

Camera Mart

CAMART DUAL SOUND EDITOR MODEL SB 111



Edit single- and double-system optical sound. Edit single-system Magna-stripe or double system magnetic sound. Use with any 16mm motion picture viewer. (Works from left to right or right to left.)

Dual Editor (without viewer) . . . \$195.00
Zeiss Moviscop viewer 96.00
Special Editor-viewer combination \$269.50

CAMART CORE DISPENSER



Keeps film cores handy at all times. Easy to remove—easy to fill. All aluminum construction. Adjustable to 16mm and 35mm cores.

Sizes
16" \$10.00
24" 12.00
36" 16.00

Aluminum Dispenser for Plastic Reels
50'—\$16.50 100'—\$18.50

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Makes Glass Smoother Than Glass
GTC-59 Glass Treatment Compound . Water repellent . Anti-Static . Anti-Fog . Cleans & degreases . Leaves a lustrous glaze . Excellent for glass, chrome, plastics, etc.
6 oz. with Spray Applicator.

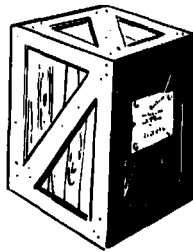


\$1.65

the **CAMERA MART** inc.

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NEW YORK 23, N. Y.

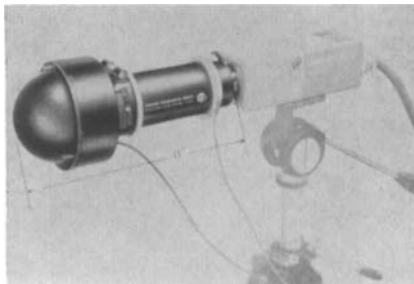
Cable: Cameromart



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 precision instrument for TV camera alignment called the Spectra TV Optoliner, Model 1000, has been announced by Photo Research Corp., 837 N. Cahuenga Blvd., Hollywood 38. The unit is attached to the lens mount of any TV camera for checking the optical-mechanical alignment and calibration. Fast and accurate testing of camera and image tube parameters is made possible by the use of various types of test patterns on special slides which can be inserted in the unit. This method also permits full utilization of the scanning area of the vidicon or image orthicon.

This "internal" use of test patterns has a number of advantages over the more elaborate method of "external" testing. Many problems associated with external test patterns are eliminated, such as inadequate orientation of the camera to the test pattern, causing the monitor presentation to appear to have poor performance characteristics in linearity, focus on one side, resolution, etc.

Other problems connected with external testing may be caused by hot spots of light reflecting off external test patterns, resulting in the appearance of low sensitivity in the lower illuminated areas of the test pattern as well as unsatisfactory shading and gray-scale rendition. This is caused by video amplifier signal compression for the over-illuminated (or hot-spot) areas of the test pattern. An internal photocell is used to indicate the amount of light falling on the face of the pickup tube.

Special slides for all standard SMPTE and EIA and RETMA black-and-white and color test patterns are available and special patterns can be provided. The tester is powered by an integral regulated power supply which operates from 105 to 125 v, 60-cycle a-c power source. The camera unit weighs about 3 lb., is 11 in. long and has a maximum diameter of 4 1/4 in.

A new 10:1 zoom lens for orthicon TV cameras has been announced by the Rank Taylor-Hobson Division of the Rank Organization, 37 Mortimer St., London, W.1. The lens, called the Varotal V, has been designed over the past two years with the use of new types of optical glass, new principles of mechanical construction, developments in nonspherical lens surfaces and improved techniques in antireflection lens coating. Although the optical system of the new lens is more complex the mechanical part has been simplified. A reduction of drive torque gives better sensitivity of control and the absence of rotating external parts provides adequate sealing against dust and moisture and better resistance to shock and facilitates attachment of controls and accessories, such as ray shades.

The lens has a relative aperture of $f/4.0$ and a focal range of 40 to 400mm, which makes it suitable for either outside broadcasting or studio use. The iris mechanism conforms with the BBC TV/88 specification. The lens can be operated manually by means of existing zoom lens controls and special servo control will also be available.

It is expected that commercial availability of the new lens will be announced shortly. The provisional United Kingdom test price is £780.

A transistorized Video Distribution Amplifier, Model VA-1, has been introduced by CBS Laboratories, a Division of Columbia Broadcasting System, Stamford, Conn. Designed especially for TV broadcasting and military and industrial video systems, the solid-state package contains eight plug-in amplifiers and two power supplies. Capacity is 24 outputs at approximately \$100 per output. The package occupies 7 1/4 in. in a standard mounting rack.

