

INFORMATION FOR THE PROFESSIONAL

TECHNISCOPE PROCESS CAMERA CONVERSION

Now available is the new Techniscope Process for conversion of 35 mm Mitchell and Arriflex cameras. Factory conversion provides two-pin pull-down movement which equips cameras for the Techniscope Process.



TECHNISCOPE FRAME as taken in camera



PROCESSED FRAME ready for projection

RESULTS: Major savings in both film cost and processing cost. Complete Mitchell BNC and NC conversions are approximately \$1,400 per camera; and 35 mm Arriflex is approximately \$1,300.



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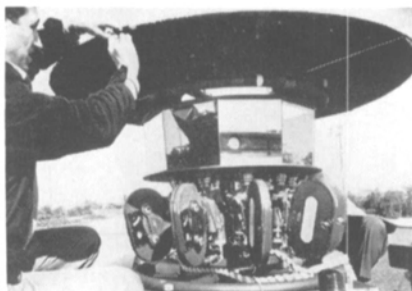


new products

(and developments)

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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.

A pre-stripped, black-and-white 16mm film specially developed for viscous processing has been introduced by Eastman Kodak Co. Designated Eastman RP Panchromatic Negative Film, Type 7229, it is said to have many of the same photographic characteristics as the Double-X film which has a camera speed of daylight, 250, tungsten, 200. The new film is the first to be pre-stripped for recording magnetic sound. All other Eastman 16mm black-and-white professional films will also be pre-stripped, it was announced, but the new film is the only one recommended by the manufacturer for viscous processing systems. The Eastman Viscomat Processor, which uses pre-packaged chemicals and processes at a rate of 18 ft/min, has heretofore been limited to the processing of positive motion-picture film. This new negative film makes it possible for a single person using a lightweight or hand-held camera to record pictures and sound of a news event, for instance, and have it processed and televised within a very brief time.



A 10-camera unit for making a 360° film for a New York Worlds Fair theater-in-the-round has been designed and built by Behrend's, Inc., 161 E. Grand Ave., Chicago, under a contract with Fred A. Niles Communications Centers, Inc., of New York, Chicago and Hollywood. The camera is being used by the Niles New York studios to film panoramic views of New York City which will emphasize transportation facilities operated by the Port Authority. The circular theater is being built by the Port of New York Authority in its Worlds Fair Heliport and Exhibit building.

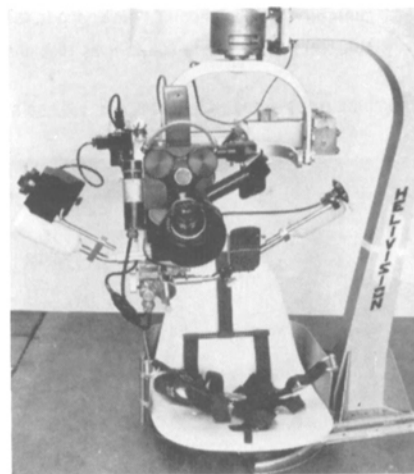
The camera is composed of 10 Arriflex 16M cameras mounted on a circular rig 40 in. in diameter, 40 in. high, and weighing

650 lb. The 10 cameras are mounted to shoot up into 10 circularly aligned mirrors. Each camera is equipped with a 12½mm lens by Taylor, Taylor & Hobson of London. Each lens covers an angle of 42° but the extra 6° latitude on each lens will be corrected by masking on the projection equipment. To achieve the proper parallax correction, mirrors were used to "fold" the light so that the nodal points of all 10 lenses coincide at one central point to allow even lines of sight at any point from 3 ft to infinity.

Without mirrors, the continuity between cameras of objects moving horizontally at close range would be broken. This is because the angle of acceptance of each lens forms a triangle with the apex at the nodal point of the lens. Therefore, if the cameras were mounted to shoot straight out, objects moving horizontally close to the rig would move in and out of the triangular lines of sight of the lenses. A special gear interlock mechanism built into the rig connects to the drive shafts of each camera so that all cameras operate identically at 24 frames/sec. All shutters open and close simultaneously and all pull-down claws work together. Control of all 10 cameras is achieved through a single control box connected to the rig and cameras with a 12-ft, 36-conductor cable.

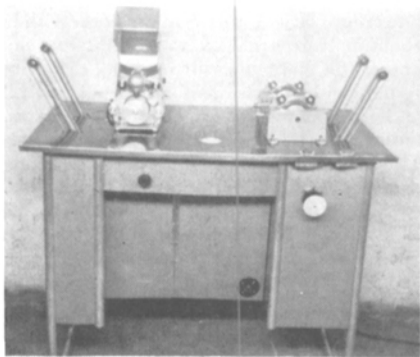
A detailed description of the design and construction of the camera will be the subject of a paper by Jack Behrend, President of Behrend's, Inc., to be presented at the Society's 95th Conference in Los Angeles.

