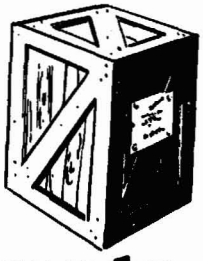


new products

(and developments)

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.

Some New Aspects of Photogrammetric Equipment

By JOHN A. EIKELMAN

(Condensed from the paper and demonstration presented on October 6, 1955, at the Society's Convention at Lake Placid N.Y. by the author from Coleman Engineering Co., 6040 W. Jefferson Blvd., Los Angeles 16.)

Acceleration of photo interpretation has been made possible by new photogrammetric equipment. Necessity for this equipment was brought about by the increased usage of large quantities of film, both still and motion-picture, as in high-speed photography and aerial photo reconnaissance. For example, many reconnaissance planes in the interest of national defense use several cameras each. Speeding up the process of interpretation while maintaining and improving accuracy has therefore been a major task of photogrammetric engineers.

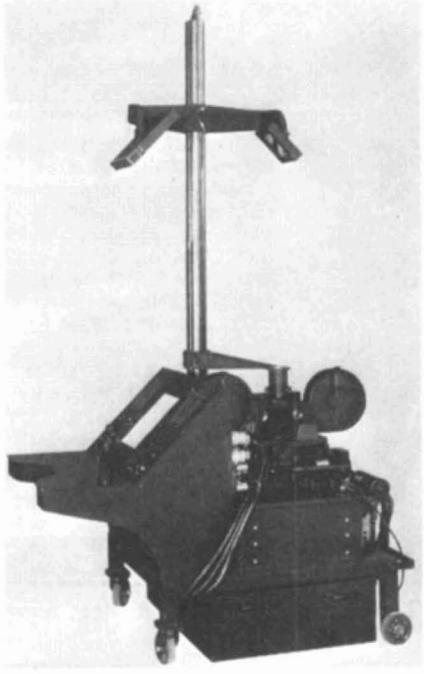


Fig. 1. Coleman Boreader is an optical and electromechanical machine designed for rapid reading and recording of image position data from 35mm film exposed in bore-sighted cameras.

Coleman Engineering Co. over the past five years has developed several pieces o semiautomatic photographic interpretation equipment to aid military personnel in the task of analyzing and interpreting engineering test photographs. The Coleman Boreader (Fig. 1) is an optical and electromechanical machine designed for rapid reading and recording of image position data from 35mm film exposed in bore-sighted cameras. (The Mitchell camera, incorporating pin registration of film, has been used widely for this purpose.) X and Y offsets of the image from an established point are measured by powered traversing of the image to the intersection of fixed crosshairs scribed on a viewing screen. With the image positioned on the crosshairs, the offsets can be automtically recorded by pressing a button which will activate a card punch, teletype tape punch, magnetic tape recorder, or an electric typewriter. As an auxiliary feature, a screen on a rotating table is provided by which image attitude measurements can be made and semiautomatically recorded. The operator aligns a reference crosshair on the screen with the apparent axis of the projected image, and by pressing a button, records the angular offset of the image from any predetermined datum angle. This device is capable of measuring at any point in the X-Y directions to an accuracy of ± 0.0004 in. This accuracy relates to a least count of 10μ. The total error in angular measurements at any point throughout the travel of the rotating table is within $\pm 1'$.

The Powered Comparator (Fig. 2) is a machine similar to the Boreader but adapted to the rapid reading and recording of comparative data from glass plates and film $5\frac{1}{2}$ in. wide. Recently, adaptation for reading of 35mm (both single- and double-frame) and 70mm film has been accomplished. Traversing controls are fully powered through joy stick manipulation up to and including final positioning of the image. The Powered Comparator has a total measuring error at any point in the X-Y directions within ± 0.0004 in.