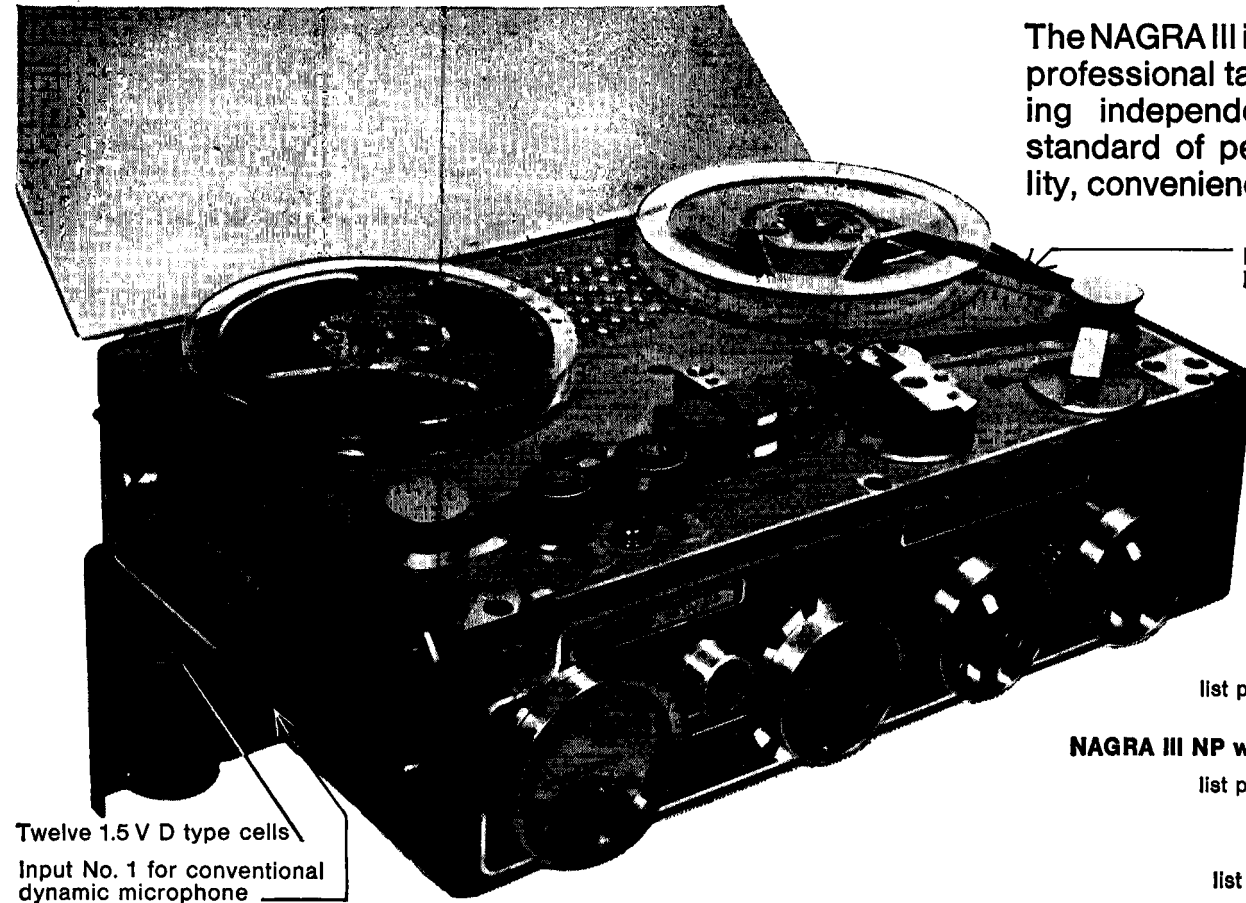
A new low-light-level image orthicon for both color and black-and-white TV cameras has been announced by the RCA Electron Tube Division, Lancaster, Pa. Designated the RCA-4415V1, the tube has previously been available only as part of a color image-orthicon set. The tube employs a field mesh and has the panchromatic S-10 spectral response.

A method, patented in France, of producing an air dielectric cable which involves crimping the insulating plastic tube tightly to the centered conductor at regular intervals, has been introduced in the United States by Superior Cable Corp., Hickory, N.C., and Simplex Wire & Cable Co., Cambridge, Mass., exclusive licensees for manufacturing and marketing the product in this country. The cable, produced by this method, is described as balloon design. The crimping may be done in such a way that a watertight or gas-tight barrier is formed between each little insulating balloon of captive air. Both firms will manufacture both single-conductor and multiple-conductor cables. Superior Cable Corp. recently developed flexible corrugated copper as sheath and armor for direct burial coaxial cable and will extend this technique to balloon construction. Plans have also been announced for manufacturing composite cables combining balloon coaxials with conventional telephone pairs and quads.

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NAGRA III

The NAGRA III is the self-contained professional tape recorder assuring independence, professional standard of performance, reliability, convenience and ease of use.



Input No. 2 and ATU m.p.s:
Pilot sync pulse input

NAGRA III B:

list price in the US \$ 1045.-

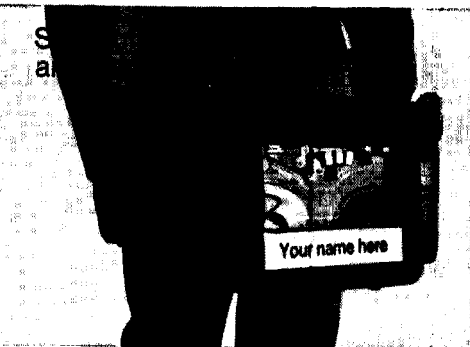
NAGRA III NP with pilot sync pulse head:

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SLP SYNCHRONIZER

list price in the US \$ 295.-

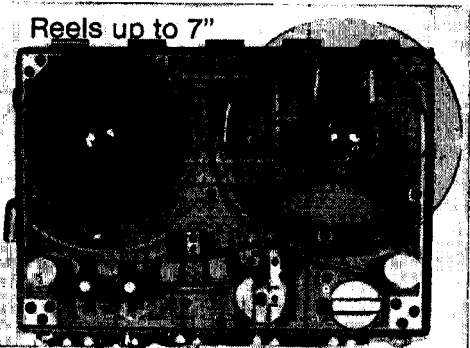
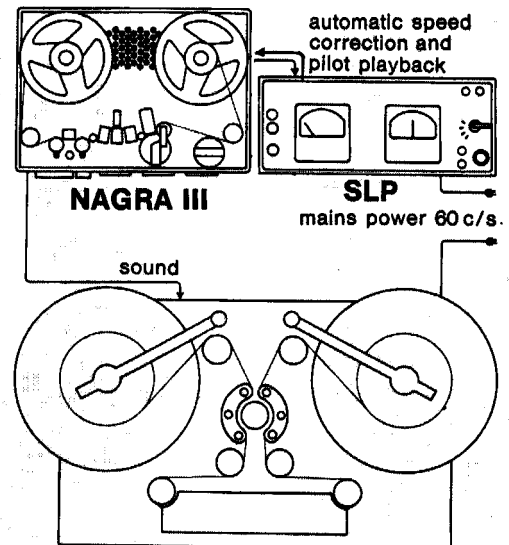
Twelve 1.5 V D type cells
Input No. 1 for conventional
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Performance

- $30 \div 16.000 \pm 1.5$ DB
- 58 DB ASA A signal/noise
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- Works from -13° to 122° F
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The NAGRA sound-transfer system



Reels up to 7"

Servo-loop speed control:
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The maintaining of permanent records of significant portions of industrial or scientific TV broadcasts by means of still photographs taken simultaneously with the showing is possible through a system developed by Nippon Kogaku Co., Tokyo, Japan. A 35mm Nikon F single-lens reflex camera equipped with an $f/4$ zoom lens with a range of 85 to 250 mm is coupled with a remotely controlled industrial TV

set. The camera, which takes three pictures per second, is attached to a revolving mechanism coupled to an amplifier linked to the monitor receiver by a signal cable. The aperture of the zoom lens is automatically adjusted by a motor. The zooming and focusing of the lens are also accomplished by a remotely controlled motor. Information has been supplied by Mel Adams and Assoc., Inc., 551 Fifth Ave., New York 17.

