

# SMPTE WINTER TELEVISION CONFERENCE

San Francisco



January 22 and 23

The Fourth Annual Winter Television Conference will be held this winter on January 22 and 23 at the St. Francis Hotel in San Francisco. "Video Magnetic Recording" is the theme of the two-day program. Featured sessions will include: Helical-Scan and Disc Recorders; Quadruplex Recorders; High-Speed Duplication of Videotape; and Color Cameras for Broadcast and Other New Developments.

Conference Chairman Werner H. Ruhl, Technical Director of American Broadcasting Co., in San Francisco, announced before press time that preparations for the Program are well underway with the papers already scheduled as shown below. Revisions or additions will be announced in the January *Journal*.

Hotel accommodations and facilities for the Conference have been worked out by Chairman Ruhl with the St. Francis Hotel. Hotel reservations cards and preregistration forms have been sent to all members. Additional forms are available from Society Headquarters.

Conference registration is \$15.00 for members and \$20.00 for non-members. Further information can be obtained from Society Headquarters.



The St. Francis Hotel

## Conference Technical Papers

The following is the schedule of papers at press time within the sessions for the San Francisco TV Conference. It is as accurate and complete as possible at this date; but before the Conference it is possible that some specific paper or two may be canceled, or some added or rearranged within the sessions. Questions about specific sessions or papers should be addressed or telephoned to the Chairman, Werner H. Ruhl, 415 Molimo Dr., San Francisco, CA 94127; or to Society Headquarters, Att: Winter TV Conference Program—Elaine Itzkowitz, 9 E. 41st St., New York, NY 10017, Tel (212) 867-5410.

**THURSDAY EVENING — JANUARY 21**  
**6:00-9:00 REGISTRATION**

**FRIDAY MORNING — JANUARY 22**  
**8:15-9:15 REGISTRATION**

### HELICAL-SCAN AND DISC RECORDERS

Session Chairman — JOE ROIZEN

#### The Secam 60 System

JOE ROIZEN, Graduate Educational Network, Palo Alto, Calif.

#### A New Look at Helical Recording for the Broadcaster

KEITH Y. REYNOLDS, International Video Corp., Sunnyvale, Calif.

Helical-scan video recording could be perfected up to the overall quality of a high-band quadruplex recorder but this improvement would result in a helical-scan VTR costing as much as a high-band quadruplex VTR, because video bandwidth, signal-to-noise ratio and time-base stability resulting in direct color involve expensive technology and are not accomplished easily. Now, after the past two or three years, many helical-scan VTRs have video bandwidth equal to high-band quadruplex videotape recorders. Signal-to-noise ratio is nearly as good as high-band quadruplex VTRs, and time-base stability, the real key to direct color recovery, has been achieved at low cost. The techniques described result in a broadcast helical-scan videotape recorder

system with the frequency response, signal-to-noise ratio and time-base stability nearly equal to a quadruplex videotape recorder. The system consists of a broadcast helical-scan videotape recorder with a time-base stability of  $\pm 75 \mu\text{s}$  and a color time-base corrector which will correct the time base of this VTR down to  $\pm 7 \text{ ns}$ . The time-base corrector corrects the jitter in two steps, monochrome correction and color correction.

#### A Processing System for Helical-Scan VTRs

ROBERT COBLER, Grass Valley Group, Grass Valley, Calif.

#### A Video Disc Recorder for Radiology Applications

RICHARD JOHNSON, Data Memory Inc., Mountain View, Calif.

#### An Address-Code Editing System for Helical-Scan VTR

GERALD CHILDS, Datatrone Inc., Santa Ana, Calif.

#### Random-Access Disc Pack Video Editor

JERRY YOUNGSTROM and DAVID BARGEN, CMX Systems Inc., Sunnyvale, Calif.

#### Color Signal Processing for Helical-Scan and Disc Recorders

YVES FAROUDJA, Graduate Educational Network, Palo Alto, Calif.

#### Helical-Scan Recorders

DELMAR JOHNSON, Ampex Corp., Redwood City, Calif.

## FRIDAY AFTERNOON

### QUADRUPLEX RECORDERS

Session Chairman — HOWARD W. TOWN

#### New Performance Criteria for Quadruplex Recorder Servo Systems

KOICHI SADASHIGE, RCA Corp., Camden, N. J.

The tendency of TV broadcasters to rely increasingly upon videotape record/playback equipment to solve the complex problems of daily program operations as well as generation of specially assembled program material creates new performance requirements for the equipment, particularly in the area of servo systems. The new performance requirements are described, such as improved stability of the record servo system for high-quality recordings, increased dynamic range and correction bandwidth of the pixlock servo, and ability to cope with non-synchronously switched recording intervals with minimum visible playback disturbance. The advent of new circuit techniques and system design philosophies such as the utilization of digital process control, digital servo error detection and a high-efficiency "hybrid" power amplifier has enabled the design of a new capstan and headwheel servo system which meets the above-mentioned requirements.

