

# 131st SMPTE Technical Conference and Equipment Exhibit

Los Angeles Convention Center, Calif., October 21–25, 1989

The 131st SMPTE Technical Conference and Equipment Exhibit is almost here. Plans for the upcoming conference, to be held Saturday, October 21, through Wednesday, October 25, 1989, are well under way for this important event, which will take place at the Los Angeles Convention Center in California.

Editorial Vice-President Frank J. Haney, Capital Cities/ABC, Inc., and Conference Vice-President L. John Spring, Jr., Eastman Kodak Co., are providing the overall supervision for the conference. Haney has appointed John L. Baptista, Consolidated Film Industries, as Program Chairman, and Alan S. Godber, NBC, Inc., as Program Vice-Chairman. Spring has named Howard T. La Zare, Deluxe Laboratories, Inc., as General Arrangements Chairman, and Nelson Meacham, Walt Disney Imagineering, as General Arrangements Assistant.

## Technical Program

Program Chairman Baptista and Vice-Chairman Godber have arranged an interesting and informative program focused on the theme "Technology and Tradition — Partners in Progress." It is expected that more than 170 papers will be presented during the five-day technical program. A complete listing of the papers appears at the end of this article.

## Conference Overview

The social events at the conference will start off with a Welcoming Reception for all registrants on Friday evening, October 20, at the Academy Theater in Beverly Hills. Shuttle buses will be available to transport guests between the Los Angeles Hilton and Westin Bonaventure Hotels and the Academy Theater for the party.

The conference will be officially opened the following morning, when SMPTE President Maurice L. French, Canadian Broadcasting Corp., delivers his welcoming address. French will be followed by SMPTE Engineering Vice-President

Stanley N. Baron, NBC, Inc., who will present an engineering report. Immediately after Baron's talk, the keynote address will be delivered by J. Phillip Samper, Eastman Kodak Co.

Saturday afternoon, the annual Honors and Awards Reception and Luncheon will be held. Immediately following the luncheon, the technical sessions will begin, and the ribbon-cutting ceremonies officially opening the equipment exhibit will take place.

## Registration

Daily on-site registration will be available for the conference and equipment exhibit beginning Friday, October 20, at 9:00 a.m. at the Palos Verdes Room of the Westin Bonaventure Hotel. Thereafter, registration will take place at the Convention Center during the following hours: Saturday, 8:00 to 6:00 p.m.; Sunday, 8:00 to 6:00 p.m.; Monday, 8:00 to 7:00 p.m.; Tuesday, 8:00 to 5:00 p.m.; and Wednesday, 8:00 to 1:00 p.m.

## Awards

The annual Honors and Awards Luncheon, recognizing those who have demonstrated outstanding technical achievements and distinguished service to the Society, will be held in Petree Hall of the Convention Center from 11:45 a.m. to 1:45 p.m. Prior to the luncheon, a reception will be held, beginning at 11:00 a.m.

## Sponsored Activities

The Society wishes to thank the following sponsors for their generous support: Banquet Entertainment (American Society of Cinematographers, CMX Corp.); Banquet Reception (Ampex Corp.); Banquet Wines (NBC, Inc.); Blood Pressure/Cholesterol Testing Clinic (Will Rogers Institute); Board of Governors Reception (Dolby Laboratories, Inc.); Coffee Club (Eastman Kodak Co.); Fellows Reception (Magna-Tech Electronic Co., Inc.); Honors and Awards Reception (Ikegami Electronics (U.S.A.), Inc.); Spouses Breakfasts (Sony Corp. of America);

Welcome Reception Wines (Eastman Kodak Co.)

## Spouses Program

Spouses attending the 131st Conference are in for an exciting week of activities. Scheduled are the following: Friday: Welcome Tea; Saturday: breakfast at the Bonaventure, an astrological presentation, Honors and Awards Reception and Luncheon, visit to Movieland Wax Museum; Sunday: breakfast at the Bonaventure, *Spirit of L.A.* cruise, *Salute to Broadway* revue; Monday: breakfast at the Bonaventure, luncheon and shows at the Magic Castle; Tuesday: brunch at the Top of Five Restaurant, tour of the Gene Autry Western Heritage Museum; Wednesday: breakfast at the Bonaventure, luncheon and tour of Lawry's Food Center.