A photometric analyzer used for industrial process analysis and control has been announced by the recently formed Instrument Products Division of E. I. du Pont de Nemours and Co., Wilmington, Del. Known as the Du Pont 400 Series Photo-

metric Analyzer, the instrument is designed for reliable and accurate performance under plant conditions. Several hundred of these analyzers have been installed in Du Pont plants. It is used to determine composition of liquids, gases and some solids

by measuring the amount of visible or ultra-violet light of a specific wavelength that the sample absorbs. It is also used to measure thickness of transparent and translucent films and coatings. The measurements are made continuously while a process is in progress to enable the operator to maintain close control and to correct deficiencies as they occur. The instrument is of modular design to enable a wide range of analytical operations. Modules of the basic analyzer consist of a light source, a sample cell and a photometer unit with amplifier. Custom combinations of the standard combinations are supplied.



A 16mm high-speed camera designed for simplicity and economy has been announced by Red Lake Labs, 564 San Xavier Ave., Sunnyvale 2, Calif. Capable of producing 200 to 6000 pictures/sec, the new Hycam weighs 13 lb with 100-ft film capacity, and can use C-mount lenses of all focal lengths. The camera is of the rotating-prism type with a disc shutter. A sectionalized design places the optical head and film-gate unit in one section that is detachable from the film magazine and transport section. Uniform resolution and exposure for each frame are accomplished by the combination of disc shutter and flat film gate. The camera can operate on either a-c or d-c without special starting provisions, by means of a centrifugal switch. Other features include built-in event synchronizer and timing light; through-the-lens viewing and on-the-film focusing; end-of-film motor cutoff switch; film-spool ejectors; and static-free operation. The price, without lens or autotransformer, is \$975.00.



NEW!

FILM PROCESSING AIR SQUEEGEE MODEL HB-2 FOR CONTINUOUS FILM PROCESSING MACHINES (16MM or 16/35MM)

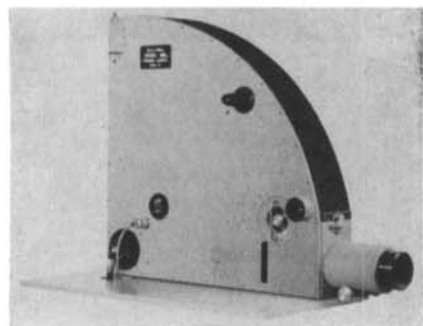
A highly efficient device for removing surface liquids from films during processing.

It uses high pressure compressed air (10-20 psi) to form a high velocity air cushion that prevents film contact and completely eliminates water spots.

It minimizes solution carry-over, contamination and wasted chemicals.

Custom fabricated of photographic grade stainless steel — no gaskets, cements or other materials — completely safe with chemicals.

Easy to adjust — easy to maintain — nothing to wear out.



A 35mm synchronized framing camera, operating at rates from 48,000 to 4,080,000 frames/sec has been introduced by Beckman & Whitley, Inc., San Carlos, Calif. The new camera Model 189A differs from its predecessor, Model 189, by the addition of integrated controls and a new self-lubricating turbine. For high reflectance



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\$ 21,650*

Now from Beckman & Whitley: Ultra-High-Speed, High Resolution

MODEL 189A...THE ONLY CAMERA BETTER THAN MODEL 189

The new Beckman & Whitley Model 189A is an even finer photo-recorder than Model 189, the most widely used and highly regarded synchronized framing camera in the high-speed world.

Model 189A includes all proprietary performance features of Model 189, plus a new sealed, self-lubricating turbine and can be ordered with the new integrated Model 100 controls.

Model 189 is now being used in research laboratories throughout the world to obtain critical information in the study of such ultra-high-speed phenomena as: lasers, plasmas, hypervelocity impact, cavitation, nucleation, dynamic stress propagation, detonations, shock and vibration.

NEW TURBINE With the new 5000 rps turbine, Model 189A operates at speeds from 200 to 5000 rps for recording rates

from 48,000 to 1,200,000 frames per second. Two other turbines are also available for this camera: a 10,000 rps turbine for recording rates from 120,000 to 2,400,000 frames per second and a 17,000 rps turbine for rates from 240,000 to 4,080,000 frames per second.

HIGH RESOLUTION Dynamic resolution on Plus X film processed normally is 34 lines per mm with standard diamond stops and 24 lines per mm with 1/2 size diamond stops. Aperture at film with full aperture stop is f/10.5.

INTEGRATED CONTROLS The new standard Model 100 control for Model 189A Camera consists of plug-in units integrated in a three-bin shelf for rack or cabinet mounting. The control includes a power supply, synchronization unit, switching unit and a regulator controlling air supply to the mirror

turbine. The synchronization unit may be either manual Lissajou or infinitely variable automatic.

For further information contact Jack Patterson, Photo Instrument Products Sales Manager, 993 E. San Carlos Avenue, San Carlos, California.

**Includes 189A Photo Recorder with 5000 rps turbine; 24" F. L. f/6 objective lens; electrically operated capping shutter; 1/2" diamond stops (1/4" stops optional); accessory parts kit and installation engineering service. F.O.B. San Carlos. Export prices slightly higher.*

Beckman & Whitley INC.

Subsidiary of Technical Operations
SAN CARLOS, CALIF. PHONE: 591-8241 CODE 415

and higher resolution the turbine mirrors are made of titanium rather than stainless steel. The standard turbine for Model 189A operates at speeds from 200 from 5,000 rps for recording rates from 48,000 to 1,200,000 frames/sec. Two other turbines are available for higher recording rates. Controls, integrated in a single console, consist of a power supply, synchronization unit, switching unit and a regulator controlling air supply to the mirror turbine. The synchronization unit may be either manual Lissajou or infinitely variable automatic. The camera is priced at \$21,650.00.

A Fiber-optics image-dissection camera which can take a sequence of 75 x-ray pictures at a speed of 400,000 frames/sec has been developed at Bell Telephone Laboratories. The camera uses an assembly of glass fibers embedded in a matrix to conduct light to a photographic plate. The fibers are coated at one end with a phosphor that converts the x-rays to visible light. The matrix and the rapidly moving plate beneath it act as a high-speed recorder.

