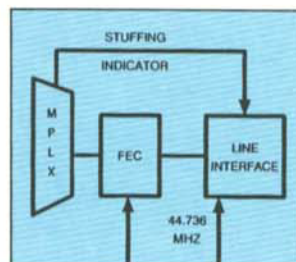
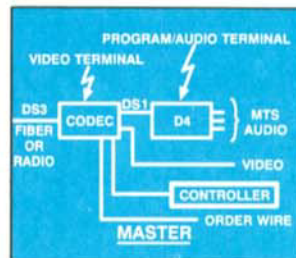


# Highlights

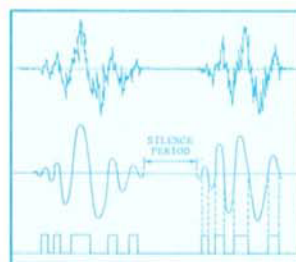
- 678 **Broadcast-Quality Television 45 Mbit/sec (DS3) Encoding Algorithm** • *E. M. Underwood* • This article describes a broadcast-quality 45 Mbit/sec television coder/decoder that can transmit on a standard DS3 facility and receive a single time-base-corrected System-M/NTSC video signal and several audio signals. The coder uses an adaptive combination of pulse-code modulation (PCM) and adaptive differential PCM with four predictors. The audio and ancillary signals are carried in an asynchronous SD1 signal that is part of the DS3 coder output. The DS3-level C-bits contain information that can be used to control a dedicated tree-type transmission network.



- 687 **DS3-Rate (45 Mbit/sec), Customer-Controllable, Multipoint Networks for Broadcast Television Distribution/Collection** • *R. J. Blackburn and P. Hessler* • This article presents an overview of Bellcore's activities in the area of nationally compatible, customer-controllable, DS3-rate (45 Mbit/sec), multipoint, digital networks. These networks are designed to distribute to and collect from affiliates broadcast-quality NTSC television on terrestrial digital fiber-optic and microwave interoffice transmission facilities (more than 215 cities are now interconnected). The networks are expected to rival today's domestic satellite networks in cost, performance, reliability, flexibility, and security.



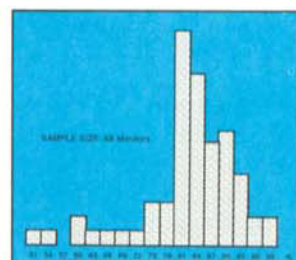
- 695 **Video-to-Audio Synchrony Monitoring and Correction** • *J. C. Cooper* • Contemporary practices in the transmission of network television programming have rendered traditional methods of restoring video-to-audio synchronization inadequate. Constantly changing transmission path lengths encountered in satellite transmissions make it impossible to predict accurately the amount of delay that will be introduced by video processing, and other kinds of processing may introduce further unknown delay times. A new method of using encoded audio to determine relative time differences between audio and video can fully automate and guarantee proper video-to-audio synchronization at the receiving station.



- 699 **Controlling Audio Mixers in Video Post-Production** • *M. D. Patten* • The concept of the Edit Suite Audio Mixer, or ESAM, was first introduced in 1983. Its purpose was to allow audio to be edited simultaneously with, and in the same way as, video. Although fulfilling its desired role at the Olympic Games in the winter of 1984, the controlling protocol was a hasty adaptation of the editor's existing video switcher control. Since then, Graham-Patten Systems, with cooperation from editing system and audio console manufacturers, has developed the ESAM Serial II protocol, designed specifically for controlling audio mixers in the video post-production environment. Because of its eminent suitability for editing and its ease of implementation, the protocol has become widely established.

If an audio mixer in a video post-production suite can be adequately controlled, then why is the actual protocol used of any significance? Furthermore, in a world of proliferating protocols, why was it considered necessary to introduce yet another? Some answers to these questions will be found by examining the recent developments in both the equipment and the requirements for audio mixing in post-production. Other, possibly more significant, answers are to be found by looking at the operational

- 703 **Challenges to the Development of a Standardized Professional Studio Color-Picture Monitor** • *R. J. Zavada* • The NTSC/FCC color specifications for the U.S. (North American) television system are display-dependent with a defined color gamut. Within a decade after the introduction of color, the industry found phosphor sets approximating the NTSC primaries inadequate for brightness and lag. The EBU proposed basing colorimetry on an average of modern phosphors as an international standard. It became necessary for the U.S. to develop corrective matrices to shift the modern phosphors used in studio color-picture monitors to approximate those of NTSC or to change the colorimetry of the system.



- 711 **The Development of CinemaScope by Twentieth Century-Fox** • *J. Belton* • The development of CinemaScope marks a unique instance of technological engineering, where optics, film design, screen construction/illumination, and magnetic stereo sound recording and playback figure as interdependent elements in a single motion-picture experience. This article explores the coordinated development of the interrelated technologies which comprise the CinemaScope system.