Preregistered spouses will have their packets mailed to them. On-site registration for spouses will begin in the Palos Verdes Room of the Westin Bonaventure Hotel at 9 a.m. on Friday, October 20. Beginning on Saturday morning, spouses may register in the Spouses Hospitality Area, Santa Anita A/B.

## Coffee Club

The Coffee Club at the Los Angeles Convention Center for the 131st Conference will be open Saturday through Wednesday and will be sponsored by Eastman Kodak Co. Coffee and danish will be available.

## Welcoming Reception

A Welcoming Reception for all Conference registrants will be held on Friday evening, October 20, in the California Ballroom of the Westin Bonaventure Hotel.

## Honors and Awards Luncheon

The Honors and Awards Luncheon is being held at the Los Angeles Convention Center on Saturday, October 21. It will feature the presentation of SMPTE awards, which recognize outstanding achievements in motion pictures and television, and service to

the Society. Karl Malden, president of the Academy of Motion Picture Arts and Sciences, will be the guest speaker. This staple of SMPTE Conferences will take place in Petree Hall from 11:45 a.m.-1:45 p.m. Before the luncheon, a reception will be held, beginning at 11:00 a.m. The fee for the luncheon is included in the Member Weekly, Non-Member Weekly, Spouse, Life Member, and Life Fellow registrations.

### SMPTE Banquet

On Tuesday evening, October 24, SMPTE will hold its annual cocktail party, banquet, and dance in the California Ballroom of the Westin Bonaventure Hotel. Companies wishing to reserve tables at the Banquet should contact SMPTE Headquarters for forms.

### Fellows Luncheon

This yearly event, which is open only to Fellows and Life Fellows of the Society, is planned for Monday, October 23, at the Los Angeles Convention Center. The guest speaker will be retired CBC executive Rodger Ross. The new Fellows will receive their plaques from SMPTE President Maurice L. French. A Fellow of the Society is one who is no less than 30 years old and who has, by his proficiency and contributions, attained an outstanding rank among engineers or executives in the motion-picture, television, or related industries.

### Committee Meetings

The majority of SMPTE committee meetings will be held at the Los Angeles Convention Center, including engineering, administrative, and editorial meetings. Committee members will be notified in advance of the time and place of their meetings, and a complete schedule will be available in the registration area of the Convention Center.

### Reduced Rate Advance Registration

Advance registration is available at reduced rates. To avoid waiting in line and to save money, register in advance by mail. An advance registration form should be returned with payment to SMPTE Registration, 595 W. Hartsdale Ave., White Plains, NY 10607. To qualify for advance rates, payment and form must be postmarked no later than September 15, 1989. There will be no refunds

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### Program Committee

Editorial Vice-President .....	Frank J. Haney
Program Chairman .....	John L. Baptista
Program Vice-Chairman .....	Alan S. Godber
Topic Chairman (Film) .....	Kenneth Knaus
Topic Chairman (Television) .....	Daniel R. Brewer