Basically the arrangement consists of the phosphor as a light source, the object to be photographed, the fiber-filled matrix and the movable photographic plate. The matrix is approximately 3 in. square and 1 in. thick. Each fiber consists of an inch-long, 0.001-in.-diameter rod of flint-glass surrounded by a thin sheath of crown glass whose lower index of refraction provides total internal reflection. This sheath is coated with a second sheath of opaque

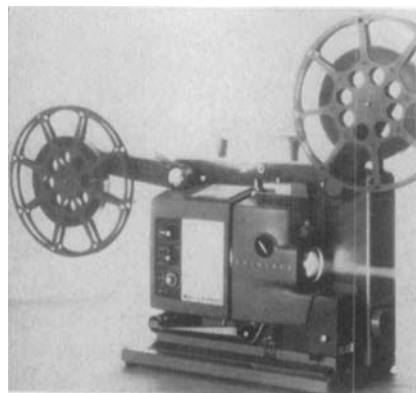
glass and the closely packed array of 32,000 fibers is held in the matrix by an opaque epoxy resin. Thus arranged, the fibers transmit light from the image to the photographic emulsion held close to the opposite side of the matrix. Under continuous illumination, each fiber produces a line whose density varies with the illumination on the image. The film needs to be displaced only the width of a fiber to permit subsequent exposure of entirely new patterns of light and dark areas. This short distance (about 1 mil) combined with rapid movement of the film plate (maximum 36 ft/sec) gives the extremely high-speed action. The film plate is mounted on a trolley which moves in a track by a compressed air arrangement. The plates are protected from breakage despite acceleration and deceleration exceeding 100 g.

To get recognizable photos it is necessary to "decode" the pictures from the composite plate. This is done by realigning the plate in accordance with a recognizable pattern originally exposed and slowly pulling it through the physical sequence. The result is a "slow motion" reproduction which can be observed directly or copied by conventional camera techniques.

The camera was described by Dr. J. S. Courtney-Pratt at the Sixth International Congress on High-Speed Photography held in September at The Hague.

A device called a Miniature Infrared Radiometer, designed for use as radiometer, calorimeter or remote temperature

sensor, has been announced by Measurement Systems, Inc., 140 Water St., South Norwalk, Conn. The unit is said to be able to detect a change of 1 C (at 25 C) in a distant object which fills its 1° angular field of view. The response time is 1 msec.



The Specialist Autoload Filmosound, a 16mm sound film projector featuring automatic threading, is a product of Bell & Howell Co., 7100 McCormick Rd., Chicago 45. The projector, which weighs less than 31 lb, is of modular construction to permit components to be easily removed and replaced. The projector is said to be "virtually jam-proof" and a lost film loop is automatically restored. The film can also be threaded or removed from the projector manually, even in the middle of a reel. The projector has Bell & Howell's exclusive Proximity lamp with built-in reflector and Super Proval 2-in. *f*/1.4 lens. Controls are arranged in close proximity on a vertical panel which is illuminated during operation. The uppermost of its three knobs controls still and motion setting; the center knob activates forward, reverse on and off positions; and the lower knob adjusts volume and control of sound. The projector is priced at \$755.00.



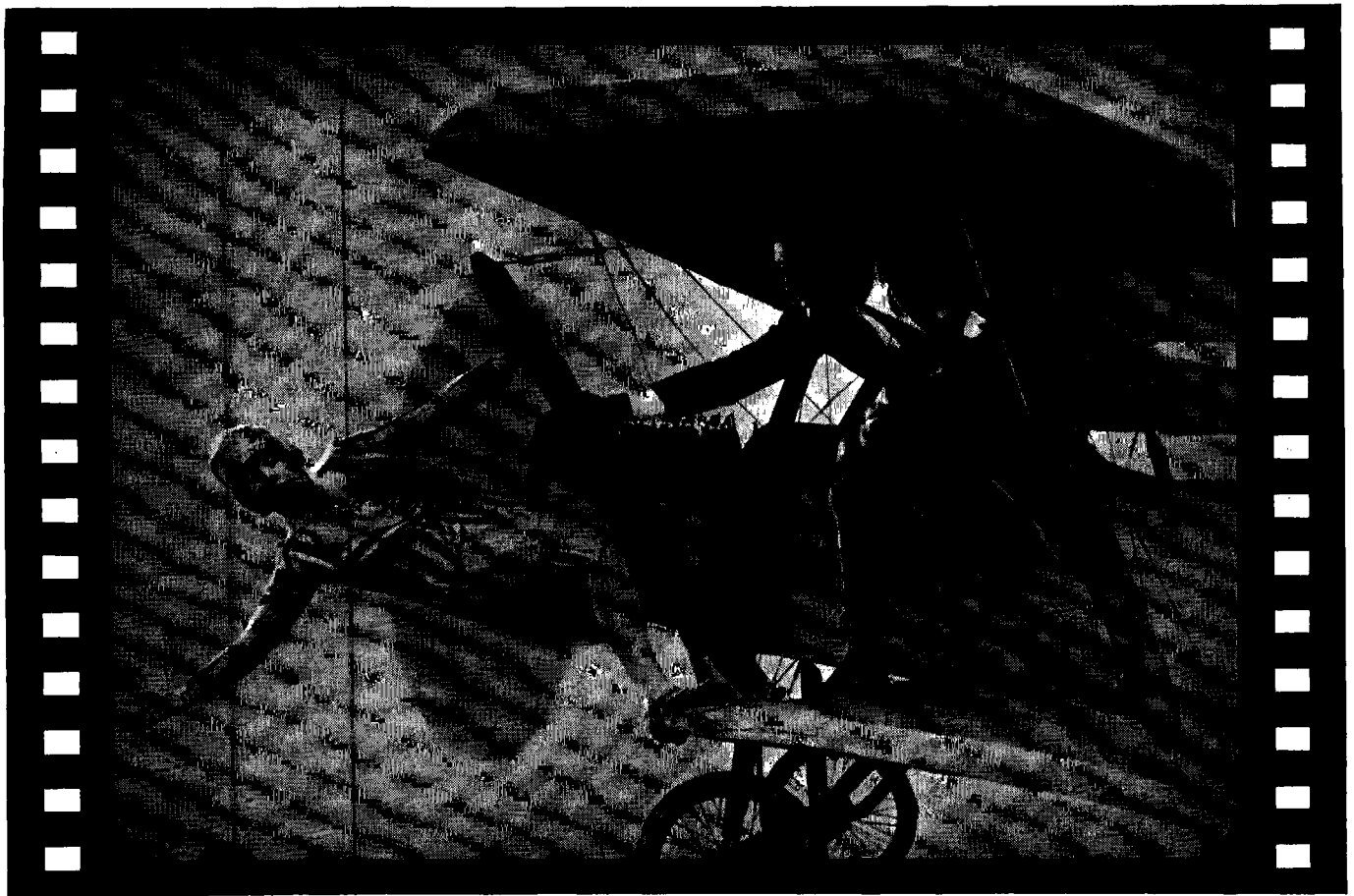
Two new low-priced models of the Technicolor 8mm Instant Movie Projector with the Magi-Cartridge have been announced by Technicolor, Box 38-547, Hollywood 38. The Magi-Cartridge is a slip-in device preloaded with up to 50 ft of film. It is designed to eliminate both threading and rewinding. All that is required of the operator is to slide the cartridge in place and turn a knob. According to an earlier announcement, a double-toothed shuttle takes the film from the center of a roll of film inside the cartridge, shows it a frame at a time, and feeds it back onto the roll inside the cartridge. Model 800, the first projector to utilize the cartridge, is priced at \$99.50. The two new models, 500 and 500Z, are priced at