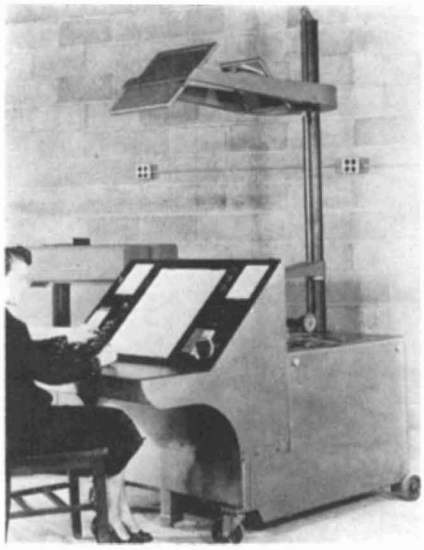


Fig. 2. Powered Comparator is similar to the Boreader but is adapted to the rapid reading and recording of comparative data from glass plates and film $5\frac{1}{2}$-in. wide.

The Coleman High Speed Comparator (*Fig. 3*) is an optical and electromechanical machine designed to fufill the requirements for very rapid reading and recording of image position data from $5\frac{1}{2}$-in. photographic film. The least count of this device is 50μ, which distinguishes the use of Coleman High Speed Comparator from that of the Powered Comparator. X and Y offsets of images from an arbitrary point located off the film are measured by manually traversing a ground-glass viewing screen marked with crosshairs and automatically recording the measured offsets of the image by means of auxiliary equipment such as card punch, electric typewriter or teletype tape punch. The total measuring error at any point in the X-Y direction is within approximately ± 0.002 in.

Fig. 3. High Speed Comparator is distinguished from the other machines by its least count of 50μ.

The salient feature with regard to the design and construction of all three of these machines is the adaptation and application of proved mechanical and electromechanical design techniques and components to the problem. A complete absence of vacuum tubes in this data processing equipment has been considered by some testers to be an additional salient, attractive feature. The Coleman Engineering staff considered this approach the most sound in that it would favor the achievement of rugged, reliable equipment having a high utilization factor. This has proved to be the case, for operating data over the past three years show 90–95% availability with 5–10% nonutilization due to routine maintenance.

Present and future requirements indicate the necessity for application of electronics in the design of future systems to meet the need of photogrammetric engineering. New developments, still underway, will be described in a future report.

Modifications of Military Photographic Equipment

By R. KUHAGEN and D. STERN

(Condensed from the paper presented on October 22, 1954, at the Society's Convention at Los Angeles, by the authors from Gordon Enterprises, 5362 N. Cahuenga Blvd., North Hollywood, Calif. Two other equipments, the Gordent 15 Intervalometer and the Focalscope, were described in the August 1955 Journal.)

A Modification of the Military Cine Phototheodolite

The military Cine Phototheodolite was originally designed to be used in pairs for triangulation purposes. They were initially used to track anti-aircraft bursts, providing an orientation in space as to the position of the burst with respect to that of the aircraft. The instrument exposes the pictures on 35mm film and records such data as the azimuth, elevation and a time identification on each exposed frame through a supplementary optical system.

The instrument's normal operating speed is 16 frames/sec. Since the resulting film is to be used for accurate data reduction and analysis in determining position in space of rockets, guided missiles and similar objects, the time interval from frame to frame must be accurate to provide a two-speed transmission for 2 and 10 frames/sec operation.

The modified instrument, Model 79GE (Fig. 1), was fitted with a synchronous, hysteresis-type of motor, which locks in with the frequency of the power supply.

Fig. 1. Modified Military Cine Phototheodolite.

The power supply is a 60-cycle, 115-v power source with the frequency accuracy held to 1 part in 25 million. The motor is coupled with a special transmission designed to allow rapid change of frame speeds (Fig. 2). The change is accomplished by the movement of a lever, plus the rotation of the motor 10° on its shaft axis. This movement engages or disengages two sets of gears in the fashion usually associated with a straight selector-type transmission. With this re-

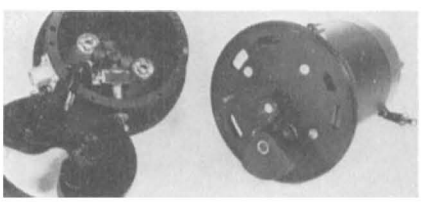


Fig. 2. Transmission of the Modified Cine Phototheodolite.

design the time interval between frame exposures can be considered constant. The resulting film can be employed for obtaining extremely accurate pictures of aircraft, or aerial objects, in relationship to other phenomena. These Cine Theodolites, as modified, have been in use for some time and have given extremely satisfactory service on several critical programs.