### Arrangements Committee

Conference Vice-President .....	L. John Spring, Jr.
General Arrangements Chairman .....	Howard T. La Zare
General Arrangements Assistant .....	Nelson Meacham
Immediate Past General Arrangements Chairman .....	Michael Chewey
Facilities/Security Chairman .....	Charles Kirscher
Banquet/Entertainment Co-Chairman .....	Louis Wolf
Banquet/Entertainment Co-Chairman .....	Milt Shefter
Display Chairman .....	John Aalto
Display Assistant .....	David Lansdown
Registration Chairman .....	John Mason
Registration Assistant .....	Fred Godfrey
Membership Chairman .....	Dick Barlow
Membership Assistant .....	Chuck Phelan
Hospitality and Information Chairman .....	Gerald Finn
Opening Films and Tapes Chairman .....	Ron Little
PA and Recording Chairman .....	Tom Kuhn
Audio/Visual and Projection Co-Chairman .....	Bob Burton
Audio/Visual and Projection Co-Chairman .....	Don Kloepfel
Video/Papers Facilities Chairman .....	Gus Dato
Video/Papers Facilities Assistant .....	Bob Ringer
Transportation Co-Chairman .....	Scotty Robertson
Transportation Co-Chairman .....	Don McCroskey
Hotel Arrangements Chairman .....	Milt Shefter
Hotel Arrangements Assistant .....	Roy Brubaker
Assistant Auditor .....	Gordon Cory
Spouses Program Chairman .....	Phyllis La Zare
Awards and Fellows Luncheon Chairman .....	Craig Curtis
Luncheon Assistant .....	Russ McMurtray

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after October 6, 1989. Members of the BKSTS, FKTG, SPSE, SBE, and AES may register at the member rate. All registrants please note: Credentials will be mailed directly from SMPTE Headquarters.

### On-Site Registration

For those who have not preregistered, the registration desk will be open beginning at 9:00 a.m. Friday, October 20, at the Westin Bonaventure Hotel, Palos Verdes Room. On Saturday, October 21, registration moves to the Convention Center for the rest of the conference. See the schedule below. If it is not possible for you to remit payment with your registration form by the cutoff date, please register on-site.

### Special Airline Rates

To assist attendees with their flight plans, American Airlines, in conjunc-

tion with the SMPTE, is once again offering discounted airfares to and from Los Angeles during our conference. To take advantage of this service, call (1-800) 433-1790 and ask for Star file #S-0209CZ.

### Equipment Exhibit

Over 200 companies, occupying close to 80,000 sq. ft. of floor space, are scheduled to participate in this year's exciting Equipment Exhibit. *Please Note:* No one under the age of 12 will be permitted on the show floor. Children 12 through 15 MUST be badged and MUST be accompanied at all times by a responsible adult. Exhibit hours will be as follows: Saturday, 2:30 p.m. to 6:00 p.m.; Sunday, 10:00 a.m. to 6:00 p.m.; Monday, 9:00 a.m. to 7:00 p.m.; and Tuesday, 9:00 a.m. to 5:00 p.m. A complete directory, with descriptions of the exhibiting companies, begins on p. 696 of this issue.

# Hotel Reservation Form

**131st SMPTE Conference  
Los Angeles Convention Center  
October 21-25, 1989**

Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State/ \_\_\_\_\_ Country \_\_\_\_\_ Zip \_\_\_\_\_  
 Telephone \_\_\_\_\_  
 Arrival Date \_\_\_\_\_ Time \_\_\_\_\_  
 Departure Date \_\_\_\_\_  
 Room Type (check one) Single \_\_\_\_\_ Double \_\_\_\_\_

**YOU MUST GUARANTEE ARRIVAL:**

Credit Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_  
 Check one:  Amex  Visa  MasterCard

- Hotel rooms will be reserved for Conference registrants only.
- Hotel reservations must be made on this form. Reservations must be received by September 15. Reservations received after that date will be subject to availability. The special rates will no longer be in effect.
- No telephone reservations will be accepted. For changes or cancellations call the Housing Bureau at (213) 488-0211. Referrals by the Housing Bureau after October 6, 1989.

**FOR OFFICE USE ONLY**

\_\_\_\_\_

SMPTE Housing  
 P.O. Box 71608  
 Los Angeles, CA 90071

Please circle desired accommodations:

**The Westin Bonaventure (Headquarters)**  
 Single Double Suite  
 108-118-128 128-138-148 250-1750

**The Los Angeles Hilton & Towers**  
 Single Double Suite Exec. Sgl/DbI Tower Sgl/DbI  
 109 129 325-550 115-135 165-185

12% occupancy tax will be applied to above prices. Shuttle bus service will run between the Convention Center and both the Bonaventure and the Hilton at no cost to the attendees.

Reservations must be received by September 15.

Guests are required to establish credit on arrival or pay in advance.