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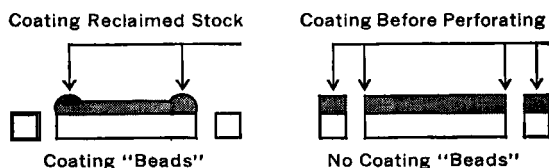


Save your magnetic sound recording from the perils of old film backing!

SCOTCH® BRAND Magnetic Film uses only fresh stock . . . assures unsurpassed coating uniformity!

If you're buying magnetic film for price, you may be getting *reclaimed* film stock for backing. Maybe the stock you get isn't quite as old as the Nickelodeon thrillers. But much of it is sure to be dried out and shrunken with age, strained and weakened by an unknown number of passes through an unknown number of less-than-perfect projectors.

"SCOTCH" BRAND MAGNETIC FILM stock is *fresh cellulose triacetate* of photographic quality. It's dependably sturdy; has known conformability and life expectancy; assures a more constant film speed without flutter and wow.



Moreover, as the above diagram shows, magnetic coating "beads" at the edges. This beading cannot be cut away from reclaimed stock. It remains, to prevent the film from conforming perfectly to the head, thereby diminishing high frequency response. Fresh stock "SCOTCH" BRAND MAGNETIC FILM is coated with ultra precision by spotlessly clean equipment, and checked by the same type of professional equipment used in the field to insure consistency. Coating is applied onto wide triacetate rolls. Slitting and perforating

of the film *after* coating completely eliminates beading. You are assured of consistent uniformity across the entire coated surface, excellent head to film contact and optimum frequency response. And all "SCOTCH" films feature exclusive lifetime Silicone lubrication to protect sensitive recording heads and extend film life.

No. 316 . . . a Standard Oxide film. The pick of professionals the world over for 16mm. sound excellence. Its uniformity, dynamic range, freedom from distortion, provide top quality for original recordings and subsequent re-recordings.

No. 326 . . . a High Output Oxide film, offers the same quality recording advantages as No. 316, with greater output and increased signal-to-noise ratio.

No. 315 . . . a Standard Oxide film in 35 mm, the industry's standard for highest stereophonic multiple track and single track master recording. This film is also available with High Output Oxide as No. 325.

Also available: 17.5 mm. sizes. For a free illustrated brochure on "SCOTCH" Brand Magnetic Films write: Dept. MCU-112, 3M Company, St. Paul 1, Minnesota.



"SCOTCH" AND THE PLAID DESIGN ARE REGISTERED TRADEMARKS OF MINNESOTA MINING & MANUFACTURING CO., ST. PAUL 1, MINN., EXPORT: 99 PARK AVE., NEW YORK, CANADA: LONDON, ONTARIO, ©1962 3M CO.

Magnetic Products Division **3M** COMPANY

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SPECTRA
"COMBI-500"

**Professional Exposure
 Meter**

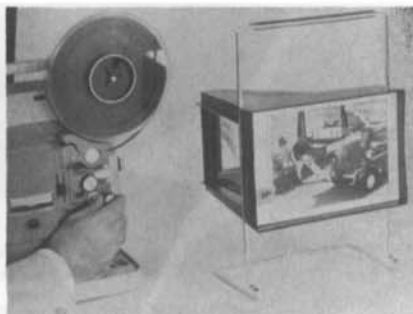
**500X MORE
 SENSITIVE!**

Combines a Selenium Cell PLUS an ultra-sensitive Cadmium Sulphide Photo-Conductive Cell, for 500X greater sensitivity than ordinary meters. Actually 100X more sensitive than the previous SPECTRA PROFESSIONAL model! Strictly professional quality, hand calibrated and produced in limited quantities. ASA range from .1 to 32,000; measures incident or reflected light. If there's any light, SPECTRA measures it, precisely! Previous model Spectras can be converted . . . it's the Lifetime Meter!

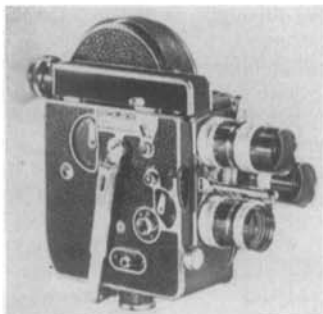
For tech data: SCOPUS, INC., 404 Park Ave. S., N. Y. 16
 Mfg. by Photo Research Corp., Hollywood 38, Calif.

\$69.50 and \$84.50, respectively. The mechanism is the same for each projector, but various accessories are included with the higher priced models. Model 500 has a 20mm *f*/1.6 lens, a Tru-Flector lamp and a housing of die-cast aluminum. Model 500Z has, in addition, a zoom lens.

The Alekan-Gerard Process Screen, used in a low-cost system of front projection photography, has been announced by S.O.S. Photo-Cine-Optics, Inc., 602 W. 52 St., New York 19, exclusive United States distributor. The screen is made of a high-reflectance, beaded, aluminized screen material which comes in 72-in. widths which can be applied to studio walls, or cemented to plywood or hardboard flats. It is priced at \$2.50 per sq ft. To complete the process, a 10-mm two-way mirror or beamsplitter with 60% transmission and 40% reflection is used. The mirror is in a 10 by 10-in. frame. Images are projected through this optical flat by any low-power lamp (100 w or more) through a slide or cine projector. The special mirror is priced at \$45.00.

