3 for medium-size viewing areas; 70mm, f/1.6 for larger auditoriums, and a 35-65mm f/1.6 zoom for rooms of varying sizes. Price of the Bolex 521 with the 50mm lens is \$3039; with the 35-65mm zoom lens the price is \$3175. Available optional accessories include a wide-screen attachment, a remote control box with cable and the 70mm, f/1.6 projection lens.

The Elmo Super 8 Sound Projector, Model GS-1200 Stereo, has been announced by Elmo Mfg. Corp., 32-10 57th St., Woodside, NY 11377. The GS-1200 provides stereo sound projection with a 15-W + 15-W output stereo amplifier. Simultaneous and individual magnetic sound recording and reproduction of the first track (sound stripe) and/or the second track (balance stripe) are possible. Synchronous pulse sound projection is possible by using Elmo Synchro Sound or Elmo Tape Sound system. Features include a 24-V, 200-W halogen lamp. Forward and reverse projection, still picture projection and switch-over of magnetic recording and reproduction can be remotely controlled. Price of the GS-1200 is \$1390.

The New Braun Visacoustic super-8 sound motion-picture projector has been announced by T.A.G. Photographic, Inc., The Alpa Group, 800 Shames Dr., Westbury, NY 11590. Features include a pair of audio amplifiers for magnetic sound-on-film stereophonically, monophonically, or for mixing two different tracks. Each amplifier can deliver 15 W rms or 20 W music rating. They offer a frequency re-

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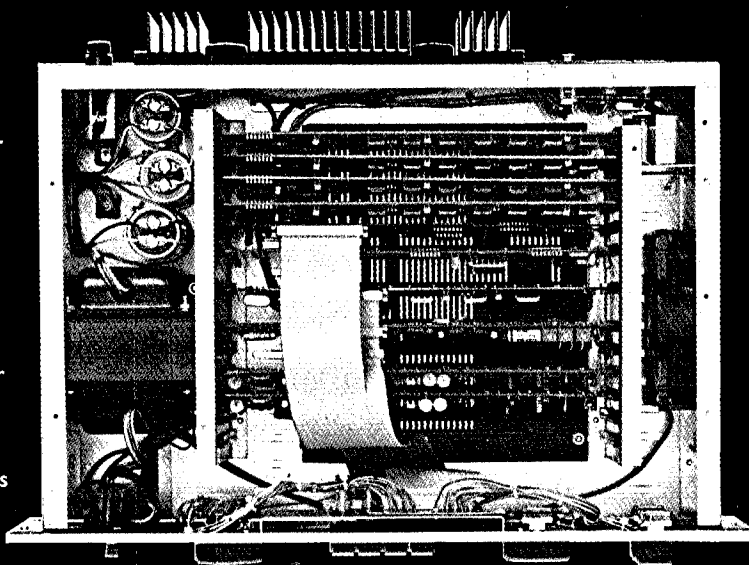
can be modified with a single control which adds a variable delay before the first echo or reflection signal.

And, most importantly, the CPR-16 allows the prominence and density of resonant modes to be altered. Thus, the density and diffusion rate of echoes can be tailored to match any room, electromechanical device, or whim.

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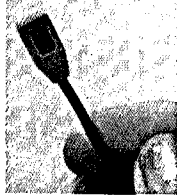


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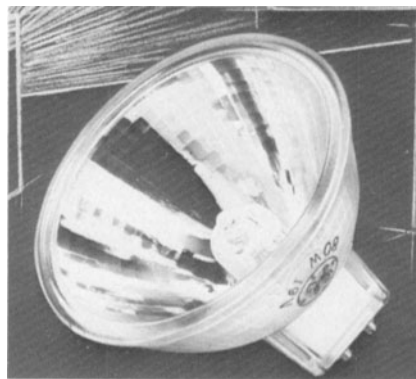


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sponse of 80 to 10,000 Hz at 18 frames/s or 80 to 12,000 Hz at 24 frames/s. Built-in controls permit a filmmaker to record the second track of sound film then to transfer the second track onto the first with level and fade capability. The projector is self-threading, featuring fast reel-to-reel rewind and electronically regulated projection speed. The $f/1.1$ Will-Travenon deluxe lens can be zoomed from 14.5mm to 26mm. The service life of the 150-W halogen lamp can be considerably extended by the use of a brightness selector on the projector. The lamp is further protected by an automatic shutoff in case of film jams or cooling fan failures. The Visacoustic is designed for editing super-8 sound films as well as for straight screening. Single-frame and pause features enable inspection of the film frame-by-frame. A brightness selector permits comfortable viewing on a close-up surface during editing in place of a screen. Price of the Braun Visacoustic is about \$995.



