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Space Photography and Image Sensing: RICHARD CALLAIS, Radio Corp. of America, Astro-Electronic Products Div., Princeton, N.J.

Instrumentation and High-Speed Photography: WILLIAM C. GRIFFIN, U.S. Naval Ordnance Test Station, China Lake, Calif.; *Co-Chairman*, MORTON SULTANOFF, Ballistic Research Lab., Aberdeen Proving Ground, Md.

Systems of Visual Presentation: ADRIAN TERLOUW, Eastman Kodak Co., 343 State St., Rochester, N.Y.

Laboratory Practice: GEO. W. COLBURN, Geo. W. Colburn Laboratory, Inc., 164 N. Wacker Dr., Chicago.

8mm Professional Prints; Audio-Visual Techniques: NEAL KEEHN, General Film Laboratories, 1546 North Argyle Ave., Hollywood, Calif.

Sound Reproduction: JOHN L. FORREST, Ansco, Binghamton, N.Y.

Subscription TV, Panel Discussion: *Moderator*, T. GENTRY VEAL, Eastman Kodak Co., Research Laboratories, Kodak Park, Rochester, N.Y.

TV Equipment and Techniques: RICHARD S. O'BRIEN, Columbia Broadcasting System, Inc., 485 Madison Ave., New York, N.Y.

TV Recording: NORMAN OLDING, Canadian Broadcasting Corp., P.O. Box 10, Snowdon, Montreal, Quebec.

Cinematography: WILLIAM D. HEDDEN, The Calvin Co., 1105 Truman Rd., Kansas City, Mo.

Organization and Operation of a Chain of Color Film Processing Laboratories

By ELDON E. BAUER

In 1955 the Eastman Kodak Company agreed to sell amateur Kodachrome films without including the cost of processing, and to issue licenses to independent firms equipped to process Kodachrome film. At present some twenty companies hold such licenses, among them Dynacolor Corporation of Rochester, N.Y., which operates on a national scale, with laboratories in Los Angeles, Dallas, Chicago, and Washington, D.C., as well as in Rochester. In 1960 this firm processed more than 10 million rolls of color films.

This firm was founded in 1949 and a few years later had developed a reversal color film of the Kodachrome type, marketed under the names of Dynacolor and McGregor Color, with sales eventually amounting to several hundred thousand dollars per year. By 1955 considerable experience had been gained in the operation of a process similar to that used by Eastman for Kodachrome film.

It was decided at that time that all available capital should be invested in increased processing capacity, and the manufacture of film was temporarily discontinued. Processing operations were moved to a larger plant in Brockport, N.Y., near Rochester, and five new processing machines were designed and built to meet the exact specifications of Eastman's Kodachrome process. In 1956, when Kodachrome film became available in quantity, Dynacolor was well prepared to handle it.

At that time it was decided that the firm would deal only through local photofinishers, who would serve as distributors for the company's processing service. By 1957 plans had been made for an East Coast station in Philadelphia and a Midwest station in the Chicago area, and since then plants have been established in Dallas, Tex., serving the Southwest, and in Los Angeles, serving the West Coast. The Philadelphia operation has been moved to Washington, D.C., because of the excellent airline service to the Southeast from that point. With the Rochester area plant serving the Northeast, Dynacolor is now in a position to give overnight color film processing service from one of its plants to a photofinisher customer in virtually any city in the United States.

It soon became apparent that it would be impossible to recruit sufficient experienced personnel at the supervisory and management levels to staff the new outlying operations. It was found, partly as a result of trial and error, that first and second echelon supervision could be supplied largely from within the organization by means of careful selection and the applica-

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tion of accelerated training programs, but that plant managers could best be hired from other industries. Some of the most successful managers are men whose training and previous experience had been in industrial engineering and/or general business management, but who had had little experience within the photographic industry.

Each of the outlying plants is operated as an individual center, with considerable responsibility devolving upon the manager. The monthly profit and loss statements for the plants are prepared by the central accounting department in Rochester, on the basis of monthly inventories, weekly payroll figures, and daily production roll counts supplied by the plants.