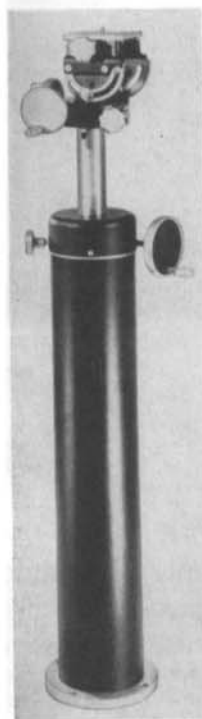


Telescreen, a low-cost rear-projection system utilizing a special plastic screen designed for audio-visual applications has been announced by Hudson Photographic Industries, Irvington-on-Hudson, N.Y. Telescreen is not connected to the projector. The image is focused through a clear glass window onto a front-surfaced mirror and from there to the special screen. The device is priced at \$16.95.



The Bolex H-8 Rex, a Swiss-made 8mm camera designed for professional as well as amateur use, has been announced by Paillard Inc., 100 Sixth Ave., New York 13. The camera, which accommodates 100-ft rolls of film to give 200 ft of finished 8mm film, is built to the same basic design as the professionally used Bolex H-16 and includes features such as a registrator claw to assure horizontal picture steadiness;

a specially designed spring-tension tailgate to assure vertical picture steadiness and flatness of the film; accurately balanced sprocket drive for smooth operation under all conditions; and a geared footage counter. The camera is equipped with three Switar lenses, 5.5mm, 12.5mm and 36mm, featuring preset diaphragm arrangement. Also available are Pan Cinor 40 zoom lens; and three Yvar lenses of 75, 100 and 150mm focal length. The Switar 12.5mm and 36mm and the Yvar 100mm and 150mm are equipped with a close-up focusing extension for macrocinematography. Camera speeds range from 12 to 64 frames/sec. The spring run is 10½ ft or 840 frames. For longer runs, the Bolex Unimotor, operating either on batteries or a-c current, can be attached to the outside of the camera. With the three Switar lenses the camera is priced at \$650.00. Equipped with only the Switar 12.5 *f*/1.3 lens it is priced at \$450.00.



A new Hercules Pedestal unit designed to provide precision instrument positioning in fixed or semipermanent locations has been announced by Quick-Set, Inc., 8121 Central Park Ave., Skokie, Ill. The elevator mechanism is mounted on a tubular pedestal fitted with a flanged base designed for bolting in place. Any one of the four different Hercules Pan Heads can be attached to the elevator column. The unit has a height range of from 32 to 50 in. and is suitable for loads up to 50 lb. Units with various other height ranges and load capacities are available on special order. Prices are from \$285.00 to \$310.00.

A dual-beam incandescent movie light, said to be a "first" in the incorporating of flood and spot beams in a single lamp, has been announced by Sylvania Electric Products Inc., 730 Third Ave., New York 17. Called the PAR 36, the 650-w sealed-beam lamp has a color temperature of about 3,400 K. When used as a spotlight,

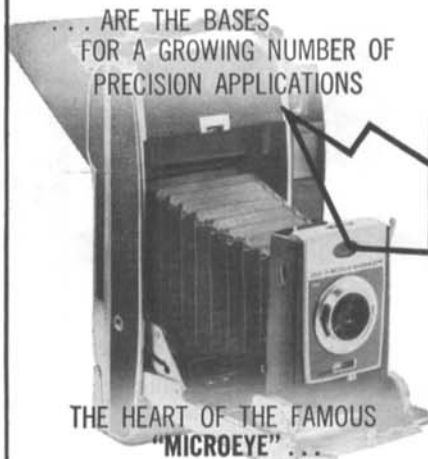
IN THE EXPANDING FIELD OF

PHOTOGRAPHY

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CHARACTERISTICS OF

CLAIREX[®] PHOTOCONDUCTIVE CELLS

... ARE THE BASES
FOR A GROWING NUMBER OF
PRECISION APPLICATIONS



THE HEART OF THE FAMOUS
"MICROEYE" ...

in the Model 900 Polaroid[®] Land Camera is a Clairex cell of special design, with a sensitivity capable of controlling the precise adjustment of the exposure mechanism over a light range from less than 1/10 of one foot-candle to several hundred foot candles.

Clairex Corporation, through:

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- ULTRA SENSITIVITY

has pioneered the use of photoconductive cells in the photographic industry. A growing number of high quality still and movie cameras, exposure meters, enlargers and projectors are now using Clairex cells.



Approximately 1/2 actual size

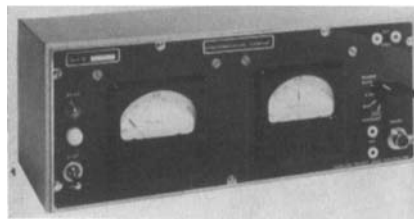
The broadest standard line —
5 Series in both glass and metal
packages plus unique abilities to
custom engineer ... because "Photo-
conductors are our only business."

CLAIREX
CORPORATION

8 West 30 Street, New York 1, N. Y.
The Light Touch in Automation and Control



the lamp is said to provide 45,000 center-beam candlepower with a spread of 20° vertical and 29° horizontal. As a floodlight the lamp provides 27,000 center-beam candlepower with a spread of 33° vertical and 37° horizontal. It operates on household current and is said to have an average rated life of eight hours.



The Nagra III B is a professional magnetic tape recorder produced by Kudelski, 6 chemin de l'Etang, Paudex (VD), Switzerland. Described as "self-contained," the motor and amplifiers can be operated from cells and batteries incorporated in the unit, from vehicle batteries, or from 50- or 60-cps, 110- to 250-v lines. To assure speed stability, a low-speed electrodynamic motor is employed. Speed of the motor is stabilized by a servo amplifier controlled by a device which directly measures the capstan speed. Other features reported are efficient use of power, quiet operation, low wow and flutter and rapid starting. The Nagra III B has three heads — erase, record and playback; and three tape speeds — 15, 7½ and 3½ in./sec. The machine contains 30 transistors and 18 germanium and silicon diodes. It is priced at \$1,045.00.

Accessories which are described in some detail in a 15-page set of specifications available from the firm are an amplifier for loudspeakers, a measuring or reference preamplifier for electrodynamic microphone, a small mixer, an electrodynamic microphone with windshield, and four types of microphone stands. Also described is the use with cine cameras — the Nagra III B, without pilot signal; and the Nagra III P, with pilot signal. Bearing on the use of an earlier model was the paper "Modifications of Tape Reproducing Equipment for Use With the Pilot-Tone Synchronization System" by Epstein and O'Donnell in the December, 1961, *Journal*, pp. 972-975.