A new hand-held dynamic microphone called the Dyna-Mike has been announced by Altec Lansing Corp., 1515 S. Manchester Ave., Anaheim, Calif. The device is described as a "noise-cancelling" microphone and has been developed especially for use in communications systems where ambient noise is apt to interfere with voice transmission.

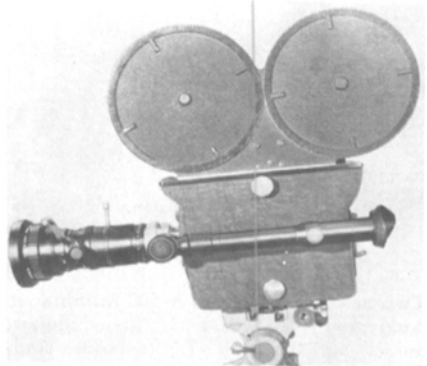


Helivision, a system for taking motion pictures from a helicopter, announced in France by Films Montsouris s.a. of Paris, has been introduced in the United States by Helivision Corp. of America, 667 Madison Ave., New York, N.Y. 10021. The system consists of an antivibratory camera mount, together with a motor-driven varifocal lens. A solid steel base holds the camera operator's seat and a

strong gantry that supports, through a shock absorbing unit, two metal bows. One of these bows supports the camera; the other supports a system of weights for counterbalancing the weight of the camera, making it possible to use the camera at any angle or at any position of the helicopter. The weights are adjusted to bring the center of gravity of the mobile assembly or camera platform exactly at the intersection point of the three axes of rotation. When the balancing and adjusting are properly done the camera will remain in a given direction regardless of the attitude and oscillation of the helicopter. A mirror at the front of the camera reflects the lens scales, enabling the operator to make necessary adjustments. The system can be mounted on any helicopter having an equal or greater load capacity than the French four-seater, the Alouette II.

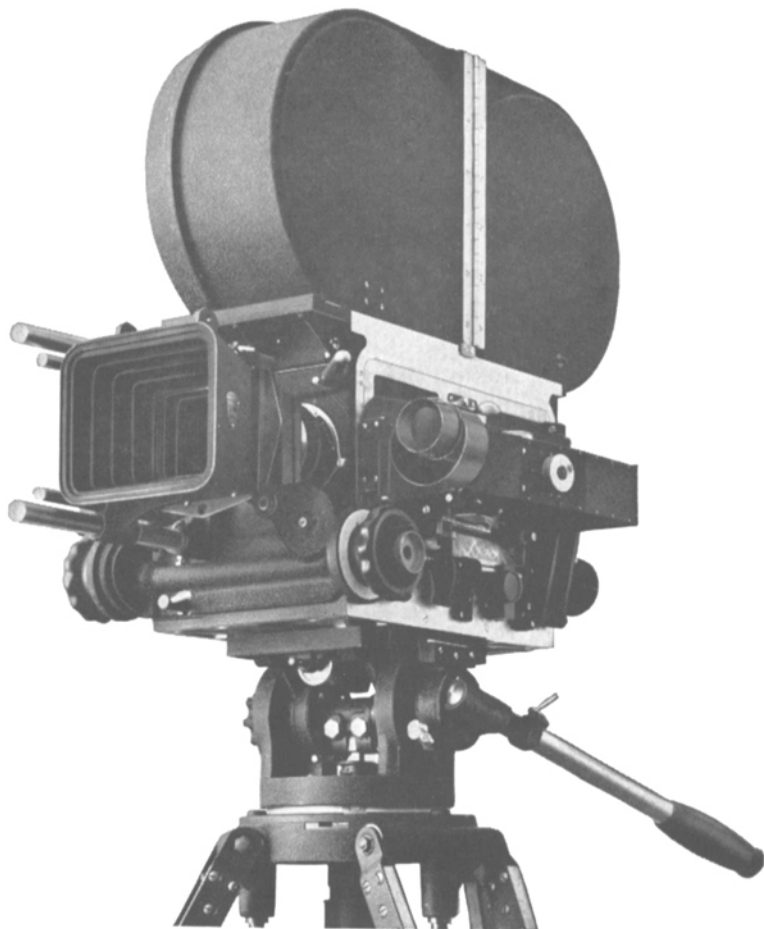


A 36 in. by 20 in. 16mm double system editing table has been announced by Palmer Editors, 73-40 Vleigh Pl., Flushing 67, N.Y. The table is equipped with two synchronizers, footage and frame counters, soundhead, viewer and reel arms to accommodate reels up to 16 in. in diameter. The soundhead is designed to read optical or magnetic track, emulsion or magnetic coating up or down, and it can also be detached and used with rewinders to read 35mm magnetic or optical track. Control is by two microswitches mounted in the table top. Film channels are motor driven in either direction and can be operated separately. The motors are equipped with magnetic brakes. The price is \$1,745.