Studies of plant operations indicate that direct labor costs have a greater influence on profits than any other factor over which the plant manager has immediate control. It is not uncommon, in a metropolitan area such as Los Angeles, for Monday's film receipts to amount to 33% of the week's total, and Friday's receipts as little as 9% of the total. Since every roll of film must be returned to the customer in 8 to 24 hours, the daily labor requirements are obviously highly unbalanced. Superimposed on this is the seasonal problem, with the volume in weeks following holidays running 100% above normal, and February volume averaging only half that of July. Increased use of prepaid processing mailers, on which the service requirements are not as stringent, has only partially alleviated the problem. Production forecasts, based on experience, and weekly labor efficiency reports applied to each plant by the Rochester accounting office, are useful tools, but conditions are constantly changing and a high degree of planning, aggressiveness, and ingenuity is required of each manager if he is to maintain his labor costs at or near the theoretical standards based on scientific studies.

Central control is maintained over process quality to insure that strict attention is given to this vital factor. Each plant is equipped with a complete control laboratory, and schedules of analysis of replenisher mixes and tank solutions are fully specified. Copies of the analytical results are forwarded to Rochester where long-range control charts are maintained on the chemistry of each plant. Each laboratory checks the reliability of its analytical procedures by means of a "standard sample" analysis program.

On the basis of hourly sensitometric controls and routine chemical and physical data, the process control supervisor in each plant determines what corrections should be made from time to time to keep the process operating at an optimum level. A random sample of the processed control strips is sent to Rochester daily where they are densitometered and each of the control parameters — color balance, speed and contrast — is plotted on a long-range chart. Any evidence of departure from standard is immediately communicated to the station, and if it persists the technical director visits the station to assist in correcting the problem. Practical picture tests, exposed under controlled conditions, are processed weekly in each station and sent to Rochester as a further check on process quality.

Since each station sends copies of its receiving records and shipping invoices to Rochester on a daily basis, it is possible to maintain a continuous service record for each account in the home office, and to alert the manager immediately if, by chance, he has not noted that a certain customer's shipments have dropped in volume or stopped completely.

Processing and related equipment is designed and manufactured by Dynacolor. Kodachrome couplers, 35mm ready-mounts, and other processing materials are also manufactured in the company's shops.

Processing equipment, developed as a result of twelve years operating experience, incorporates many novel features, including a feed-on elevator with a new-type crashless carriage and a film motion detector which automatically stops the processing machine and sounds an alarm four seconds after a break occurs in the film. The machine, which operates on the bottom drive principle, also incorporates a Dynacolor-designed tube-type rack which perfectly controls the film web in highly agitated developer solutions, thereby providing maximum insurance against breaks resulting from the film loops becoming entangled with each other or wrapping around the bottom rollers.

Other equipments designed by the firm include an automatic stapling machine for pre-splicing 16mm film, a tape splicing machine for 35mm film, and a roller bonder for sealing 35mm ready mounts at high

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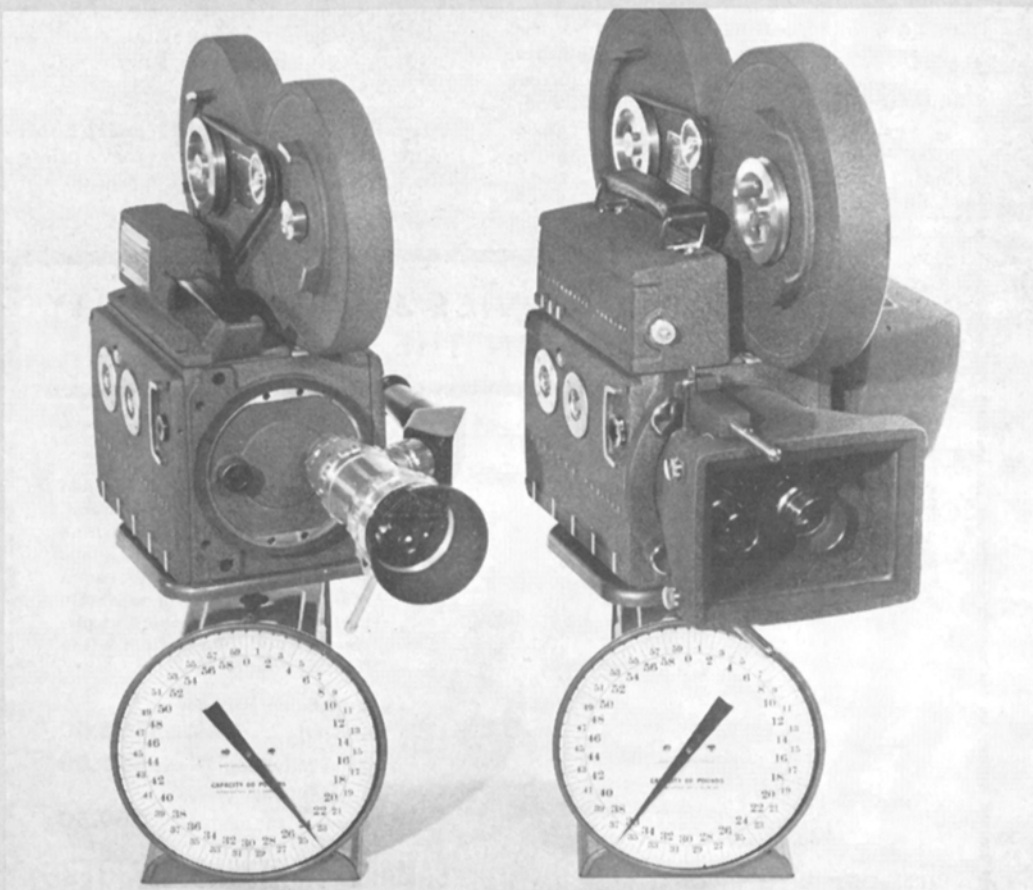