A miniature (½-in. diameter, 3¼-in. length) **Sony condenser microphone**, the C-17B, has been announced by Super-scope Inc., 8150 Vineland Ave., Sun Valley,

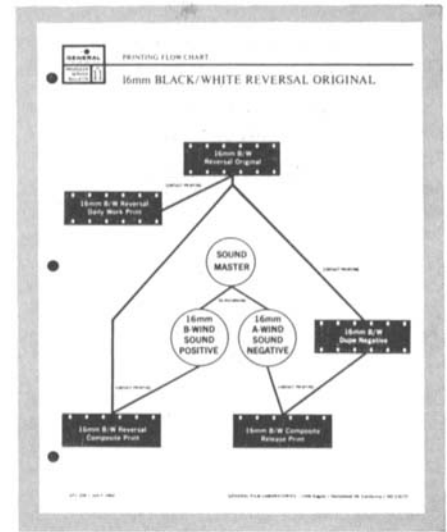
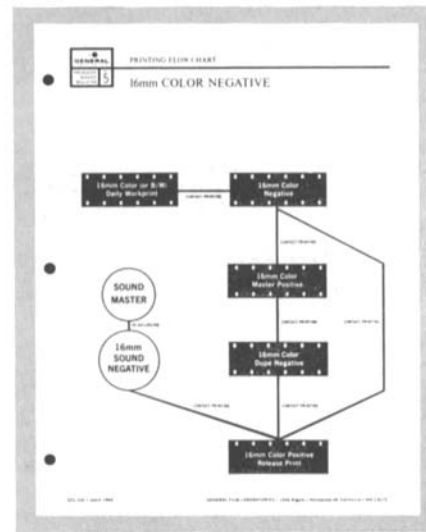
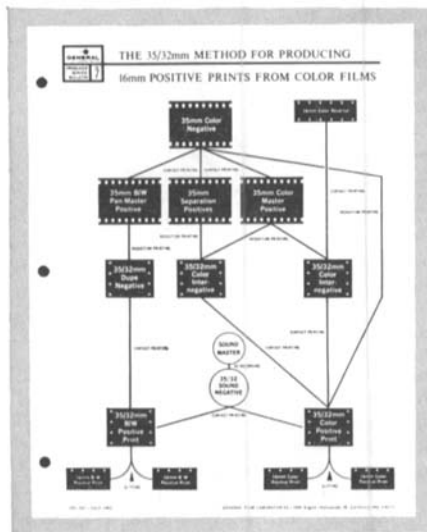
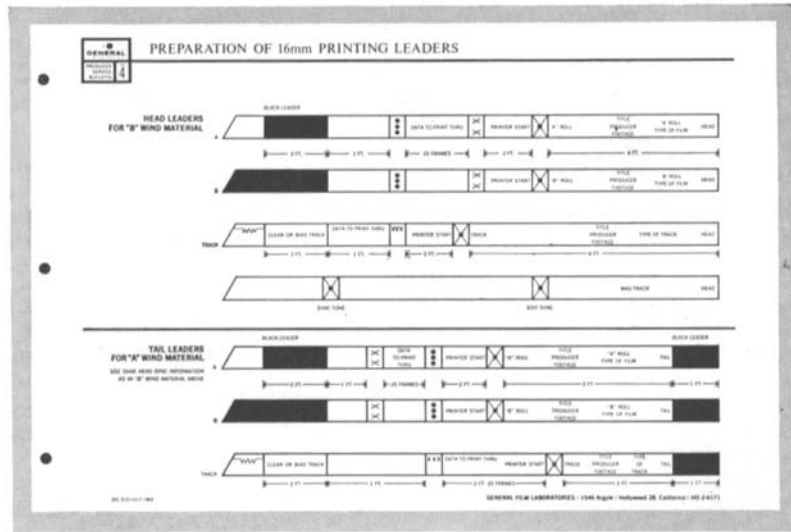
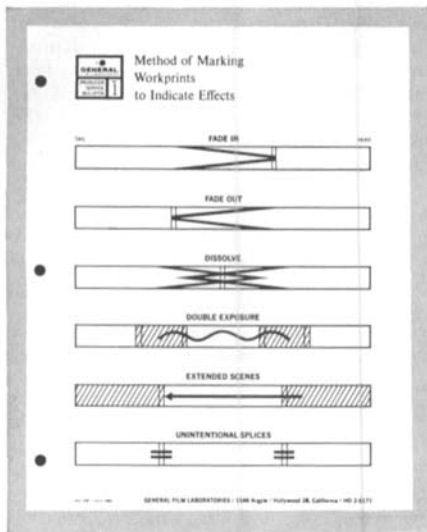
Calif. The diaphragm is constructed of a special plastic material processed to a thickness of 0.006 mm and coated on one side with pure gold, by means of a vacuum process that applies the metal to a thickness of 0.0003 mm. The frequency response is said to be ±2 db 20-15,000 cps. The microphone is priced at \$299.50, including a power supply which provides both low-frequency 4-position step attenuation and high-frequency cutoff, a carrying case and 30 ft of connecting cable.

Various improvements in the Model 101 Audio Oscillator Module have been announced by Henry Francis Parks Laboratory, P. O. Box 1665, Lake City Sta., Seattle 55, Wash. All modules are now of fixed frequency with six standard frequencies immediately available and any other frequency within the range of 1 cpm to 12 kcs available on special order. Three waveforms are offered: modified square, sawtooth, and sine wave. All of the modules are operated at 12 v d-c regulated. The square and the sawtooth modules are priced at \$15.00. The sine wave module is priced at \$25.00.

The 3000B High Frequency Speaker, an inexpensive tweeter produced by Altec Lansing Corp., 1515 S. Manchester Ave., Anaheim, Calif., now uses a Mylar diaphragm instead of the aluminum diaphragm formerly employed. The use of Mylar is said to provide a smoother high-end response and to eliminate the problem of crushed diaphragms. The speaker is available as a separate component and it is also incorporated in the Altec 602C Duplex Speaker.