Night Shutter Missile Recording Camera System, Type GE22 and Type 30GE

These cameras consist of specially modified components designed to make possible the use of time exposures with a focal-

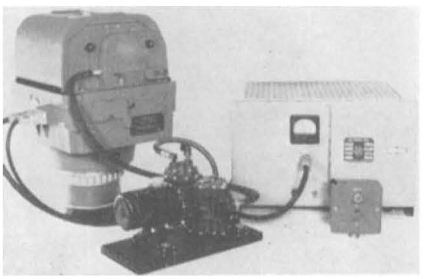


Fig. 3. Missile-Recording Night Shutter Camera System.

plane shutter on a large (9 × 9 in.) format. The system includes a modified film magazine, vacuum pump system and d-c rectifier (Fig. 3).

An unusual feature is the special 12-in. *f*/2.5 lens which covers the 9 × 9 in. for-

mat and is manually operative for focusing through a range from 10 ft to infinity. A desirable feature is that the lens is non-rotating during focusing. Also provided are a remote-control connection with indicator light allowing the operator to pulse the camera manually or by means of an intervalometer, two pulses being required to open and close the shutter. The focal-plane shutter can be replaced with an instantaneous-type unit which incorporates the standard speed range. Shutter assembly includes a capping curtain which covers the film while the shutter curtain slit is transported across the film. The capping curtain moves out of the optical path after the shutter curtain is reset.

Weight of the complete camera is approximately 45 lb. Recycling time is approximately 2 sec. Use of a vacuum insures film being held perfectly flat at the critical plane during exposure. An interesting feature of the vacuum supply is a constant flow reservoir to prevent pulsation or intermittent loss of vacuum in the magazine.

New 8mm Copper-Coated Carbon for Motion-Picture Projection

By R. B. DULL and F. P. HOLLOWAY

(Condensed from the paper presented on October 4, 1955, at the Society's Convention at Lake Placid, N.Y., by the authors from the National Carbon Co., Fostoria, Ohio.)

National Carbon Co., A Division of Union Carbide and Carbon Corporation, has developed an improved Suprex 8mm carbon designed primarily for use at 70 amp. At this current it burns 10% slower and produces from 7 to 10% more light than the old carbon, depending upon whether the projection lamp is set for 80% side-to-center light distribution or for maximum screen light. The new carbon is noticeably steadier than the old, and the light level on the screen is more reproducible. At 70 amp and 80% side-to-center light

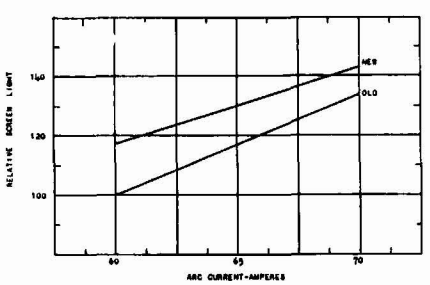


Figure 1. Relative screen light vs. arc current at 80 percent side-to-center light distribution

distribution the probable difference in screen light from carbon to carbon is 60% less for the new carbon. The large increase in reproducibility is due in part to improved processing techniques and in part to the fact that the carbon has a much higher overload current.

Although the improved carbon is designed primarily for operation at 70 amp, it can be used at any current in the 60–70-amp range. At 60 amp it has the same burning rate and produces approximately 20% more light than the old carbon, regardless of whether the projection lamp is set for 80% side-to-center light distribution or for maximum screen light. The improvement in steadiness and reproducibility extends over the entire 60–70-amp range. The accompanying figure shows the relative screen light of the old and new carbons vs. arc current, at 80% side-to-center light distribution.

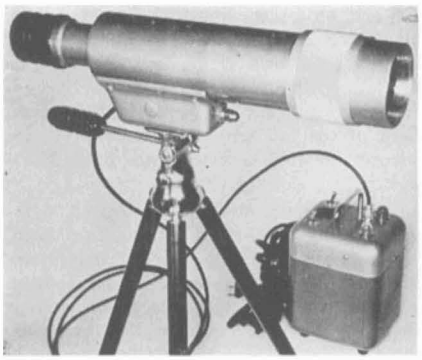
Whenever the new carbon is used, without altering the ballast setting, in a lamp which has been burning the old carbon, arc voltage rises and current decreases slightly. The magnitude of the decrease in current depends upon the voltage at the power source. The magnitude of the increase in arc voltage and decrease in current for 55 and 110-v power sources, when the power sources are set to deliver 60, 65 and 70 amp with the old carbon, are shown in the accompanying table. A plus sign indicates an increase and a minus sign a decrease in current or arc voltage.

