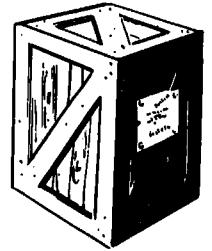


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 Further information about these items can be obtained direct from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement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



A continuously operating optical maser which generates a coherent beam of infrared light has been developed by Bell Telephone Laboratories. The device uses a mixture of helium and neon gases for its active medium. It receives its energy from a low-powered (tens of watts) electrical discharge within the gas, and has an output power of about 1/100 w. Lying in the infrared portion of the spectrum, the beam of coherent radiation is highly directional, having a spread less than one minute of arc. Theoretically, a beam sent to the moon would cover a spot less than one mile in diameter.

The device is potentially capable of carrying vast numbers of telephone calls and television programs. It may also be used in various fields of research, especially in the study of the atom and its structure.

In operation, an electrical discharge flows through the mixture of helium and neon gases. The energy from the internal discharge excites the helium atoms to a very high upper metastable energy level from which they normally would not radiate energy. The neon atoms in the mixture collide with the excited helium atoms, and the energy is transferred to them through the collision process. The neon atoms themselves can then be stimulated to radiate their energy on demand in a continuous stream. The beam, reflected back and forth through the length of the gas-filled tube by semireflecting end plates, grows in intensity with each trip. Some of the beam is transmitted through the plates to form a very narrow output beam of coherent infrared light. During this stimulated radiation of energy, some of the neon atoms also drop into still lower energy levels, spontaneously emitting the reddish-yellow light typically associated with normal neon tubes A.

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number of possible applications have been suggested including the accurate measurement of distances of many miles.

A booklet available without charge from H. W. Mattson, Bell Telephone Laboratories, Murray Hill, N.J., contains a detailed description of the optical maser at each stage of development.

An optical maser, called a laser (from Light Amplification by Stimulated Emission of Radiation) has been developed in the laboratories of Hughes Aircraft Co., Culver City, Calif. The laser is constructed around a synthetic ruby crystal which is irradiated by a light source, such as a powerful flashtube lamp. The optical energy excites the atoms to a higher energy state from which the energy is reradiated in a narrow band of frequencies. The excited atoms are coupled to an atomic resonator and stimulated to emit the radiation together. According to the inventor, Theodore H. Maiman, the laser generates an almost perfectly parallel beam which, theoretically, could be directed at the moon, illuminating a lunar area less than 10 miles wide. The laser emits a sharp coherent light beam in the extremely high frequencies of optics — about 500,000 billion cycles/sec — where electromagnetic waves become light. Possible applications suggested by Dr. Maiman included use of the concentration of light energy to vaporize individual parts of bacteria, small plants and particles. It was also suggested that laser beam's light and heat could be used to induce chemical or metallurgical changes in biological, medical or industrial applications.

Experiments with ruby rods in the construction of optical masers are presently

being conducted at Bell Telephone Laboratories.



An improved transistorized Filmagnetic sound recording system for use in Auricon cameras has been announced by Bach Auricon, Inc., 6950 Romaine St., Hollywood 38. The new Model MA-11 amplifier weighs only 5 lb and is designed for portability and dependability. The circuitry employs 14 transistors for amplifier frequency response to 12,000 cycles. New impedance matching techniques are used to eliminate heavy output transformers. The amplifier operates from a self-contained permanent rechargeable battery, or directly from 115-v house current for continuous operation. Three inputs (two microphone and one phono), with switch-operated compensation for speech or music, operate in conjunction with a visual recording-level indicator. Prices begin at \$960.

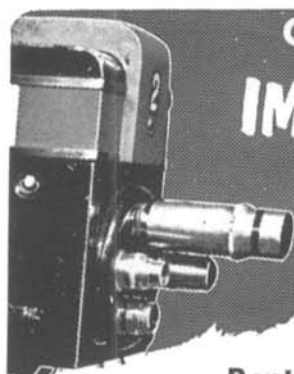


A 3-channel 16mm Editing Table has been announced by Palmer Editors, 73-40 Vleigh Place, Flushing 67, N.Y. The unit is power driven by a reversible synchronous motor. Two speeds are provided through a belt shift — sound speed for normal viewing and high speed for quick inspection. Instant stopping is provided for. The drive is through timing belts and a clutch is provided so that the film can be moved by hand in either direction. For convenience in operation, the sound slit is 26 frames away from the synchronizer index and the picture aperture is 60 frames from it.



The L-W Photo-Optical Data Analyzer is a 16mm projector designed for data reduction of instrumentation film. The Analyzer is produced by L-W Photo Products Co., P.O. Box 147, Northridge, Calif. Variable-speed viewing from "still" to 24 frames/sec is reported to be accomplished without flicker. Remote control of all operating speeds permits pushbutton single-frame projection as well as automatic projection at previously selected speeds. Direction change to forward or reverse may also be remotely controlled. The machine also incorporates a daylight viewer. The unit is 12½ in. long, 14½ in. high and 10½ in. wide. It weighs 26 lb.