A new viewfinder model of the Angenieux 10 x 12, 12-120mm, f/2.2 zoom lens has been announced by Zoomar International, Inc., Glen Cove, L.I., N.Y. The new lens, designed to enable the operator to focus and view directly through the

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The Mitchell BNC not only carries the industry's highest quality standards . . . but has proven one of the world's most outstanding investments. It produces the finest film . . . is virtually ageless . . . is so versatile that its owner has almost limitless freedom in creative range. Whether you call the Mitchell BNC 35mm Studio Camera a "work-horse," or call upon it for Techniscope, or measure its world-renowned reputation for top performance under difficult conditions — it all adds up to the most amazing instrument that today stands alone in the art of cinematography. There's more to the story, just write for new literature on the BNC.



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the modern Sun Reflector by Lowel-Light. Portable, lightweight. The Vari reflector has a bright even reflection you can soften or diffuse by a finger-operated lever. Mylar and aluminum slat construction is rigid in wind, rolls up in seconds for storage or travel in its own carrying tube. Floods like a spotlight, doubles as a shadowless indoor "fill." Washable, scratch resistant surface. Special stand allows, pan, tilt & height adjustments.

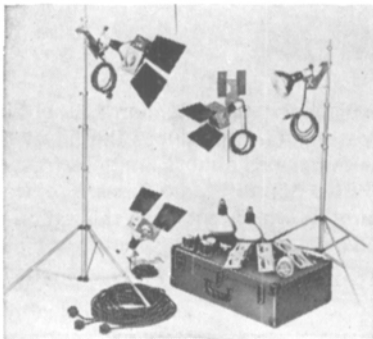
4 x 4 Vari-reflector complete with stand and case (7" x 42") ...\$149.50

2 x 2 Vari-reflector Hand-hold model \$24.50

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2 x 2 Fiber carry case (4" x 24") \$9.50



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Gaffer Tape, 12 yard roll...\$1.95, 30 yd. roll...\$3.95 Lowel Barndoors...\$5.75 each

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lens, is adaptable to most of the standard "C" mount cameras. A four-to-one ratio crank for slow, smooth zooming is provided along with a zoom handle for fast zooming operations. The viewfinder can be rotated through 180° to allow the camera door to be opened for threading without removing the lens from the camera. The lens is 8½ in. long in the folded position and weighs approximately 2½ lb. Price range is from \$860 to \$895, depending on the type of camera.

An all-transistorized amplification system designed for improved sound quality and flexibility in use has been announced by Ballantyne Instruments and Electronics, Inc., 1712 Jackson St., Omaha, Neb. 68102. The system is manufactured in three units, each measuring 7½ in. deep, 10 in. wide and 26½ in. high. The system eliminates photocells, vacuum tubes and relays and, as a result of the use of transistor components, there is no problem of heat dissipation. The transistors are designed to operate well within power limits. All switching is done electronically by pushing a button, permitting changing from six-track to four-track to optical and from 70mm to 35mm film. Pushbutton operation permits changing from left to right projector and to non-synchronization in order to use either music or microphone from any position, left, right or center of the projector installation. The amplifier also has a channel balance control for each channel. All major component parts are plug-in type.



The Mark IV Motion Analyzer, designed for adaptability in testing photographic and other equipment, has been announced by National Camera Repair School, Dept. 174, Englewood, Colo. 80110. The basic design — that of an overlay grid technique adapted to oscillographic testing of camera shutter speeds and flashlamp synchronization — is the same as that of three previous analyzers developed by the firm. The new analyzer incorporates built-in timing controls and other features for an extended range of usefulness. The machine also incorporates a beam-splitter device for shutter

Components of the machine include a cathode-ray tube, vertical amplifier, horizontal amplifier, rectifier, trigger amplifier and trigger blocking tube, thyatron sawtooth oscillator and a phototube. Weight is about 30 lb, height, 11 in., width, 11¼ in. depth 18 in. The machine can be adjusted for various types of testing by setting appropriate controls. Testing for which it has been designed includes shutter action, contact action, synchronization or time interval, and battery action. According to the announcement, "movie equipment or anything with a repeating action may be timed (and) projectors and motion-picture camera governors may be set." The analyzer is priced at \$760.

The Zeiss Ikon Movieflex Super, an automatic 8mm all-electric movie camera, has been announced by The Zeiss Ikon Division of Carl Zeiss, Inc., 444 Fifth Ave., New York 18. The camera features a powered f/1.9 Vario Sonnar lens with a zooming range of 7.5 to 30mm, and an automatic light measuring and exposure system with provisions for manual control of lens openings. The electrically driven motor may be run at 16 or 48 frames/sec. The automatic exposure system can accommodate all films between 10 and 800 ASA. A built-in filter factor compensator is adjustable from 2 to 8X. The camera is expected to have a list price of about \$600.

