

Book Reviews

Advances in Image Pickup and Display, Vol. 2

Ed. B. Kazan. Published (1975) by Academic Press, Inc., 111 Fifth Ave., New York, NY 10003. Illus. Diagrams. 253 + xi pp. 6 × 9 in. Price \$26.

This second volume of the series by Academic Press contains three major chapters covering, quite effectively, subjects of specialized interest. The first is on laser displays; the second on PLZT ceramics; and the third on a particular class of color TV camera systems. Although only the specialist in a related activity will be intensely interested in any one of the three subjects, this new volume does provide the general technologist in motion picture, TV and display fields with a good resource of reference and background information on subjects which have not earlier been accorded so comprehensive a treatment.

The first chapter, "Laser Displays," is authored by a research team of Hitachi, Ltd., to convey an effective review of this field; one which has received only sporadic attention from several

research organizations. In this chapter, Yamamoto and Taneda drew freely from, and referenced effectively, the rich supply of available literature — I counted no less than 118 references, filling over five book pages! Yet, some good ones were still left out. The material is well written, carrying the reader through an interesting historical summary, general description of a laser display, resolution considerations, color characteristics, light modulation and deflection, and specific applications.

The introductory definition of TV-type display resolution may confuse the professional reader of the *SMPTE Journal*. Take the statement, "The horizontal resolution of N resolvable spots per scanning line means that the system is capable of generating 2N alternate black and white dots, or 2N picture elements, along the scanning line." The authors then discuss resolution from a diffracting gaussian or truncated gaussian aperture viewpoint, independently of the introductory statements. Later, under the subject of light modulation, appears an expression (Eq. 20) which implies that the number of resolvable spots per active scanning line is equal to the active number of information (bandwidth)

cycles in the line. These concepts could well be unified through the MTF description.

There were some other minor inconsistencies. In a discussion of rotating mirror scan resolution, the authors introduce a factor of 2 (p. 32) which is valid for a particular type of scanner-illumination; not, for example, for the one illustrated in Figure 32. Also, on p. 33 they speak of fully-illuminated facets, whereas, the earlier Figure 16 shows a partially-illuminated system.

Although this chapter provides a good overview of the ingredients of a laser display, the really important factors of the required laser power and the characteristics and control of coherent display speckle were accorded insufficient discussion. As prefaced by the Editor, B. Kazan, and concluded briefly by the authors, it is, after all, the low power efficiency of present visible lasers which has frustrated its broader application in the large screen display field. Yet, the subject of laser power and its implication in terms of input power to the display system is covered only superficially. In all, the authors have a valuable assembly of laser display technology, albeit somewhat imbalanced coverage on detailed subject matter.

The second chapter, "Display Applications of PLZT Ceramics," provides a thorough exposition of the history and experimental progress of lead-zirconate-titanate materials (with a variety of metallic dopants) since their introduction as a display device only nine years ago. Interestingly, similar materials have been studied and utilized over the past 21 years for their electro-mechanical and piezoelectric properties. Thus, this display-oriented work is relatively recent and has not been given a truly cohesive treatment till now.

The authors Maldonado, Fraser and Meitzler of Bell Laboratories are among those prominent in the experimental development of these devices, therefore the treatment is not only authoritative; but, in some instances, it provides a thorough narrative presentation of the details of the experiments and their measured results. There is a feeling of participating in some of the work and joining in the struggle of interpreting the data as it was revealed from the experiments. In some instances, this narrative format was inadequately augmented with cross-referencing with subsequent discussion within the same chapter. For example, the reflection mode of operation was introduced on p. 90 with no indication of its subsequent coverage; then, re-stated on p. 95 with anticipation of discussion "below," while it was finally described on p. 97 and illustrated on p. 98. In one case, (p. 112) I couldn't find where something was discussed "later." The referencing of the paragraph numbers would have helped.

I had the feeling that some of the material was written several years ago when, for example, work was reported as "presently" being conducted and referenced in 1972 (p. 102) and work "recently" done and referenced in 1973 (p. 122); in fact, it demonstrates the "phasing-down" of work in PLZT materials over the past few years, for very little referencing is introduced which is more recent than 1973.

A surprising and useful adjunct to this exposition on PLZT materials is a closing section on the development, preparation and processing of transparent conductive and photoconductive films such as PVK and CdS films. For those who require information on photosensitive coatings, the ending survey alone is worth this excellent review of the technology.

