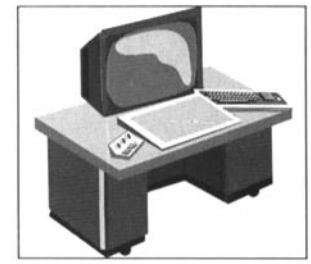
Highlights

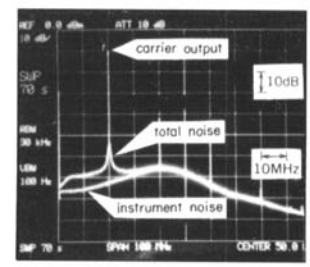
156 **High-Resolution Electronic Intermediate System for Motion-Picture Film** • *B. Hunt, G. Kennel, L. DeMarsh, and S. Kristy* • The production of motion-picture special effects can be a costly and time-consuming step in the production of motion-picture films. Although several electronic video systems have been proposed and demonstrated for use in special-effects generation, these lower-resolution video systems, including HDTV, do not operate transparently between film input and film output. They introduce a number of disturbing image artifacts to the final film element. This article defines the system requirements for a high-resolution digital manipulation system able to produce high-quality motion-picture special effects.



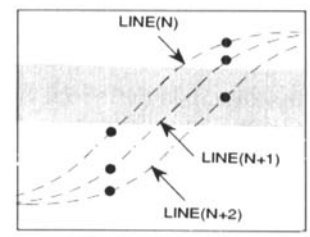
162 **A Real-Time Video Mapping and Manipulation System** • *S. Vigneaux, T. Kato, A. Ohba, and M. Oka* • A system has been developed that offers real-time input video mapping to internally create 3-D objects of revolution. These objects may be purely curvilinear or possess multiple individually crafted local deformations. Full-motion video may then be mapped to the object in real time (real time is defined as video rate, 30 frames/sec). This article describes the system and the technology that makes it possible.

167 **The Accordion Charge-Transfer Mechanism: A New Development of the Frame-Transfer CCD Image Sensor** • *F. L. Stok* • In frame-transfer (FT) sensors, the imaging area basically utilizes all incoming light. In state-of-the-art charge-coupled-device (CCD) sensors, this light is partly reflected and absorbed by the CCD gate electrodes. The basic FT sensor principle, however, does not preclude 100% light usage. The accordion mechanism, which reduces the absorbing gate electrode area, is a step toward this 100% goal. This improvement can be used to increase sensitivity or to enlarge the pixel number or a combination of these. The accordion versus the classic FT principle is explained, with emphasis on how this mechanism can benefit sensor characteristics, and the design of the second-generation NXA 1100 (FT5) sensor, well suited to studio camera applications, is discussed.

173 **A Hi-Vision VTR for Industrial Applications Using a ½-in. Videocassette** • *H. Shibaya, K. Yokoyama, T. Kido, M. Matsumoto, I. Obata, and R. Tsunoi* • Some considerations in designing and building a baseband recording system for an industrial-application Hi-Vision cassette VTR are discussed. First the size of videocassette was determined by parameters of picture and sound quality, recording time, and packing density attainable by the use of the latest magnetic recording technologies. Then the compact mechanics and electronics suitable for this ½-in. cassette were introduced, while maintaining the Hi-Vision picture quality with four-channel pulse-code modulation (PCM) sound.



178 **Digital Keyers in Video Switchers and Effects Systems** • *R. S. Bannister* • Designing a digital video production switcher by simply copying the analog building blocks, adder for adder, multiplier for multiplier, can have inferior results. Digital technology offers opportunities for improvements that were not possible with analog circuitry. This article focuses on keyers and first explains how a keyer works in an analog switcher. It then shows how this implementation can result in jagged key edges in a digital keyer and presents a solution that can eliminate this problem. Self-keyers and a digital keyer that eliminates key fringing are discussed.



182 **Technicolor Adventures in Cinemaland • (Originally published in December 1938)** • *H. T. Kalmus* • An account of some of the highlights in the history of the development of the business of Technicolor Motion Picture Corporation primarily from the point of view of its contact with motion-picture producers, distributors, and exhibitors; incidental to which is an account of the development and growth of the various Technicolor processes from a semi-technical point of view but with special reference to practical applications in the motion-picture industry.

Webster defines adventure as *chance of danger or loss; the encountering of risks; a bold undertaking, a daring feat; a remarkable occurrence or experience, a stirring incident; a mercantile or speculative enterprise of hazard; a venture.* The excursions of Technicolor into the domain of the producers, distributors, and exhibitors