A new **DDM Multi-Mirror™** projection lamp designed for use in projectors that provide both front- and rear-screen projection has been announced by General Electric, Nela Park, Cleveland, OH 44112. The lamp uses the 80-W, 19-V "DDM" for cool and efficient operation. Key to the lamp's dual-role capability is the light beam provided when light from a tiny quartz bulb is reflected from more than 700 mirror-like facets molded into the ellipsoidal-shaped inner surface of the lamp's reflector. The lamp has a 2-in diameter dichroic coated reflector that projects cool light by allowing most of the heat to escape through the back of the reflector. The DDM has an efficient beam pattern with minimal light scattering with a color temperature of about 3300 K. Price of the new projection lamp is about \$16.55.

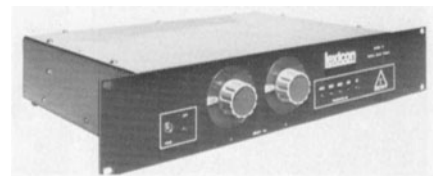
The **Telefunken M 15A multitrack audio master recorder** has been announced by Gotham Audio Corp., 741 Washington St., New York, NY 10014. The machine, available in 8-, 16-, 24-, and 32-track configurations, features CMOS logic with Hall effect pushbuttons and solid state switching throughout. The indirect capstan drive



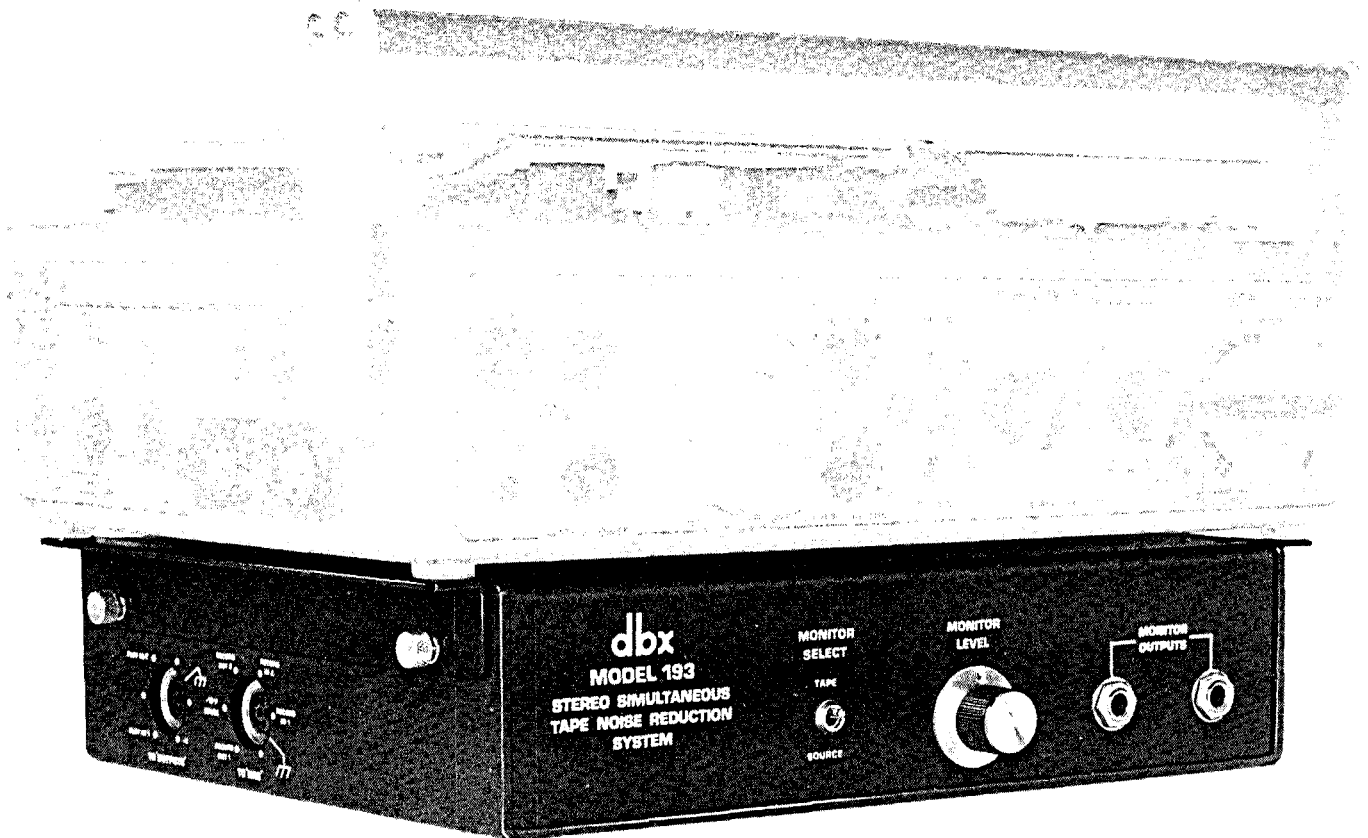
system incorporates a brushless dc motor, the speed of which is referenced to a quartz crystal oscillator. Rugged deck casting supporting precision aligned heads and guides ensures an easy threading tape path. A mechanical servo system provides constant tape tension in all modes. Fast wind speeds are continuously speed-variable. An LED timer counts minutes and seconds on both sides of zero. Prices range from \$7250 for the mono version to \$64,600 for the 32-track machine.