Comparison of Carbons

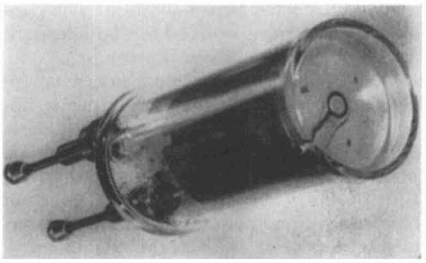
Voltage power source	Current with old 8mm Suprex Carbon	Changes in current and arc voltage with new 8mm Suprex Carbons	
		Amp	Volts
55 v	60 amp	−5	+2
	65	−4	+1
	70	−3	<1
110 v	60	−2	+2
	65	−1	+1
	70	−1	+1

It is recommended that when changing from the old to the new carbon the current be increased to its maximum recommended value, by resetting the ballast, to take full advantage of the increase in light.

Infropake Cine Filter Liquid is a daylight filter in liquid form for flow coating of film studio windows now available from Infropake Corp. of America, 153-16 10th Ave., Whitestone 57, N.Y. Replacing gelatin sheets formerly used, this material is reported available in all the standard photographic filter colors. It comes in quarts, at $20; gallons, at $50; and 5-gal containers at $200. One gallon will coat at least 220 sq ft.



The Model 105 Farnsworth Infrared Viewer is a product of Farnsworth Electronics Co., Fort Wayne, Ind. It is for use in photographic work, medical and biological research and hot body observation (above 250 C). The viewer specifications are a 1C16-3 Farnsworth tube, wavelength response of 0.4 to 1.2 microns, with resolution of 400 lines/in. The lens is a 4-in. f/2.0 Raptar. There is a special eyepiece and ¼-20 screw tripod mount. Power supplies for specified a-c or d-c voltages can be supplied. The standard supply is 115-v, 60 cycles, 15-w, with an output voltage of 16 kv. There are accessories of infrared sources and lens adapter.



The RF Lamp is a new multipurpose light source just announced as commercially available by Sylvania Electric Products Inc., 1740 Broadway, New York 19. Designed in coooperation with the Motion Picture Research Council in Hollywood to overcome a number of motion-picture printing problems, the lamp can also be used in color television tube processing, medical research, radar and air traffic control, computers, film projectors and many other fields. The research development of this light source was described by Sanford C. Peck in the December 1955 *Journal*, pp. 671–673.

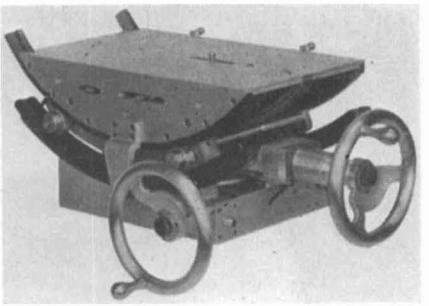
With the RF lamp, it is now said to be possible to increase the speed of critical film printing operations up to eight times faster than was practicable with conventional methods. At Consolidated Film Industries, Hollywood, where it is already installed, Chief Engineer E. H. Reichard has reported that the use of the light source in optical printing equipment resulted in increased uniformity of field, exceptional increase in light output and greater lamp life. Carl Hauge, also of Consolidated, has been reported as believing that the present usage of RF for color separations and negatives is only the initial stage in wide-spread laboratory applications.

Sylvania engineers are now working on the possibility of employing the RF lamp for studio set lighting, since it is said to have the advantage of conducting out heat which in other lamps is transferred into the air.

400 American Standards in the Electrical Field is a 60-page booklet which indexes and describes each American Standard in the electrical engineering area. It is designed to help the user and prospective purchaser to find the applicable standard on the product in which he is interested. The booklet also gives briefs of each of the current International Electrotechnical Commission recommendations; and a listing of all projects under the jurisdiction of the Electrical Standards Board. The booklet may be obtained free from the American Standards Assn., 70 East 45 St., New York 17.