If a room at the rate requested is unavailable, one at the nearest rate will be reserved.

**Registration Hours**

Registration will take place at the Convention Center except on Friday, when it will be held at the Westin Bonaventure, Palos Verdes Room. The registration hours are as follows:

Friday, October 20 . . . . . 9:00 a.m. to 5:00 p.m.  
 Saturday, October 21 . . . . . 8:00 a.m. to 6:00 p.m.  
 Sunday, October 22 . . . . . 8:00 a.m. to 6:00 p.m.  
 Monday, October 23 . . . . . 8:00 a.m. to 7:00 p.m.  
 Tuesday, October 24 . . . . . 8:00 a.m. to 5:00 p.m.  
 Wednesday, October 25 . . . . . 8:00 a.m. to 1:00 p.m.

**Hotel Reservations**

Reservations must be made on the hotel reservation form which appears with this article and returned directly to the housing address indicated. The Society has an allotment of approximately 1500 rooms at the Westin Bonaventure, the Los Angeles Hilton, the Holiday Inn, and the Figueroa. The cutoff date for hotel room reservations is the same as that for advance registration. Reservations received after that date will be subject to availability and the special room rates may not be in effect. Rooms at the special conference rate are available to conference registrants only. The rooms and rates available for SMPTE registrants are shown below.

—Joyce R. Hurwitz

**Registration Rates**

	Advance Rate	On-Site Rate
Member Weekly	\$185.00	\$225.00
Nonmember Weekly	225.00	265.00
Spouse	85.00	95.00
Life Member	FREE	FREE
Life Fellow	FREE	FREE
Student Member (no lunch)	FREE	FREE
Student Nonmember (no lunch)	10.00	15.00
Press (no lunch)	FREE	FREE
Author (day of paper only)	FREE	FREE

**Hotel Rates**

**The Westin Bonaventure**  
 Single \$108-118-128  
 Double 128-138-148  
 Suite 250-1750

**The Los Angeles Hilton**  
 Single \$109  
 Double 129  
 Executive Single/Double 115/135  
 Tower Single/Double 165/185  
 Suite 325-550

**The Holiday Inn**  
 Single \$ 68  
 Double 78

**The Figueroa**  
 Single \$ 64  
 Double 72

131st ANNUAL SMPTE TECHNICAL CONFERENCE AND EQUIPMENT EXHIBIT  
 REGISTRATION  
 LOS ANGELES CONVENTION CENTER  
 October 21-25, 1989

**ADVANCE REGISTRATION DEADLINE—SEPTEMBER 15, 1989**

PLEASE TYPE OR PRINT CLEARLY

LAST NAME		FIRST NAME	MIDDLE INITIAL
COMPANY NAME			
COMPANY ADDRESS			
CITY	STATE	ZIP OR CODE	COUNTRY
COMPANY TELEPHONE (include area code)			MEMBERSHIP GRADE, IF MEMBER
<b>COMPLETE NEXT TWO LINES ONLY IF SPOUSE IS REGISTERING FOR SPOUSES PROGRAM:</b>			
SPOUSE'S LAST NAME		SPOUSE'S FIRST NAME	MIDDLE INITIAL
SPOUSE'S COMPLETE HOME ADDRESS			

**REGISTRATION FEES**

Check ALL that apply:

**Weekly Registration**

- 1. Member\* \$185.00
- 2. Nonmember\* 225.00
- 3. Student Nonmember 10.00
- 4. Life Member\* FREE
- 5. Life Fellow\* FREE
- 6. Student Member FREE
- 7. Press FREE
- 8. Author FREE
- Spouse\* 85.00  
(day of paper only)

**Food Functions**

- H&A Luncheon 30.00  
(if separate: qty.\_\_\_\_)
- Fellows Luncheon 35.00  
(Fellows only)
- Banquet (qty.\_\_\_\_) 60.00
- Full Banquet Table 600.00

**TOTAL FEES** \$\_\_\_\_\_

**INFORMATION:**

- 1) \* Includes Honors & Awards Luncheon.
- 2) Fellows Luncheon NOT included in ANY registration.
- 3) Weekly nonmember registrants may present this receipt at SMPTE Membership Desk for \$20 credit towards membership.
- 4) Members of BKSTS, FKTG, SPSE, SBE and AES may register at the Member rate.
- 5) No one under 12 admitted to show floor; ages 12-15 must be badged/accompanied by a responsible adult.
- 6) All fees slightly higher on-site. See brochure for on-site fees.