An 8mm movie projector, the Kodak Chevron 8 Projector, Model 10, announced by Eastman Kodak Co., features a dual air-jet cooling system which enables the user to hold any single frame on the screen with no light loss. The machine can also be run at slow motion speeds. Other features include automatic threading; special voltage control switches for maximum lamp life and screen brightness; a single-lever control for forward, still and reverse projection; on-off room light control; and a 400-ft reel capacity. Price range is from under \$190 to \$215, depending on the type of lens.



Two new models of the A-500 Luminance Analyzer, the A-500 fL (foot-Lambert model) and the A-500 EC (exposure computer model) have been announced by Gamma Scientific, Inc., 5841 Mission Gorge Rd., San Diego, Calif. 92120. In addition to luminance measurements the exposure computer model is used for exposure computation on the constant density principle. Both instruments are high-

ARRIFLEX at work — ONE OF A SERIES*



Photograph by Joanna Steichen

"...so I began again with an ARRIFLEX..." STEICHEN

In his eternal search for photographic perfection, Edward Steichen, called "the century's most influential photographer," selected the ARRIFLEX 35 for the motion picture sequel to his famous Shad-Blow Tree series of stills.

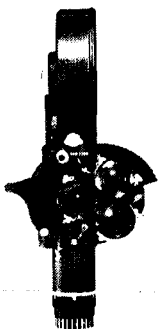
In his autobiography, "A Life in Photography," recently published by Doubleday & Co., Inc., Steichen tells how he spent nearly four full years photographing his beloved tree in every season and all hours of the day, and of his eventual attempt to weave the hundreds of stills into a "photographic concerto."

"But then I thought," he writes, "why turn these still

pictures into a film? Why not start the series over again and take advantage of the wind and the rain and the movements of the water? On movie film I could also have the advantage of sound... So I began again with an Arriflex..."

Thus started another fascinating four-year project for Steichen whose spectacular career spans 65 years of extraordinary camera craftsmanship.

From art to atoms, in the imaginative hands of notable or unknown... the versatile Arriflex performs with almost limitless capabilities, extending its enviable reputation into all areas of professional cinematography.

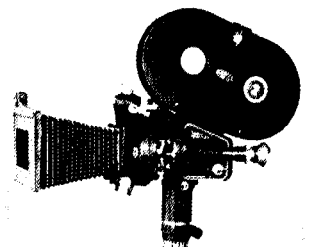


First Choice of Professionals... Lightweight, compact, rugged and versatile, the Arriflex 35 masters every filming assignment from hand-held newsreel shots to "blimped" sound shooting. Arriflex 35 rates "first choice" for motion picture assignments in Industry, Science, Education, News, Sports and Entertainment.

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definition, photomultiplier spot photometers with $\frac{1}{2}$ -degree acceptance angles, and with identical measurements of $7\frac{1}{2}$ in. long, $2\frac{1}{2}$ in. wide, 6 in. high, and weight of 3 lb. They are designed to eliminate adjustments for warm-up, focus, drift, zero or full scale. Luminance range is in excess of 10,000 ft-L. to less than 0.3 ft-L. The A-500 fL is priced at \$670, and the A-500 E.C. is priced at \$690.

A remote-controlled vidicon lens with a zoom range of 10 to 1 has been announced by Zoomar Inc., Glen Cove, N.Y. The lens, designated the Mark X, zooms from 15mm to 150mm with a constant speed of $f/2.8$ and zoom, distance and iris are remote-controlled from distances up to 2,000 ft. Range extenders are available to convert the lens to 25mm-250mm, $f/4.5$ and 30mm-300mm, $f/5.6$.

The EMI TVS-80 Color Television Switching System has been announced by the distributor, Electra Megadyne Inc., 1750 N. Vine St., Hollywood 28. The system consists of a console and plug-in electronic modules. Features include circuitry to provide for vertical interval switching; semiconductor switching circuitry; ability to handle composite or non-composite signals; capability of expansion up to 70 inputs and 80 outputs; provision for the addition of montage and special effects equipment at any time; capability of using the push keys at any distance from the switcher up to a circuit length of 1500 ohms; no pulses required at the switch

panel; and provision for re-entry. The new switching system has recently been installed in Television Station WECT in Wilmington, N.C.

A method for connecting a home Pay-TV decoder externally to the TV set has been developed by Teleglobe Pay-TV System, 400 Madison Ave., New York 17. The method, which has been patented, obviates the removal of the back panel of the TV set and tampering with the "innards." Connections for the encoder are also made external to the broadcast equipment. Teleglobe Video Security Systems are designed for use with centralized metering and billing for both over the air and over cable. The systems can all be used with vhf or uhf and with black-and-white or color TV sets.