Guide to High-Fidelity Loudspeaker Systems is a new booklet issued by Electro-Voice, Inc. Details are given about integrated, separate and completely assembled 2-way, 3-way and 4-way speaker systems, and acoustically designed, furniture-styled enclosures. The booklet also includes information about Electro-Voice "Do-It-Yourself" high-fidelity enclosure kits, and the availability of individual speaker system components for your own "building-in" arrangement. Write to Electro-Voice, Inc., Buchanan, Mich., for Catalog Guide No. 117. *Price: 25 cents.*

The Worrall Geared Camera Head features a two-speed dual track, pan or high-speed tilt. It has an adjustable tie-down screw for balance and the pan and tilt gears disengage so that the head "floats" friction free on balls or rollers. Two large diameter handwheels complete the assembly. Exactly balanced for the Mitchell



BNC Camera and keylight, the head can also be used on an extension platform with Mitchell NC and other cameras. It will fit any tripod, dolly, boom or crane, weighs approximately 80 lb, and is priced at $1350. More detailed information is available from the distributor: S.O.S. Cinema Supply Corp., 602 West 52 St., New York 19, or 6331 Hollywood Blvd., Hollywood 28.

Journals Available and Wanted

These notices are published as a service to expedite disposal and acquisition of out-of-print Journals. Please write direct to the persons and addresses listed.

Available

Sept., 1937; March, 1939; June, 1939; July–Dec. 1941; 1942 through 1953; 1954 complete, with exception of Dec.; 1955 to date. Available only as entire lot. Write E. J. Mauthner, 310 Riverside Drive, New York 25.

Jan. 1930 through Dec. 1937; Journal SMPE issues; and Jan. 1930 through Dec. 1935, bound volumes of SMPE Journal; SMPE Transactions: Apr. 1919:8, May 1920:10; May 1922:13; Oct. 1922:15; May 1925: 21; Oct. 1925:24; Apr. 1927:30; Sept. 1927:32; Apr. 1928:33; Sept. 1928:36; SMPE Membership Listings: 1928, 1930, 1938; SMPE Index and Authors: 1930–1935; SMPE Miscellaneous: ASA Z22—1930; Dim Stab of M.P. Films 1934; ASA Z22—1935; High Intensity Lamps—1935; Program Spring Convention Apr. 26, 1939. Write John Faber, 5 Edgewater Drive, Denville, N. J. Phone Rockaway 9-2623M. June 1940 through Jan. 1950. Write Earle F. Orr, 345 Fellsway West, Medford, Mass. Dec., 1936; Jan., Feb., Apr., May, July, Sept., Nov. 1937; 1938 complete; 1939 complete; 1940 complete; Jan.-Aug. 1941. Write Richard S. Norton, Warner News Inc., 625 Madison Ave., New York 22. Collection of back issues available either singly or as a lot. Write F. H. Cole, 1258 So. Burnside Ave., Los Angeles 19.

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All Journals published in 1938 or earlier. Write John P. Byrne, Motion Picture Sensitometrics, Signal Corps Pictorial Center, 41-15 48 St., Long Island City 4, N. Y. May, July 1944; Jan., Apr. 1945; Jan., Feb. 1946; Jan., Feb., Apr. 1947; Feb. 1950. Write Kraus Periodicals, Inc., 16 East 46th Street, New York 17.

High-Speed Photography, Volumes 2 and 3. Write William T. Mills, University of North Carolina, Dept. of Agriculture & Engineering, Raleigh, N.C.

Complete set of Transactions. Write John Flory, Eastman Kodak Co., 343 State St., Rochester 4, N. Y.

High-Speed Photography, Volumes 1, 2 and 3. Write Jack Gershon, Armour Research Foundation, Technology Center, Chicago 16.

Transactions Nos. 6 and 9. Write W. W. Hennessy, 503 West 41 St., New York. Transactions Nos. 1, 5, 6, 7 and 9. Write Lloyd E. Varden, Pavelle Color Inc., 533 West 57 St., New York 19.