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speed and with maximum safety to the film.

This processing equipment originally was manufactured solely for use in the firm's own processing laboratories. However, as a result of increased demand, Dynacolor-designed equipment was made commercially available beginning in January, 1961.

Although more photofinishers are now engaged in Kodachrome processing, Dynacolor's volume of Kodachrome film processing is still increasing slightly as a result of the growth in the total market. In addition, it is expected that a 20% to 30% increase in total volume will be realized in the coming year as a result of the company's processing of a color film of its own manufacture.

Education, Industry News

Test Film:

70mm All Purpose Alignment Film

Users of the Society's 70mm All Purpose Alignment Film (PA70) may now obtain this film in 40-ft rolls at a price of $22 per roll. This test film has previously been offered only in minimum length rolls of 100 ft each.

A two-day Audio-Visual Pictorial Equipment Show, sponsored by the Society's Washington Section, in cooperation with Trade Associates, Inc., will be held October 31 – November 1, at Marriott Motor Hotel, Twin Bridges, Washington, D.C. More than 50 exhibitors will show their latest equipment. Representatives of industry, education and government agencies throughout the United States will attend the show, as well as numbers of interested persons from the Washington, D.C., area.

This two-day show is indicative of the Washington, D.C., Section's plans for increasing effectiveness. The emphasis is on worthwhile meetings of more than routine interest, which means that the concept of holding regular meetings according to a fixed schedule has been abandoned in favor of seizing every opportunity to arrange dynamic, purposeful meetings to discuss timely topics.

William E. Youngs, Washington, D.C., Section Chairman, has reported that the Section has scheduled four meetings in September and October — two on the same day. On September 13, the Section plans to hold a Luncheon Meeting jointly with the Washington Film Council at which Thomas Hope will speak on Utilization of 8mm Sound Films, and that evening the Section will meet in the National Academy of Science to hear discussions by recognized authorities on the general theme of "The Story of 8mm Sound Film for Technicians and Lay-Visitors." Later in September the Section will spend an evening, arranged by Washington D.C., Section Manager Don Duke, at the newly remodeled studio of the U.S. Information Agency's Television Service.

High point of the two-month schedule of meetings will be the Audio-Visual Equipment Show. The Section will meet in the hotel at 7:30 P.M., October 31, the first day of the show. Technical papers on audio-visual subjects will be presented.

A new American Standards Association Sectional Committee on Magnetic Visual-Aural Recording Systems is being established in accordance with a proposal by the Society approved by the ASA General Conference on Magnetic Visual-Aural Recording. The Society has been named administrative sponsor of the new Sectional Committee which will consider all proposed American Standards for magnetic-tape recording. The new committee, to be composed of manufacturers, consumers and representatives of other interested groups represents the culmination of a series of discussions reflecting the early and continuing interest of the Society in the standardization of video tape, and the cooperation of the SMPTE, the IRE, the EIA and the NAB through the Joint Committee on Intersociety Coordination.

The SMPTE Video-Tape Recording Committee was established in June 1958 (Chairman, Howard Chinn). During its first year, according to a report presented at the Society's 1959 Spring Convention in Miami Beach by A. H. Lind (*Journal* pp. 612–614, Sept. 1959), the Committee formulated three Proposed American Standards and one Proposed Recommended Practice; and at the time the report was presented, four Proposed Standards and two Recommended Practices were in preparation. At the time the