The Vidicon Camera Channel V321 Series, recently introduced by Marconi Company Ltd., Chelmsford, Essex, England, has been designed for airborne, marine, military and heavy industry applications where automatic, stable operation is needed despite mechanical shock and ex-

treme conditions. The camera is cylindrical in shape and 3.5 in. in diameter. This diameter is said to be the minimum compatible with high performance, using a 1-in. vidicon. Three control units are available — a free-standing ruggedized, airtight unit; a rack-mounted unit to fit a standard 19-in. rack; and a similar rack-mounted unit engineered for airborne use. With all three units the only exposed control is an on/off switch. Additional accessory control switches may also be fitted, but no external electronic controls are provided since the equipment automatically adjusts itself to prevailing light conditions. Other features include a more sharply focused beam by the use of magnetic and electric focusing fields approximately twice as powerful as those normally employed to give higher horizontal and vertical resolution and an improved signal-to-noise ratio since less aperture correction is required.

The camera is presently being used by the Fishing Laboratories of the Ministry of Agriculture and Fisheries at Lowestoft, England, for underwater studies of the general behavior and breeding habits of fish, according to a recent announcement. Further information is available from the U.S.A. distributor, Ampex Corp., 934 Charter St., Redwood City, Calif.

A high-resolution television camera system, type SCT-875E, has been developed by the Radio Corp. of America for remote monitoring of military and space operations. The camera uses an 875-line/frame format at 30 frames/sec and is said to be capable of 1,000-line resolution. It employs the RCA type 7735A vidicon tube. The system has a video bandwidth of 20 mc. Control and deflection chassis for the system are rack-mounted for better serviceability, ease of maintenance, and to reduce heat at the operating position. The remote control panel can be located up to 200 ft from the camera control and deflection chassis.

A system called the Videograph Automatic Car Reporting System has been introduced by A. B. Dick Co., Chicago 48, Ill. When the system is in use, trains moving at speeds up to 35 mph through switchyards activate a camera-type scanner that generates an electronic signal. The signal is transmitted through coaxial cable to an electrostatic printer located in a yard office. The printer contains a modified cathode-ray tube that images each railroad car on a roll of paper tape $2\frac{3}{4}$ -in. wide which is moving at about 55 ft/min. The imaged tape is then run through a viewer for checking car numbers and names against waybills and other documents.

An automatic camera system for hyperthermal tunnels, announced by Giannini Scientific Corp., 185 Dixon Ave., Amityville, L.I., N.Y., has been developed by the firm's subsidiary, Flight Research, Inc., specifically for photographic recording of the effects of simulated re-entry conditions on models and material samples. The system consists of a Flight Research Model IV-E camera with variable shutter and auxiliary data chamber; a 90mm $f/2.8$ lens with motorized iris and an integral

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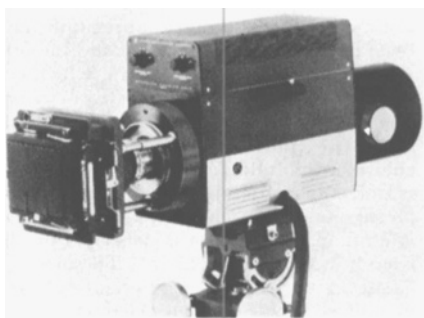
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beam splitter and photocell; and a control panel. Automatic exposure control over a range of 12f/stops is accomplished by controlling both the iris of the lens and the motor-driven variable shutter of the camera. The camera employs a pulsing mechanism which may be changed instantaneously from one pulsing rate to another or from the pulsing mode to the cine mode, by means of simple switching. The lens has a large focusing range of infinity to 8 in. and provides a field of view of 6 by 6 in. at a distance of 36 in. The control panel, of standard 19-in. rack mounting configuration, contains an intervalometer with five rates, a cine mode switch, provisions for remote operation, access to the correlations pulse, a power switch and indicator light, and the necessary power supply and control circuitry for the system, all of which are solid state.



The **STL Image Converter Camera, Model 1D**, has been announced by STL Products, a Division of Space Technology Laboratories, 139 Illinois St., El Segundo, Calif. The camera provides both streaking and framing operation through the use of interchangeable plug-in units. Three frames per event are obtained at exposure times adjustable from 5 nanosec to 200 nanosec with independently adjustable framing intervals at rates from 5,000 to 20 million exposures/sec. Streak writing rates range from 1,000 mm/μsec to 0.25 mm/μsec. Both framing and streak operation can be alternated through the same optical setup, the announcement stated. The camera can be triggered either optically or electrically from the experiment.

A fiber optical probe can be used to pick up luminosity from the event and at a pre-selected energy level trigger the instrument. An electrical probe can also be used with a minimum internal delay of 12 nanosec. The rear optics relays the image from the photoanode onto Polaroid or ordinary cut film. The double-coated rear lens, designed for recording data from a phosphor screen, has maximum transmission matched to the 4,500 Å spectral response of the phosphor, and provides uniform illumination anywhere on the image size, i.e., 17 × 25 mm for each of the three frames, 25 × 50 mm streak size. This is made possible by converting the luminous image to an electron image which is accomplished by focusing the event under study onto the photoemissive cathode of the image converter tube which is then turned on for the selected interval by a rectangular pulse from the plug-in unit to the gating grid which acts as an electronic shutter. The framing exposure time or streak writing time is determined by the duration of this shutter pulse.