**Make check payable in US Dollars. Send check and both copies of this form to:**  
 SMPTE Registration  
 595 W. Hartsdale Avenue  
 White Plains, NY 10607  
 914-761-1100  
 Or Fax with credit card number: 914-761-3115

**Method of Payment (circle one and enter ALL information)**

A) Enclosed is my check for \$\_\_\_\_\_

B)  Amex     MasterCard     Visa

Card # \_\_\_\_\_

Exp. Date \_\_\_\_\_ Signature \_\_\_\_\_

Cardholder Name \_\_\_\_\_

I am a Member of (check all that apply):  
 \_\_\_ BKSTS    \_\_\_ FKTG    \_\_\_ SPSE    \_\_\_ SBE    \_\_\_ AES

**CANCELLATION POLICY:** All refunds subject to a \$25.00 cancellation fee. All requests for refunds must be in writing and postmarked no later than October 6, 1989. Approved refunds will be issued following the conference. For those unable to attend entire conference, daily registration is available at the conference. There is a \$25.00 fee for lost or forgotten badges.

# Program Outline

## 131st Technical Conference

### Theme: Tradition and Technology — Partners in Progress

*The papers listed below are in the correct sessions (except as otherwise noted) but not in the final order of presentation. The sessions are firm as of July 24, 1989. However, changes are possible between the time of printing and the conference. For up-to-the-minute program information, call or write SMPTE Program Coordinator Marilyn Waldman, 595 W. Hartsdale Ave., White Plains, NY 10607. Phone: (914) 761-1100; Fax: (914) 761-3115; Telex: 4995348.*

### Saturday Morning

#### Opening Session

**Introduction by Program Chairman, John L. Baptista, CFI**

**Welcoming Address: SMPTE President Maurice L. French, CBC**

**Engineering Report: SMPTE Engineering Vice-President Stan Baron, NBC**

**Keynote Address: J. Phillip Samper, Eastman Kodak Co.**

### Saturday Afternoon

#### Session A: Archival (at UCLA)

**100 Years of 35mm Film, Jess Daily, UCLA Dept. of Film and Television, Los Angeles, Calif.**

**A Continuous Optical Printer Which Will Run Fragile Badly Shrunk Damaged Archival Film Without Repair, John P. Seabourne, Sigma Film Equipment Ltd., Sussex, England**

**Cinematography: From Silent to Sound — and Stereo Film, V. V. Makartsev, *Technika Kino i Televidenia Journal, Moscow, USSR***

**The Shape of Things to Come, John Belton, Rutgers University, Brooklyn, N.Y.**

**Archiving the Obsolete, Paul C. Spehr and Robert Carneal, Library of Congress, Washington, D.C.**

#### Session B: Advanced Television

##### I — Transmission

**Experiment with Second Generation EDTV System, Yosai Anaki, Susumu Takayama, Shuji Hanafusa, and Joji Urano, Nippon Television Network Corp., Tokyo, Japan**

**A Digital Augmentation Approach to**

**HDTV, Sheau-Bao Ng, David Sarnoff Research Center, Princeton, N.J.**

**Robust Bandwidth — Efficient HDTV Transmission Formats, William F. Schreiber, William Butera, Edmond Chalom, Peter Monta, Ashok Papat, Jae Lim, Andrew B. Lippman, Arun N. Netravali, and David H. Staelin, Massachusetts Institute of Technology, Cambridge, Mass.**