#### The Design of a Quadruplex Television Tape Recorder Having Rapid Synchronizing Capability

R. W. OLDERSHAW, Ampex Corp., Redwood City, Calif.

#### The Logical Design of a Video Buffer

R. P. MacKENZIE, Ampex Corp., Redwood City, Calif.

#### Broadcast Station Operation Utilizing Two-Inch Quadruplex Automatic Cassettes

DAVID FIBUSH, Ampex Corp., Redwood City, Calif.

#### Advanced Editing Using Address Codes and the RA-4000

E. S. BUSBY, Ampex Corp., Redwood City, Calif.

#### A New Videotape Cleaner

BARRY A. MOORE, Advanced Transducer Systems Ltd., Toronto

Magnetic tape cleaning has for some time been used to great advantage in the computer industry: computers are equipped with parity checking facilities whereby the computer will automatically retrace its steps and reprocess the affected area until the error is eliminated. On very dirty tapes this continuous recycling can slow down computer operations very seriously. While the computer does have the opportunity to retrace its steps and correct its mistake, once a videotape dropout has occurred with its corresponding detrimental effect on the transmission signal, it cannot be recalled and corrected. A second and equally important advantage of maintaining the tapes in a particle-free condition is the improvement in head life. It is also the objective of the tape cleaner to wind the tape under accurately controlled tension in order to prevent cinching in the stack which can permanently deform a tape during storage. The videotape cleaner described is designed to pass the videotape from one spool to another, tracking over a tissue station when both sides of the tape are burnished on a tough fibrous tissue; then the oxide layer is honed over a precision ground blade. The tension of the tape is controlled by a feedback loop from a tension roller to the assist or delivery spool. When the tape nears the end of its spool a photoelectric device is used to reverse the direction of the tape and wind it back onto the original spool.

## FRIDAY EVENING

### FIELD TRIP TO AMPEX CORP.

Session Chairman — CHARLES E. ANDERSON

Buses, courtesy of Ampex Corp., leave the Hotel at 7:15 p.m., with rides for those who have signed up on a first-come first-served basis. At Ampex Mr. Anderson will conduct a tour of the laboratory and production facilities. Qualified engineers will be available to answer any questions on videotape recording problems.

## SATURDAY MORNING — JANUARY 23 HIGH-SPEED DUPLICATION OF VIDEOTAPE

Session Chairman — R. A. ISBERG

#### Thermal Contact Duplication of Videotape

WILLIAM B. HENDERSHOT III, Memorex Corp., Santa Clara, Calif.

A high-speed contact duplicator capable of making video quality copies from a standard master tape using chromium dioxide ( $\text{CrO}_2$ ) was developed to improve video magnetic tape duplication. A computer program was prepared to investigate the basic characteristics of several thermal duplication systems employing  $\text{CrO}_2$  tape. Laboratory equipment was built to show feasibility of a dynamic thermal duplication system. This equipment consisted of reel-to-reel master and reel-to-reel slave tape transport. Many successful iron oxide (master tape) to chromium dioxide (slave tape) dynamic thermal transfers were made on this transport using a helical format, resulting in high-quality color video duplicates. An actual gain in signal level is realized by this thermal transfer process. Due to the magnetic susceptibility of chromium dioxide particles just below the Curie temperature, audio and control track signals have been transferred by the dynamic thermal transfer process. The investigation into thermal contact duplication of videotape onto  $\text{CrO}_2$  has revealed many advantages over both the ac approach and the recorder-to-recorder process.

#### Automatic Video Recorder/Automatic Cassette Recorder/Contact Videotape Duplication/Overall Systems

CHARLES W. CRUM, Ampex Corp., Redwood City, Calif.

#### Magnetic Contact Duplication of Two-Inch Quadruplex Videotapes

STANLEY BECKER, Ampex Corp., Redwood City, Calif.

## SATURDAY AFTERNOON

### COLOR CAMERAS FOR BROADCAST AND OTHER NEW DEVELOPMENTS

Session Chairman — LOUIS L. POURCIAU

#### Improvements in Color Film Broadcasting by Use of New Telecine Test Objects and Television Film Preview Rooms

J. D. AGIN, A. E. FLORACK, R. G. HUFFORD, T. R. McMURTRAY and R. S. WOOLMAN, Eastman Kodak Co., Rochester, N.Y.

For the past several years, the film input to television stations in the form of programing, commercials and news has covered a wide spectrum of quality. This problem is of major concern and steps are being taken in both the motion-picture and broadcasting industries to improve the television quality of programs and commercials, and to improve the uniformity of prints which television stations receive. Review room conditions and chain evaluations procedures have been suggested for the purpose of establishing some uniform guidelines for evaluating film prior to broadcast, and for insuring proper transmission of film material.