The **Audio Level Optimizer II**, Model 221, an audio signal processor incorporating an automatic gain control, compressor and limiter, has been announced by Inovonics, Inc., 503-B Vandell Way, Campbell, CA 95008. The gated gain-riding AGC amplifier compensates for long-term variations in program input levels over a ± 10 dB range at a correction rate of 0.5 dB/s. Control over program dynamics is provided by a gated open loop compressor. A fast peak limiter is used to prevent over-modulation with program-controlled phase inversion and adjustable limiting symmetry for AM; a separate 25-/75-us high-frequency limiter is provided for FM. Model 221 is said to be within 1 dB of flat from 20 Hz to 20 kHz. Although primarily designed for radio broadcast applications, Model 221 is applicable to television audio and can be used also for dialog recording or sound reinforcement. The price is \$760.



A **digital time delay system**, the Delta-T Model 92, designed specifically for sound reinforcement applications in small school auditoriums, etc., has been announced by Lexicon, Inc., 60 Turner St., Waltham, MA 02154. The dynamic range is reported as better than 90 dB and noise and distortion at less than 0.1%. The system provides two adjustable audio signal delays of up to 120 ms each controlled by a single front panel knob. The system also includes audio input and output transformers, an automatic, fail-safe audio by-



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The dbx 193 not only provides up to 30 db of noise reduction and eliminates print-through, but actually increases the Nagra's already excellent headroom by an additional 10 db. The system uses a 2:1 compression ratio during recording, and inverts this for a 1:2 expansion ratio during playback. Both figures are linear in decibels over a total dynamic range of 100 db.

No additional or external power source is required, yet the unit reduces battery life in the Nagra by only one third.* Two seven-pin Tuchel connector cables provided mate the dbx

193 to the IV-S, and its construction is designed to withstand heavy field usage.

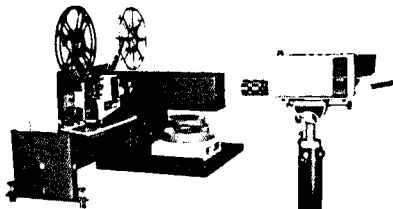
Tapes produced using the dbx-equipped Nagra are, of course, fully compatible with any other dbx professional noise reduction system. So give your Nagra an extra measure of flexibility, without weighing yourself down. Audition the dbx 193 at your professional audio products dealer soon. If you'd like more information beforehand, just drop us a line and we'll be happy to send you the full specs.