**A 6-MHz NTSC Compatible Wide Screen Television System With Pan-and-Scan Capability, Shuji Inoue, Sadashi Kageyama, Hideyo Uwabata, Yoshio Yasumoto, and Yoshio Abe, Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**A Digital Audio Transmission System Using Quadrature Modulation of NTSC Television Carrier, Tsutomu Noda, Isao Nakagawa, Takatoshi Shirotsugi, Keirou Shinkowa, and Shigeo Matsuura, Hitachi Ltd., Yokohama, Japan**

**RF Transmission of Compatible ATV, Yves Faroudja, Faroudja Laboratories, Sunnyvale, Calif.**

**A 1050-Line Interlaced HDTV Format, Jose Alvarez and Alan Peter Cavallerano, Philips Laboratories, Briarcliff Manor, N.Y.**

**The Historical Development and Standardization of the NTSC Color System, Kerns H. Powers, David Sarnoff Research Center, Princeton, N.J.**

#### Session C: Computer Interactive Video and Graphics

**Digital Motion Video for Personal Computers, Arch C. Luther, Arch Luther Associates, Merchantville, N.J.**

**Personal Computer Video Recording, John P. Stautner, Digital Multimedia, Palo Alto, Calif.**

**Shooting for Interactivity, Michael Naimark, Apple Multimedia Lab, San Francisco, Calif.**

**The CD-I System, Mark Dillon, American Interactive Media**

**Interactive NOVA: An Example of Interactive Multimedia, Ted Sicker, WGBH Educational Foundation, Boston, Mass.**

**Paintbox V-Series: An Integrated Approach to TV Graphics Systems, Bob Pank, Quantel Ltd., Newbury, England**

**Inside the "STAMP WIPE," Richard L. Allman, Capital Cities/ABC, Inc., New York, N.Y.**

**A Real-Time Video Mapping and Manipulation System, S. Vigneaux, M. Oka, N. Ohba, and T. Kato, Sony Corp., Teaneck, N.J.**

### Sunday Morning

#### Session A: Film Production

**New Single Ended Metal Halide Lamps for the News and Entertainment Industries, F. Stephen Henry and Bernard Lewandowski, Osram Corp., Montgomery, N.Y.**

**Research and Development: A Foundation on Which to Build a Tradition, Jonathan Erland, Apogee Productions, Inc., Van Nuys, Calif.**

**The BKSTS and the Great British Film Industry, David Gibbs, Filmatic Laboratories Ltd., London, England**

**Keykode Numbers on 35- and 16-mm Film, Ronald E. Uhlig, Eastman Kodak Co., Rochester, N.Y.**

**The Colorful History of Motion-Picture Film, Gary L. Borton, Eastman Kodak Co., Hollywood Calif.**

**Aaton 35mm Camera, Jean-Pierre Beauviala, Aaton RG, Grenoble, France.**

**A Century of Film in Australia, Dominic J. Case, Colorfilm Pty Ltd., Sydney, Australia**

**Survey of Users: F-Series Products, One Year After Introduction, H. A. Parker and Dick Barlow, Fuji Photo Film U.S.A. Inc., Elmsford, N.Y.**

**New 35mm and 65mm Film Production Camera Systems Featuring State-of-the-Art Technology, G. Schwab, M. Koppetz, E. Bayer, R. Mueller, A. Nguyen-Nhu, Arnold Richter Cinetechnik, Munich, W. Germany, and K. Ropin, Arri Austria, Vienna, Austria**

#### Session B: Advanced Television II — Transmission/Production

**Adaptive Comb Filters for Improving the NTSC Video Signal, Carl P. Markhauser, University Simon Bolivar, Dept. Electronics Engineering, Caracas, Venezuela**

**Quincunx Coding for Picture Memories, Tiina Jarske, Kari Saarinen, and Yrjo Neuvo, Tampere University of Technology, Signal Processing Laboratory, Tampere, Finland**

**A Hierarchical Approach to Production Standards, Birney D. Dayton, Nvision Inc., Nevada City, Calif.**

**Common Image Format for International Television Program Exchange, Stanley N. Baron, NBC, New York, N.Y., and Kerns H. Powers, Consultant, Princeton, N.J.**