### A Systems Approach to Film Correction and Color Balance for Telecine

MICHAEL FISHER, American Broadcasting Co., New York

### A Versatile Single or Dual Unit CCTV Color Camera

HAROLD L. HERZ, PETER MURPHY and NIKOLA VIDOVIC, Link Div., Singer Co., Binghamton, N.Y.

A new color camera is a moderately priced three-tube color TV camera for use in a broad range of educational, closed-circuit, broadcast, military, medical and industrial applications. Three one-inch Plumbicons provide the basis for its uniform, low lag and sensitive color picture-making capability down to 80-fc scene illumination. Its design is such that single or dual unit operation can be set up in a very short time. As a single-unit camera it contains all the necessary color TV electronics including sync generator and encoder within its frame. Dual-unit operation is achieved by removing two hingeable rack-mountable side packs (containing the necessary operating controls) and locating them at a distant point. Other innovations include an overall 48-dB SNR, the capability for external synchronization in a multicamera TV system from one monodrive signal instead of the usual three separate drive signals, capability of synchronizing a second color camera with its internally generated monodrive signal, to mention a few.

### Color Encoding Techniques for One-Tube Color Cameras

EARL JONES and ALBERT MACOVSKI, Stanford Research Institute, Menlo Park, Calif.

### Two-Dimensional Spatial Filtering for High-Resolution Color Cameras

LOUIS F. SCHAEFER, Stanford Research Institute, Menlo Park, Calif.

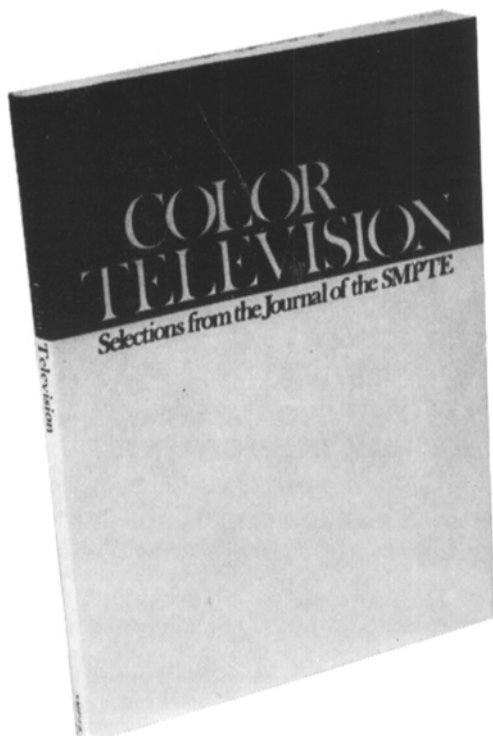
### A High-Sensitivity SEC Vidicon Color Camera

MARC BROEMMELSIEK, Commercial Electronics Inc., Mountain View, Calif.

### Operational Report on Field Tests of a Video Cartridge Recorder

P. A. DARE, RCA Corp., Camden, N.J.

The results obtained at WDCA-TV, Washington, D.C., by operating a video cartridge recorder under actual station operating conditions are discussed. The results cover the operational experiences from the technical and programing aspects and include reliability, maintenance, setup, adjustment, interchange, cleaning and the effects on overall station programing and operational procedures.



# Color Television Selections from the Journal

Here, in one convenient volume, is a collection of *Journal* papers covering fundamental aspects of color-television technology. Emphasis has been given to papers covering important principles and concepts which change relatively slowly, if at all, compared to the rapid evolution of technical equipment. The book is of use as both a tutorial and a reference volume.

Prepared by a special committee comprised of the following members of the Society: Robert W. Byloff, D. Lisle Conway, Richard S. O'Brien, Richard E. Putman, Irving S. Rosner, Rodger J. Ross, James L. Wilson.

Supplementing the reprinted papers is a complete index of all other papers on color television which have been published in the *Journal* to date. The coverage is rounded out by the inclusion of pertinent SMPTE-sponsored United States Standards and SMPTE Recommended Practices, together with an index of all current Standards and Recommended Practices.

231 pages, including 10 pages in color. Over 200 illustrations. Size: 8½ x 11¼. Paperbound.

**Price:** \$7.50 each.

**Discounts** to SMPTE members and to booksellers:

|                |      |
|----------------|------|
| 1 to 4 copies  | 20%  |
| 5 to 49 copies | 25%  |
| 50 or more     | 33½% |

Order from

SMPTE, 9 East 41 St., New York, N.Y. 10017