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- DEVELOPS NEGATIVE FILM AT 35 FPM
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The S-60 is Filmline's newest Spray Processor. It is a friction drive processor, guaranteed not to break or scratch film. Absolute control of footage in each chamber insures sensitometric quality control and consistent development. And Filmline processors (unlike competitive makes) have lower film assemblies that are adjustable and remain captive in the position placed.

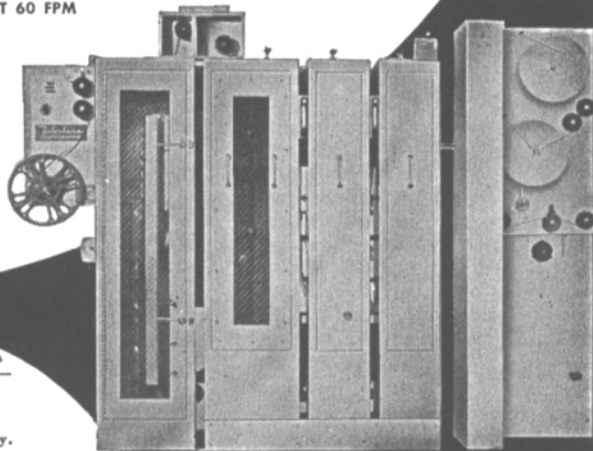
The S-60 is the specific answer to every laboratory's need for a Spray Processor—because it outperforms machines costing twice as much.

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- Film chamber doors are completely removable for easy access to entire chamber (Not found in competitive models of similar class)
- Processing section is stainless steel • Impingement dry box • Precision temperature controls with indicating pilot lights for cooling & heating • 316 Stainless steel pumps for developing & hypo solution • Water temperature regulator • Dual air storage • Feed in take up elevators for continuous operation • Replenishment flow meters • Manual & automatic brake for film supply • Automatic electrical torque motor take-up • Variable drive with film speed tachometer • Precision Thermometer & footage counter.



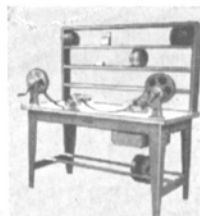
EDITING TABLES

Only F & B has combined greater durability and eye-appealing lines in the design of an editing table. F & B engineers skillfully blended steel, Micarta and your favorite shade of green into a form that is both more attractive and more durable.

- Heavy-gauge steel construction.
- Attractive green hammertone finish.
- Durable top of light gray Westinghouse Micarta.
- Spacious 60X28 inch work area.
- Convenient height—33½ inches.
- 9X12 inch light box with diffusion glass.
- Electrical outlet box and light switch.
- Back rack with V-shaped shelves.
- Handy utility drawer.

\$129⁹⁵

Table Only (without light box, drawer and rack) \$80.00

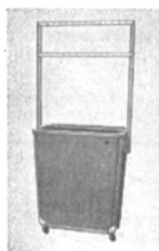


Extra Liners \$4.00 each

As illustrated, but without casters \$38.00

Barrel only (without casters, rack & liner) \$18.00

\$43⁷⁵



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After the tube is gated on, the electrons carrying the data gain energy as they are attracted toward the accelerating electrode and photoanode. The electron image is focused and then deflected into three positions for framing operation. For streak operation, ramp pulses applied to the deflection electrodes sweep the image across the photoanode. Selector switches on the framing plug-in units control the pulse duration and intervals. The streak writing rate is similarly selected on the streak plug-in units. The signal then strikes the high-resolution photoanode coated with a vacuum deposited P11 type phosphor where the signal is reconverted to an optical image. The movable film back permits the recording of three events on a single piece of film in any combination of streak or framing, thereby permitting quantitative study and comparison of the time-resolved data.

Applications include studies of plasma physics, lasers, exploding wires, and hyperballistics. Units are available for various research purposes. The price range is from \$15,000 to \$30,000.

A field mesh image-orthicon tube, WX-4861, designed for use with light levels as low as 3×10^{-7} ft-c of illumination on the photocathode has been announced by Westinghouse Electronic Tube Div., Elmira, N.Y. Elements of the tube include a field mesh to provide improved corner focus and minimize beam bending; a high-sensitivity "S-20" photocathode; and a high-gain metal oxide target which

allows resolutions up to 3,000 television lines and permits the use of time exposure techniques. The tube can be used in standard television equipment.