Studies of optical-mechanical laser feedback modulation techniques conducted by Beckman & Whitley, Inc., San Carlos, Calif., point to the possibility of achieving the emission necessary for high-power, single-pulse lasers with output intensities from 10⁷ to 10¹⁰ watts, depending on the pumping rate and the size of the laser. A number of feedback modulation systems utilizing high-speed rotating prisms and mirrors to generate a high-power, single-pulse output are now under study. Reported as one of the most promising is a technique which employs a rotating prism spinning at from 10⁴ to 10⁵ radians per second. With its external optics, this technique provides a rise time of 10⁻⁸ sec for a mode width of 10⁻³ radians. The firm is also conducting laser research in high-precision, time-resolved radiometry and in new applications of ultra-high-speed photography in the study of laser emission.

Laser rods made of rare-earth glass are now being produced by Eastman Kodak Co. The Kodak rods are cylinders or bars of rare-earth glass to which the element neodymium has been added. They form the part of the laser that converts light from flashlamps into a powerful coherent beam. Neodymium glass emits a beam in the infrared region of the spectrum. A very little energy is required to produce a beam of coherent radiation. Special reflective end coatings increase the efficiency of the rods which range from one to 12 in. in length



Charts fit 8 1/2" x 11" binder

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Four of the twelve are editing charts. They show how to mark workprints to indicate effects, how to prepare 16-mm and 35-mm film for A & B Roll printing, and

how to prepare 16-mm printing leaders.

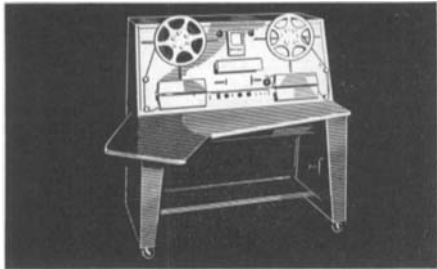
The other eight are printing flow charts. They illustrate the steps required in different types of printing, from the camera stock to the release prints. All are punched for a three-ring binder (the big ones fold to fit.)

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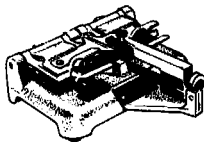
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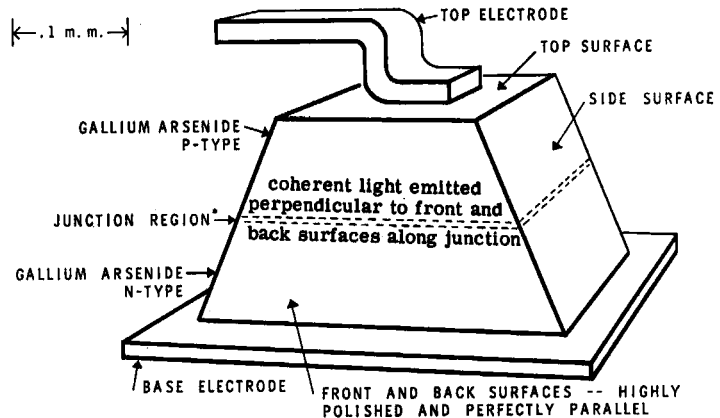
THE HARWALD COMPANY

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DAvis 8-7070

and $\frac{1}{4}$ to 1 in. in diameter. The rods operate at room temperature. They are supplied by Special Products Sales of Kodak's Apparatus and Optical Division, Rochester, N.Y.

A "traveling-wave" pulsed ruby optical maser which can directly amplify or intensify light has been constructed at Bell Telephone Laboratories, using techniques similar to those employed in microwave maser amplifiers. The device has a net gain of 13 db — an amplification of 20 times. When a suitably illuminated object is placed at the input of the amplifier, an

intensified image of the object appears at the output. This property has been demonstrated with a small transparency whose intensified image was recorded photographically. The amplifier preserves the spatial arrangement of the image. The device is composed of two maser amplifying sections with an "isolator" between them. The active maser material is ruby and the active isolator material is lead-oxide glass, a material transparent to light over most of the optical range. The experiments were carried out with support from a contract with the U.S. Army Signal Research and Development Laboratory.



Schematic of Gallium Arsenide Diode-Laser. (*Junction region is not to scale: actually only about 1/10,000th of an inch thick.) General Electric Research Laboratory.

A new type of laser which uses an electric current to generate coherent light has been developed at General Electric Research Laboratory, and a similar type has been developed by International Business Machines Corp. Separate announcements went out from the two organizations on November 1, tacitly illustrating the apparent coincidental nature of revolutionary developments arrived at as a result of independent research projects.

The General Electric announcement was made by means of a report on "coherent light emission from gallium-arsenide junctions" in the November 1 issue of *Physical Review Letters* published by the American Physical Society. The IBM report is published in *Applied Physics Letters*.

According to the GE description which, in its broad general principles could also be applied to the IBM development, coherent light is generated directly by passing an electric current through a semiconductor crystal. The laser is "transistor-sized," and "the fact that its energy is provided directly by an electric current offers a convenient solution to the difficult problem of modulating laser beams." This means that the goal of broadcasting by light waves is within reach and the day when communication with distant planets may be possible is not far off.

The new laser does not require "pumping" by a high-intensity external light source, as in the earlier ruby lasers. Instead the excitation is achieved directly by injecting electrons (and holes) into the plane of the junction region—a plane less than a ten-thousandth of an inch thick—in the middle of a tiny diode of

gallium arsenide. The directional and coherent beam of infrared light, with a wavelength in the vicinity of 8400 angstroms, is emitted from the junction-plane edges at two carefully polished and precisely parallel sides of the device. The crystal "heart" of the new laser is approximately cube-shaped, each edge measuring about $\frac{1}{4}$ mm.

To achieve laser action, intense electric currents as high as 20,000 amp/sq cm are applied. To keep the device from overheating the current is applied in pulses and the crystal is kept refrigerated in liquid nitrogen or liquid helium.

The ability of gallium-arsenide to produce infrared light has been observed in several laboratories. Its successful use in laser action may be attributed to a combination of improved control of impurities in the gallium-arsenide crystals and the concept of an optical cavity with parallel reflecting surfaces in which coherent light build-up occurs, the announcement indicates.

Gallium arsenide diodes are extremely efficient sources of light energy; measurements of noncoherent output have shown that nearly 100% of the applied electrical energy can be transformed by injection-electroluminescence into infrared light. GE scientists believe that the laser diode should be within the same range of efficiency.

Continuing research at GE is directed toward refinements in materials and design to permit continuous-wave (non-pulsed) operation as well as substantially larger and more powerful devices than the developmental models built so far.