The third and last chapter, "Striped Color Encoded Single Tube Color Television Camera Systems" provides an outstanding documentary



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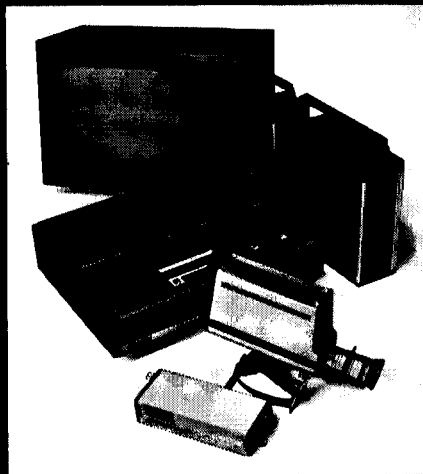
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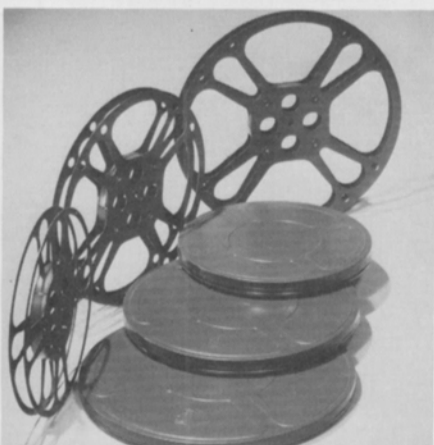
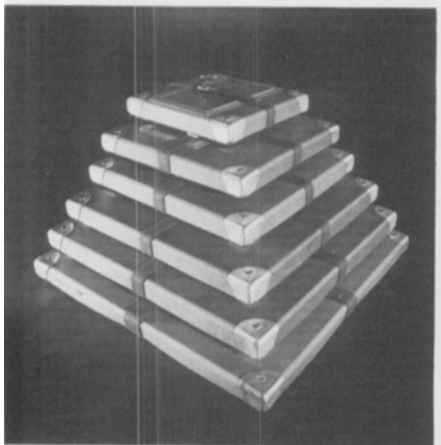
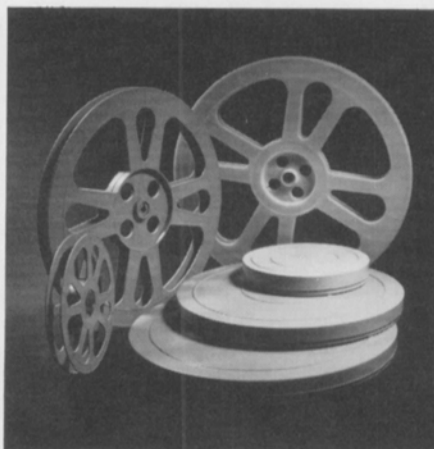
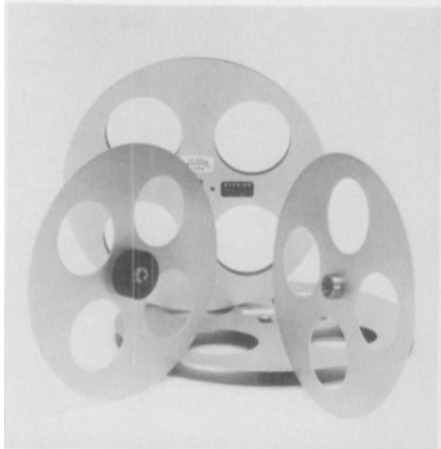
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on this special class of image pickup devices and techniques. The authors, Brandinger, Fredendall and Prichard, all of RCA Laboratories, composed an authoritative review of a surprising large number of such camera types and systems. One of the most outstanding aspects of this chapter is the disciplined organization of subjects covered, transporting the reader through 13 camera types with rigorous precision and authenticity.

Although it is commonly acknowledged that the highest broadcast quality (in resolution, sensitivity and low lag) color TV camera systems depend upon the use of three separate tubes, sensing precisely-registered simultaneous color images, the single tube color camera having a striped encoding pattern offers economical, packaging and operating advantages, particularly adaptable to industrial color TV applications. Interestingly, of the single-tube color cameras in recent use, a prominent type, employed for NASA's Apollo "live" shots, utilizes an entirely different principle — the field sequential system — commonly associated with the rotating color wheel. The authors introduced this type, classified under "time division multiplex," as opposed to the "space division multiplex" (striped) techniques which form the major subject of this work. The chapter concludes with three informative Appendices covering system evaluation considerations, 1-H delay comb filtering and the spectral characteristics of striped filters. The chapter gains importance, not only for its interest to a specific segment of the community, but as an historical document having substantive technical value for any serious worker in the color-TV field.

In all, I regard this second volume in the series as a valuable adjunct to a working library on Image Pickup and Display; particularly for those specializing in laser information handling, display processes and color TV systems. — *Leo Beiser*, 151-77 28th Ave., Flushing, NY 11354.

Scarlett, Rhett, and a Cast of Thousands

By Roland Flamini. Published (1975) by Macmillan Publishing Co., 866 Third Ave., New York, N.Y. (and by Collier Macmillan Canada). i-vii + 355 pp. 6 x 9 in. Price \$13.95.