The Linear Century Model Solid-State Converter is a product of Linear Systems Inc., 605 University Ave., Los Gatos 2, Calif. Operating on a 12- to 15-v d-c input, the device provides a series of three d-c outputs which include a high-voltage output ranging from 650 to 850 v d-c with 500 to 400 ma; a low-voltage output ranging from 250 to 325 v d-c at 200 ma; and a bias output from 0 to 120 v negative at 20 ma. Special circuitry has been developed to give the unit the capability of operating at 91% efficiency with 275-w output and similarly high percentages over a substantial range of powers on either side of this point. Outpoint voltage is said to show only a 8% drop from no load to full load and circuit-breaker protection is included. The unit measures $3\frac{1}{2} \times 6 \times 7$ in. and weighs 7 lb. It is priced at \$145.

A new family of electrooptical tape storage camera tubes has been developed by Westinghouse Electronic Tube Division, Pittsburgh, Pa., under a contract with the U.S. Air Force. The tube has a new type of storage target in the form of a metal diffraction grating instead of the normal mesh. The grating is a solid piece of metal with grooves on one surface. A dielectric is deposited at a sharp angle to the surface, coating one side of each groove. This pro-

vides the stored charge with a dielectric surface which is recessed into the groove so that when the storage material is in the form of a flexible tape it may be reeled tightly without detriment to the stored signals. The information is electrostatically written and stored as electric charges on a special tape. Writing is performed either by secondary emission or electron bombardment induced conductivity, and readout is nondestructive. All materials of the tape-camera system are re-usable.

A metallized-polycarbonate, stripped lacquer film capacitor has been developed at Bell Telephone Laboratories in Murray Hill, N. J. The new capacitor, which has low-loss characteristics approaching those of present polystyrene or mica capacitors, is many times smaller and can be operated over a wider temperature range. Based on a new polycarbonate resin developed by the Tennessee Eastman Co., improvements in the method of laboratory fabrication have been developed at Bell Telephone Laboratories. The polycarbonate resin, which is a polymerized carbonic acid ester of a bisphenol, was found to possess outstanding dielectric characteristics. The resin in a chloroform solution is applied to a support of polyethylene terephthalate and dried by passing it near a set of infrared lamps. A thin aluminum film coating is deposited on the resin by vacuum metallizing. The material is slit to the desired width and 0.12-mil metallized polycarbonate lacquer film is stripped (or mechanically separated) from the backing. A new tangential winding machine developed by the Western Electric Co. is used for winding the metallized film into capacitors.

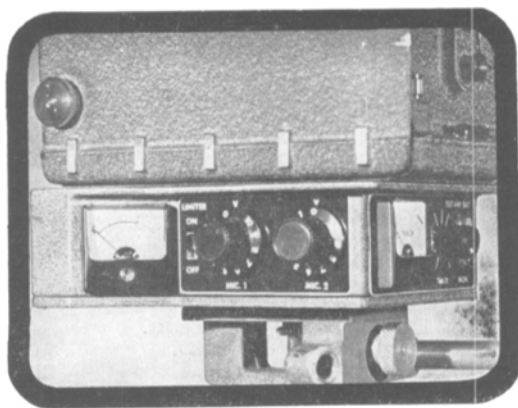
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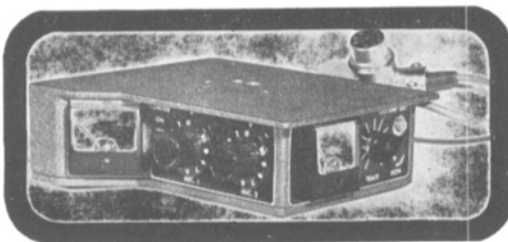
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A new optical maser material, magnesium fluoride doped with nickel ions, which, in addition to emitting coherent infrared light, also generates vibrations called phonons in the crystal lattice, has been discovered by Bell Telephone scientists. The material has been found to "lase" at a wavelength determined partly by vibrations of the crystal lattice near the nickel ions and partly by electronic states of the nickel ions. In previous lasers, the wavelength of the emitted laser light is determined solely by electronic transitions. In the new laser, nickel ions are excited to high states of energy by optical pumping in the usual way and they then relax back to the upper laser level. From this level, which is an electronic state of nickel in the magnesium fluoride lattice, the ions fall to the lower laser level, emitting the photon associated with laser action. At this lower level, the nickel ions are in the ground state and therefore unexcited; but the lattice, on the other hand, is vibrationally excited.

Remendur is a new alloy developed at Bell Telephone Laboratories. It is a member of the cobalt-iron-vanadium family and is capable of extremely high values of remanence up to 21,500 gauss. It has the highest residual induction of any permanent magnet material and yet is so malleable and ductile that it can be rolled to the thickness of human hair. Applications are expected to include commercial telephone and military switching systems. The new

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alloy will be used in an improved ferreed, a switching device with relay-like mechanical contacts that can be controlled at electronic speeds, that will be used in the Bell System's new electronic switching system now being installed at Succasunna, N.J. The device got its name from its two major components, a magnetically hard ferrite member and a magnetic reed switch. Instead of the ferrite the improved ferreed will use the newly developed Remendur.