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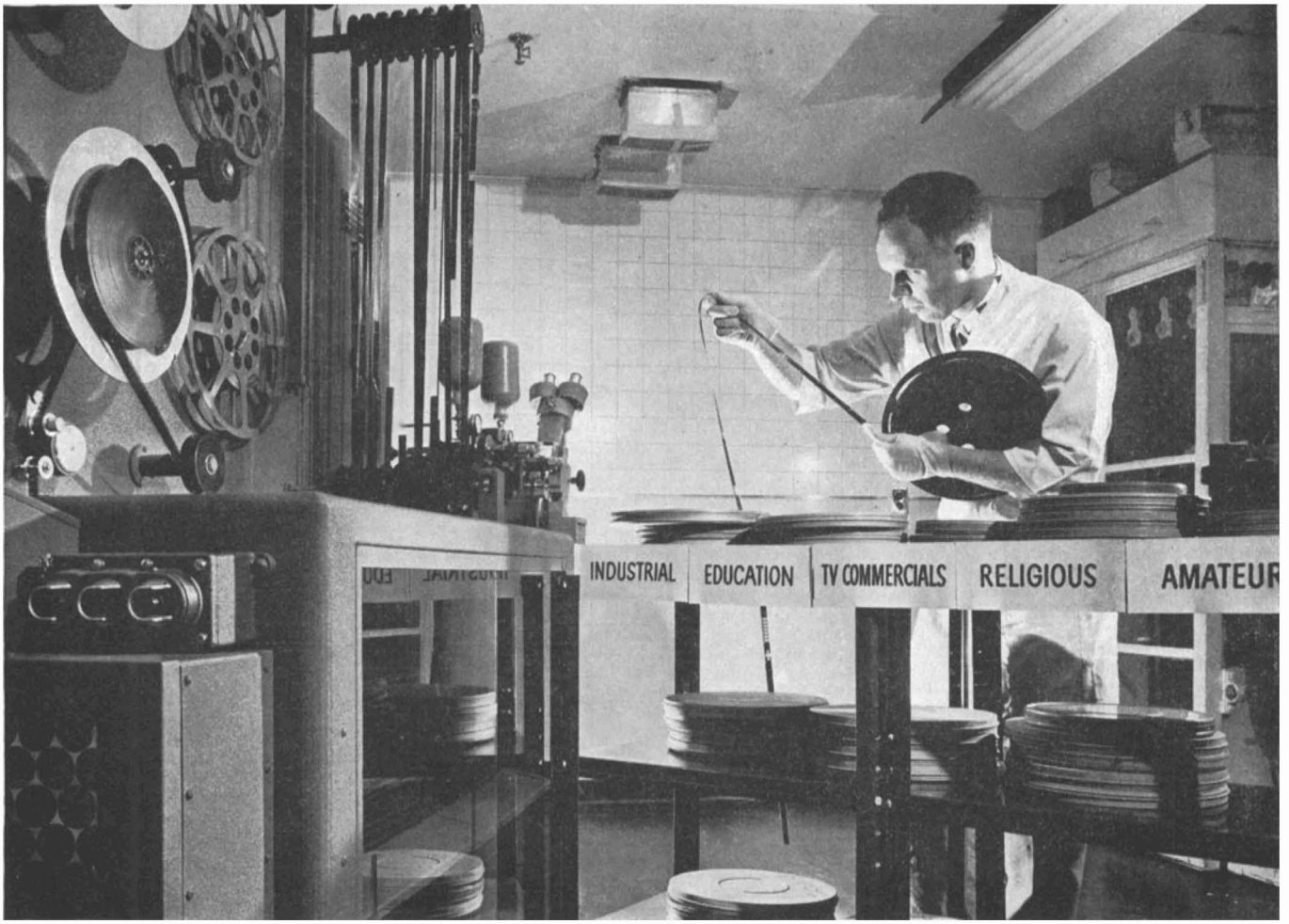
Complete set of Journals 1938 through 1955, including High-Speed Photography volumes. Also July–Dec. 1936, Jan.–May 1937, Sept.–Dec. 1937. Entire lot $125, postage paid in U.S. Write: Gordon E. Holland, 122 Grosvenor Rd., Needham, Mass.

Complete set of Journals published previous to and including Dec. 1952, also Transactions. Write: Mort Lesser, Lesser Studio, 112 Grange Ave., Toronto, Ont., Canada.



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