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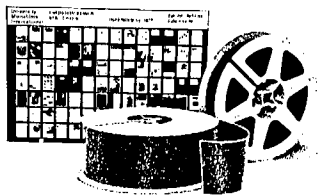
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pass feature, silent power-up/power-down circuitry and rear mounted XLR-3 type audio connectors. Features include a 5-position LED headroom indicator calibrated in 10 dB increments below limiting to simplify level adjustment and verification. The units have universal power compatibility, 115/230 V, 50/60 Hz and have international connectors and detachable power cords. The Delta-T 92, designed for rack mounting, uses Lexicon's proprietary floating point digital encoding techniques for audio quality and dynamic range. It uses plug-in modules for its memory and audio subsystems. The construction is all solid state, employing MOS-RAM memory and low power Schottky IC logic. The unit weighs 8½ lb. The price is under \$2000.



The Speedmatic closed-circuit infrared television system, designed to reduce processing accidents in film loading and splicing rooms, has been announced by ESECO, Cushing, OK 74023. The system consists of a specially developed sensitive infrared camera, mounted in the film loading room and a high resolution monitor outside the darkroom. The outside monitor permits someone to watch every operation while it is in progress until the film passes through the

darkwall. Any operator error or processor malfunction is thus instantly detectable and can be corrected before it becomes disastrous. The system is reported to be safe for use with all Kodak products when the infrared energy is provided by Kodak Safelights fitted with #11 filters and installed at recommended distances. The price of \$2650 includes one camera and mount, high-resolution monitor and 30 ft of coaxial cable.



The RCL Auto Rewind, a servo-controlled film rewriter for 16mm film, has been announced by Neilson-Hordell Ltd., Central Trading Estate, Staines, Middlesex TW18 4UUU England. The rewriter has automatic electronic control of running and shut-down and has the capability of handling original negative and other delicate film stocks. It is designed to provide a completely safe hands-off operation. Tension and speed are regulated by low inertia motors controlled by servo amplifiers working from a sensing arm. Whatever the diameter of reeled film, this form of control can maintain the correct low tension at all times during fast and slow running, acceleration and deceleration and when stationary to obviate the possibility of snatching and

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cinching the film. A substantially linear speed is maintained throughout the rewind operation with a maximum speed of 183 to 244 m/min for the 16mm negative film rewinder. A faster positive film version is available with speeds up to 366 m/min. Ball race rollers are of the Diablo type to ensure easy threading and accurate centering enabling operation in a darkroom. Price of the Auto Rewind (either negative or positive versions) is 820£. Optional accessories include a digital electronic cue-tab counter at a price of 150£. Also available is an inspection light box and an anti-static device. Shown above is the negative rewinder with the cue-tab counter.



The Programmable Signal Source, Model 8165A, able to store and recall up to 10 complete instrument settings, has been announced by Hewlett Packard, 1501 Page Mill Rd., Palo Alto, CA 94304. Complete operating mode settings, function parameters and output mode settings are recalled by pushing two buttons or by addressing one of 10 storage registers via the HP-IB (IEEE-488) interface bus. Built-in batteries maintain data storage when the instrument is turned off. Sweep is available as Option 001.

Sine, triangle and square waves are generated in the frequency range from 1 mHz to 50 MHz. Pulses or ramps with 20% to 80% duty cycles are generated in the range from 1 mHz to 19.99 MHz. Pulse transition times of less than 5 ns combined with wide frequency range make possible a wide variety of digital test applications including TTL and MOS logic families. Source impedance can be set to 50 or 1000Ω. Operating temperature range of the instrument is 0° to 50°C to ensure accuracy in rack applications where temperatures may be as high as 40°C. Price of Model 8165A Programmable Signal Source is \$6000. Price of Sweep Option 001 is \$330.

Equipment cases, featuring a favorable strength/weight ratio, designed for carrying fragile apparatus have been announced by Image Devices Inc., 1825 N.E. 149 St., P.O. Box 61-0606, Miami, FL 33181. The cases are made in 14 stock sizes, most of them based on 14 × 10 in with different depths. Other sizes can be made to the user's specifications. The cases are made in the Samcinc Rigidizing process which gives a lenticular surface to resist crushing and scarring. The units are supplied in 14-gage metal where maximum strength is desired and in 16-gage where weight is the chief consideration. All include a double lipped and lined dust trap and either Ethafoam or polyester filling. Handles can be either standard or recessed. Prices are computed by adding the three dimensions — length width and depth and multiplying by \$2.75 for stock items or \$3.00 per inch for specially made units. Recessed handles add \$6.50 each; recessed catches add \$7.25 each; and locking catches add \$5.25 each.