A new type of gas laser, called a triode laser, which can be modulated by varying the voltage on the grid in the tube, has been invented at Bell Telephone Laboratories. Excited by a beam of electrons of nearly identical energies emitted from a hot oxide cathode, the triode laser oscillates without the usual glow discharge present in ordinary gas lasers. Inside the triode laser tube is a cathode, grid, and anode in the form of ribbons parallel to each other and extending about eight inches along the horizontal axis of the laser. The electrons from the cathode are controlled by the grid to have an energy spread of only a fraction of a volt. By varying the grid voltage which controls the electron flow in the laser tube, the light beam can be switched and amplitude modulated.

A special photoconductive cell has been developed by Clairex Corp., 8 W. 30 St., New York 1, manufacturers of cadmium sulfide and cadmium selenide photoconductors, for use with an electronic shutter in the Polaroid Land Model 100 camera. The new cell was developed to have rapid response to measure brief light like that of a flashbulb and also to meet requirements involving spectral response, light memory, temperature characteristics and linearity over a wide light range. The new cell is said to be able to measure flashes of light with response times of 2 to 3 msec and to have a resistance light slope of 0.9. The cell is also said to be very flat in its response to different color temperatures having a ratio of 1:10 for color temperatures from 2,850 K to 6,000 K.

Three new cadmium selenide high-speed photoconductive cells have been announced by Clairex Corp., 8 W. 30 St., New York 1. Each makes possible the design of low-cost photoelectric choppers operating at rates up to 1,000 cps. Additional features include absence of moving parts or electromagnetic shielding, ability to modulate submillivolt signals, and a wide impedance range. The firm has also announced six new dual element photoconductive cells. Each cell contains two elements and each element is connected to one common and one separate lead, forming a three-terminal device. The cells are available in either cadmium selenide or cadmium sulfide in TO-5 hermetically sealed metal cases. Light resistances range from 1.5 K to 166 K.

A Teflon-aluminum laminate in continuous sheet form, first in a series of TFE composites based on various substrates, has been developed by Tri-Point Industries, Inc., Albertson, L.I., N.Y. The laminate evolved from a heat-pressure bonding proc-

ess originated by the firm. The materials combine the chemical, electrical and physical properties of polytetrafluoroethylene with the mechanical and thermal properties of metal and are available in sheets 18 in. wide and up to 4,500 ft long.

Two new portable charge/power supply units that double as direct power sources for battery-operated instruments and equipment when power is available or as battery chargers for nickel-cadmium, silver-zinc or similar batteries have been announced by Hughes Electronics Co., 5271 Jefferson Blvd., Los Angeles 16. The units are of the modified constant potential type with built-in current limiting, a-c and d-c fusing, and output meters for recharging of batteries overnight or for extended periods. Both models accept an input of $115\text{ v} \pm 10\%$. One model has an output of 15.7 v at 3 amp. The dual output of the other is 13 v at 8 amp, or 15.7 v at 3 amp. Price of either model is \$179.50.

Two new noise generators, Model 331A and Model 321A, have been announced by Elgenco Inc. The 331A, covering frequencies from 10 to 20,000 cps, has been designed for general laboratory, medical research, simulation and production line use. The 321A is a low-frequency noise generator featuring a solid state chopper, a highly regulated rms output level and a high uniform bandwidth to square bandwidth ratio.

An automatic sampler and predetermining totalizing counter designed for use with a 500-lb Floco totalizing flow meter is a product of Barton Instrument Corp., Monterey Park, Calif. With this device a sample may be taken manually or automatically from the line of liquid flow at any time at a programmed rate. A pneumatically or electrically operated signal indicates a sample has been deposited in the container.

The RHO-tector VSWR measuring instrument, announced by Telonic Engineering Corp., 480 Mermaid St., Laguna Beach, Calif., is said to be capable of providing a minimum of 50 db return loss error. An impedance comparator, utilizing a frequency-insensitive r-f bridge with a detector circuit, the unit, model TRB-3, may be used for determining VSWR from 1 mc to 1000 mc and is optimized for operation at a 50-ohm impedance level. It is priced at \$150.

An elapsed time meter for installation on printed-circuit cards, which measures only 1.1 in. long and 0.18 in. wide, has been announced by Curtis Instruments, Inc., 351 Lexington Ave., Mount Kisco, N.Y. Designated Curtis Model 120-PC, the device can be calibrated to any required time scale to 25,000 hr by provision of an appropriate series resistor. Full scale deflection is 4.2 ma-hr against a 5-division scale. Radial leads, 0.625 in. long, spaced on 0.900 in. centers, are provided for printed-circuit card mounting. The device is reversible by reversing the current through it.



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