A 35,000-w VHF high-channel amplifier, said to have a driving power requirement of less than 5000 w has been developed by General Electric Co's Technical Products Operation, Communication Products Dept., Lynchburg, Va. Outlined in the announcement were such features as d-c filaments for improved signal-to-noise ratio; a triplex cavity with three parallel tubes; double-stub loading control to permit the exact degree of output loading required by the amplifier; and a built-in electronic r-f sweep generator to simplify tuning. The amplifier incorporates a semiconductor bias power supply which is basically a three-phase bridge circuit, the output of which is filtered for reduction of the 360-cycle component. Both the aural and visual amplifiers use a common power supply. The aural bias has self-bias adjustable resistors in each grid feed.



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A six-camera closed-circuit television system built by General Electric Co. has been installed at Cape Canaveral so that missile launching can be observed by personnel stationed in a blockhouse at a distance of 1000 ft from the launching pad. One of the cameras is mounted directly over the flame bucket. This camera watches the proceedings during the four seconds between engine firing and missile launching. If a defect or malfunction is apparent to the observers in the blockhouse, the test can be halted in time to save the missile. One camera is mounted on the blockhouse to observe the missile during launching and in flight. The others are placed around the launching pad. The cameras are operated from a control console in the blockhouse and a permanent film record of the launchings is maintained.

The RCA Bi-Directional Distribution Systems, developed by Radio Corp. of America primarily for closed-circuit educational television, makes it possible to send signals in two directions simultaneously over the entire cable system without the use of parallel cable runs or switching methods. Each outlet on the distribution system serves a dual function. When a standard receiver is connected to the outlet, all r-f signals on the system can be seen. R-F signals fed into the outlet are then available at all other outlets. The output of the program originating equipment is in the form of a standard r-f TV signal. Off-the-air signals are fed into the main amplifier, are amplified, then passed through the mixer, distribution transformer and down the risers to the receivers. The signals from the closed-circuit program originating equipment are fed into the room outlet, go up the riser, pass through the distribution transformer and into the mixer. The mixer removes the r-f camera signal channel and feeds it to the convertor where it is converted to another channel. The converted signal is fed into the amplifier where it is mixed with off-the-air signals and fed out over the system. The output of the camera equipment is fed to a video modulator that provides an r-f signal. The output frequency may be a standard TV channel or below the standard VHF channels. In this way, only one channel is required for distribution. The camera channel is returned to the system amplifier so that proper operating levels can be established.

The system is based on a special "hybrid" distribution performer. Using this device, signals fed into the input will appear at any of the outputs, and signals fed into an output will appear at the input but not at the other outputs.

The Amphicon 108, announced by Dalto Electronics Corp., Oak St., Norwood, N.J., is a portable TV projector which projects an image of up to 9 by 12-ft on a motion-picture screen or a wall. The design is based on a flat-faced direct projection video tube. At a distance of 16 ft from the screen it projects a 9 by 12-ft picture. As the projection head is moved closer to the screen, the picture becomes smaller. The unit, which is self-contained, includes high-fidelity audio. It uses any type of antenna and operates on standard house current.

The projection head may be separated from the tuning control, and the sound unit may be used in conjunction with existing sound systems. The complete unit weighs 95 lb.

The Zoomar Mark VI remote controlled ITV lens has been announced by Zoomar, Inc., 55 Sea Cliff Ave., Glen Cove, L.I., N.Y., as audio and r-f noiseless due to the use of a newly developed miniature d-c motor designed to eliminate noise and electrical interference. Principle features of the new design are a novel copper armature, a miniature commutator made of five white gold wires, and spring-loaded brushes of the same material to assure spark-free contact. The entire armature is sealed with a plastic cover which prevents dust from entering and also renders it explosion-proof. The new lens, priced at \$1350, is in full production and experiments, leading to the application of the same principle to the Mark IV lens are being conducted.

The firm has also announced availability of five conversion lenses for use with its Zoomar Service Collimator when a finite, rather than an infinite, target is desirable. An internal holder accepts conversion lenses which move the test target into a finite position. Target distances are 500 yd, 1000 yd, 2000 yd, 4000 yd and 8000 yd. The collimator with the five lenses is priced at \$5500 with Standard Air Force Target. Lenses for any desired distance are available on special order.

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Achromat lenses providing high resolution in the 8-14 micron range are now being manufactured by the Servo Corp. of America, 111 New South Road, Hicksville, L.I., N.Y. These are in addition to achromats for 1-6 micron applications, according to a recent announcement. The firm has also announced a new computer program in its Optical Laboratory. The new program is expected to advance design and manufacturing operations in the production of Servacon lenses. The firm specializes in the manufacture of all types of infrared lenses and optical devices.