**Selecting Appropriate HDTV Production Standards for North America: Making the Puzzle Pieces Fit, S. Merrill Weiss, NBC, New York, N.Y.**

**Plans for Testing Advanced Television Systems: A Status Report**, E. B. Crutchfield, *Advanced Television Test Center, Alexandria, Va.*

**New Developments in NTSC-Compatible EDTV**, Joshua P. Hill, *Viento Laboratories, New York, N.Y.*

**Progressive Scanning: The Gateway to HDTV**, Bernard Tichit and Jean-Pierre Lacotte, *Thomson Video Equipment, Cergy St. Christophe, France*

**EUREKA! — The Way Towards a Single World Production Standard and Compatible Transmission Standards**, P. W. Bogels, *Philips International B.V., Eindhoven, Netherlands*

### **Session C: Ancillary Services and Distribution Systems**

**Applications of the PBS VBI Data Delivery System**, Michael J. Garr and Mark S. Richer, *Public Broadcasting Service, Alexandria, Va.*

**Data Services in the CBS Network Signal**, George Gabritsos and Scott Pursell, *CBS Inc., New York, N.Y.*

**Closed Captioning in Real Time**, Marc Okrand, *National Captioning Institute, Inc., Falls Church, Va.*

**Closed Captioning in Real Time: The Optimal Solution**, Larry Goldberg and Doug Dittman, *The Caption Center, Boston, Mass.*

**Satellite News Gathering**, Brandt Vieira and Robert Sisko, *NBC, New York, N.Y.*

**Direct Broadcast Satellite for Britain**, Ellie Griffiths, *British Satellite Broadcasting*, and Brian Salkeld, *IBA, England*

**Fiber and Optical Switching**, Peter Montanos, *Grass Valley Group, Grass Valley, Calif.*

**Studies on Systems for New Video Services within the European Community RACE Program**, Pol T. Descamps, *Barco-Industries N.V., Kortrijk, Belgium.*

### **Sunday Afternoon**

#### **Session A: Film Production/Presentation (at USC)**

**Sixty Years of USC Cinema-Television**, Herbert E. Farmer, *School of Cinema-Television, University of Southern California, Los Angeles, Calif.*

**The History of Fujicolor Motion-Picture Film**, Makoto Hara and Masaru Jibiki, *Fuji Photo Film Co., Ltd., Kanagawa, Japan*

**The Science of Film Production: Milestones from 1950-1990**, Glenn M. Berggren, *Optical Radiation Corp., Azusa, Calif.*

**Eastman EXR Color Negative Films: Technology and Performance**, K. Fowler, C. Hagmaier, M. Mendel, D. Michon, E.

Oftedahl, J. Pepe, U. Singh, S. Spakowsky, and G. Whittier, *Eastman Kodak Co., Rochester, N.Y.*

**A Condensed History of Frequency Response of Motion Pictures and Motion-Picture Theaters**, Ioan Allen, *Dolby Laboratories, San Francisco, Calif.*, and Tomlinson Holman, *Lucasfilm, San Rafael, Calif.*

**Potential Acutance Improvements Identified by Motion-Picture System Modeling**, John T. Keech, *Eastman Kodak Co., Rochester, N.Y.*

**Ultra Star — The State-of-the-Art in Projection Lenses**, Glenn M. Berggren, *Optical Radiation Corp., Azusa Calif.*

### **Session B: Advanced Television III — Production Equipment**

**HDTV Camera Lens Requirements — From 525 TV Lines First CCD Generators to HDTV: The Evolution of Optical Requirements for TV Cameras**, Bernard Angenieux and Gerard Corbasson, *Angenieux Corp. of America, Miami, Fla.*