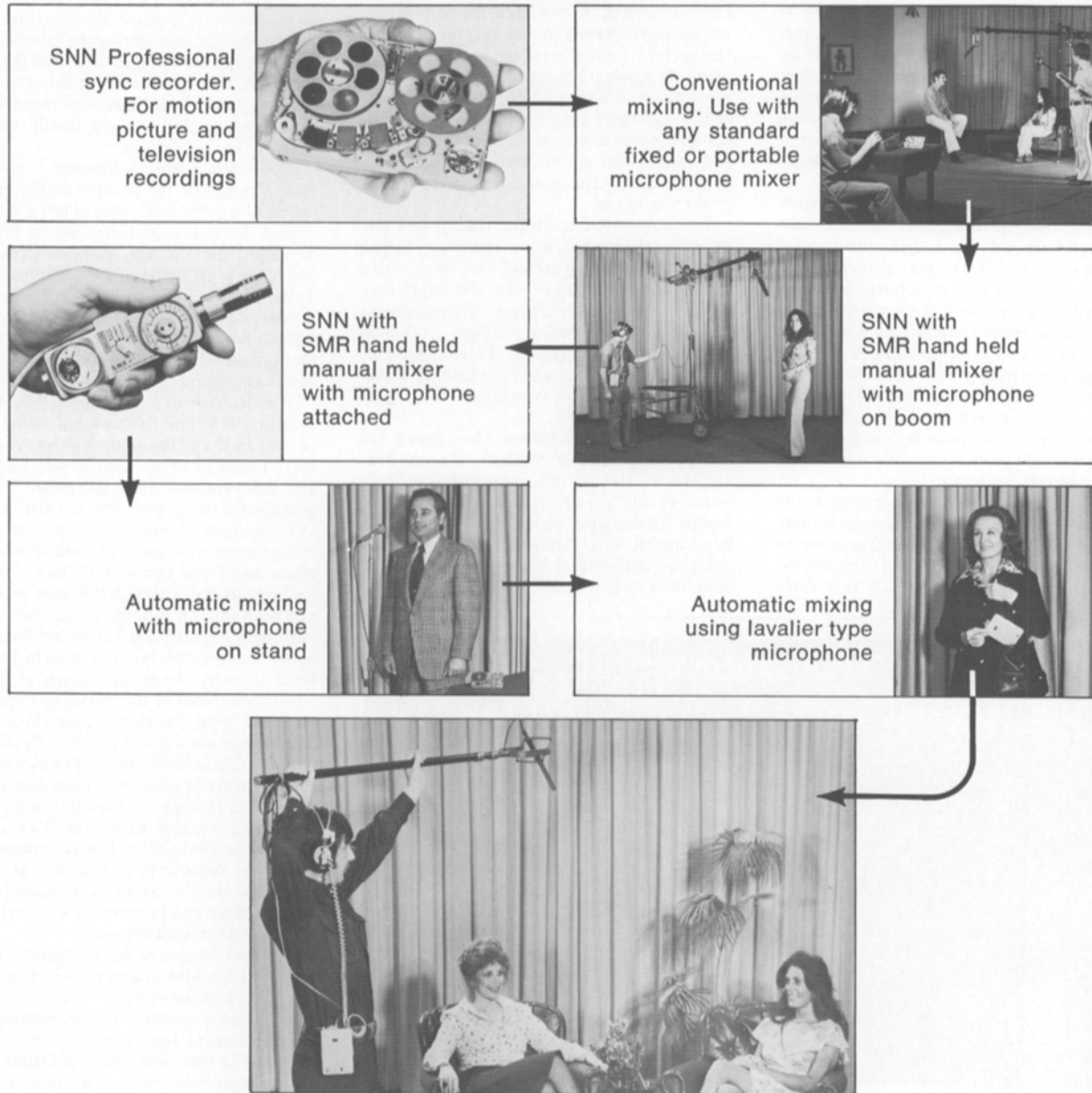
If you are devoted to the memories of "the old Hollywood" and also go back again and again to the "great" movies, here is your book. It consists of what is left after what must have been winnowing away mountains of gossip and chaff that accompanied the making of *Gone With the Wind*. It contains a smooth recounting of the months of casting (and of publicity) before the principals were chosen and it records extensively enough the financing and the boxoffice success.

There are some production or technical gleanings, such as the operation of Natalie Kalmus as the color consultant required by Technicolor to pass on all sets and costumes, and the difficulties of Selznick's Special Effects Dept. getting color samples for matte printing: "... But while Technicolor procrastinated, Clarence Slifer, Selznick's special effects cinematographer, accidentally stumbled onto their developing secret — which was to heat the developing agent to a very high temperature — and thereafter was able to make his own color tests. Slifer's discovery opened the way to an unhampered use of matte painting."

There are some 120 pp. of pictures (many 2-page spreads) to augment your photographic memories and there is a useful 9-page index. — *Victor H. Allen*, Old Sleepy Hollow Rd., Pleasantville, NY 10570.

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