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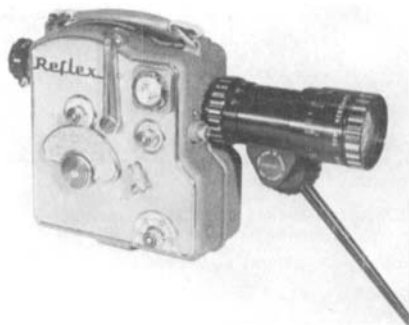
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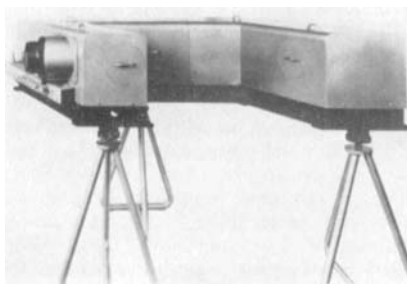
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A new varifocal lens for the Camex-Reflex 8mm single-lens camera has been announced by Karl Heitz, Inc., 480 Lexington Ave., New York 17. Designated the Pan-Cinor 8-40mm, the $f/1.9$ lens is said to provide a continuous zoom range of up to $5\times$ magnification. Available with 3-in. or 1-in. zoom lever, it focuses down to 3 ft. (with close-up lens to 1.5 ft.). The lens is priced at \$189. A lever and scale to set the diaphragm while filming are also available.

A new ColorTran Converter, the Cinemaster Chief Mark II, designed for economy and efficiency, especially when used in rugged location work with portable power generators, has been announced by Natural Lighting Corp., 630 South Flower St., Burbank, Calif. Six outlets are provided, each independently controlled by color-coded and numbered pushbutton switches. Exact color temperatures can be monitored and intensities may be selected

and varied for each lamp or group on any outlet. The new unit also features a wider range input voltage control which allows compensation for line variations — 100/120 or 200/240 a-c. It is priced at \$309.



The Schardin-Mach-Zehnder Interferometer has been introduced in the United States by Zoomar, Inc., 55 Sea Cliff Ave., Glen Cove, L.I., N.Y. Developed from the original Mach-Zehnder Interferometer, the new instrument is designed for flexibility to permit use in either a vertical or horizontal position. Applications include interferometric, schlieren and shadow methods of photography in various areas of research.

An electronic device to improve the acoustics of churches and auditoriums has been announced by Westrex Corp., a Division of Litton Industries, 6601 Romaine St., Hollywood 38. Called the Westrex 1400 Distributed Reverberation System, the device is for use in auditoriums where

the natural reverberation time has been established primarily for voice sounds, and is thus too short for satisfactory reproduction of music. The system creates for each sound a complex train of repetitions in continuously diminishing volume from various parts of the auditorium. The sounds are repeated by recording them on magnetic tape and passing the tape over a succession of reproducing heads. Frequency of repetition is determined by tape speed and head spacing and can be adjusted to the requirements of the particular auditorium. The illusion of sound passing from front to back with successive reflections and diminishing volume is achieved by connecting each reproducing head to an individual pair of loudspeakers, distributed from front to back on opposite sides of the auditorium. Three groups of equipments are included in the basic system: tape transport, including erase, record and reproduce heads; distributed reverberation assembly, including recording and reproducing circuits; and an amplifier cabinet containing 60-w amplifiers for each speaker.

A tape head demagnetizer, featuring a special plastic sleeve on the tip of the probe to prevent accidental scratches, has been announced by Robins Industries Corp., Flushing 54, N.Y. Called the Model HD-3, it is designed mainly for amateur users of tape. It is priced at \$5.95. The firm also offers the Model HD-6, a professional unit priced at \$10.

A demagnetizer for bulk sound recording designed to serve the dual purpose of completely erasing the tape on the reel without rewinding, and demagnetizing record-playback and erase heads is manufactured by Amplifier Corp. of America, 398 Broadway, New York 13. The device, called the Magneraser, is available in two models, the 200C for 100 to 300 v, and the 220C for 200 to 260 v. Both models are priced at \$24.

Tin-A-Lum, a low-temperature fluxless solder, has been introduced in the United States by Metals for Industry, Inc., 299 Pavonia Ave., Jersey City, N.J. The solder melts at extremely low temperatures, thus eliminating the danger of metal destruction under heat. It is used on aluminum and its alloys, zinc, tin, pewter, magnesium and other metals as well as castings. It can be polished and chromium plated and is said to be an excellent conductor of heat and electricity.

The PW-2, a 2-w power wire-wound resistor, has been announced by International Resistance Co., 401 Broad St., Philadelphia 8. The firm also manufactures 3-, 5-, 7-, 10-, 15- and 20-w sizes. Resistance elements of the new unit are wound on glass fiber cores. Tinned copper leads are secured to the element and the element-lead assembly is sealed in a rectangular ceramic case, providing a mechanical protective bond linking the resistance element, terminals and case. The resistance range is from 0.24 to 8200 ohms, and standard tolerances of $\pm 5\%$ and $\pm 10\%$ are available. The price of the PW-2 is \$52 per thousand for the 10% tolerance unit.



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