**Large Screen HDTV Trinitron Monitor**, Hideki Miura, Takashi Chikuma, and Laurence Thorpe, *Sony Corp., Teaneck, N.J.*

**HDTV Digital Frame Recorder**, Vince Perry and Mark Klingehoffer, *Sony Technology Center, San Jose, Calif.*

**Digital Transmissions of Studio Quality HDTV Signals at 1.118 GBPs Over Fiber-Optic Cable**, Hugo Gaggioni, *Sony Advanced Systems, Teaneck, N.J.*, Shigeo Komuro, Yasutoshi Komatsu, and Takashi Otake, *Image Processing Laboratories, Atsugi, Japan*

**A European High-Definition Production Realized by SFP**, Michel Oudin, *Societe Francaise de Production et de Creation Audiovisuelles SFP, Paris, France.*

**High-Sensitive HDTV Camera Tube with the HARP Target**, Norifumi Egami, Toshio Yamagishi, Saburo Okazaki, Kenkichi Tanioka, Mituhiro Kurashige, Kentaro Oku, and Shigeru Ehata, *NHK Science and Technical Research Laboratories, Tokyo, Japan*

**PFWM Fiber-Optic Transmission System for HDTV**, Susumu Morikura, Noboru Okamura, and Kiyoshi Kubo, *Matsushita Electric Industrial Co., Ltd., Osaka, Japan*

**An HDTV 3-CCD Color Camera**, Yuji Ide, Mitsuo Sasuga, Nozomu Harada, and Tomotsu Nishizawa, *Toshiba Research and Development Center, Kawasaki, Japan*

**Television Measurement Technology**, John Horn, *Tektronix, Beaverton, Ore.*

### **Session C: Quality Control and Measurement**

**Instrumentation for Monitor Calibration**,

Joseph J. Kane, Jr., *Independent Producer*, and Paul Thomsen, *Conrac Display Products, N. Hollywood, Calif.*

**Test Signal Generators: New Technology for the 1990s**, Steven Talley and Paul McGoldrick, *Magni Systems Inc., Beaverton, Ore.*

**Matchman Mk II Speeds Up Video Camera Color Checking**, C. J. Dalton, *ITVA, Teddington, England*, and E. J. Vavasour and D. J. Newport, *Nuneaton, England*

**PBS's Total Quality Program**, F. Cary Wright, *Public Broadcasting Services, Alexandria, Va.*

**Operational Consideration for Color Monitors**, Ronald A. Williams, *Landmark Eng., Agoura, Calif.*

**Quality Control of Off-Air Television**, Bill Hogan, *IVC, Capp Loughboro, Capp's Electronics*, and Tom Weenes, *Tektronix, Burbank, Calif.*

**Television Measurement Standards: Present and Future**, Alan S. Godber, *NBC, New York, N.Y.*

**Some Fundamental Limits on the Accuracy of NTSC TV Signal Measurements**, Ganesh Rajan and Ajay Luthra, *Tektronix Inc., Beaverton, Ore.*

### **Monday Morning**

#### **Session A: Laboratory Technology**

**The Digisync — A Multipurpose, Multi-format Electronic Counter/Calculator for Film Synchronizers**, Frederick Gasoi and Ed Zwaneveld, *National Film Board of Canada*, and Michael Lazaridis, *Research in Motion Ltd., Quebec, Canada.*

**A Method of Digital Chromatic and Density Slope Corrections in a Color Film Analyzer for Superb First Print Yields**, Gregory L. Breedlove and Michael V. Chewey, *Bremson Data Systems Inc., Lenexa, Kans.*

**Controlling Technology**, C. F. Mossman and S. Morrissey, *Rank Film Laboratories, Denham, England.*

**Perception of Color**, Carl F. Holtz, *Eastman Kodak Co., Rochester, N.Y.*

**300D Digital Video Color Film Analyzer: A Logical Use of the Best of Today's Technologies**, Harry Teitelbaum, Al Arbeeney, and Mark Levine, *Hollywood Film Co., Los Angeles, Calif.*

**Superlab — Colorfilm's Bulk Release Printing Facility**, Tim Waygood and Dominic J. Case, *Colorfilm Pty Ltd., Sydney, Australia*

**A Networked Automatic Densitometer System**, Michael V. Chewey, *Bremson Data Systems, Woodland Hills, Calif.*

**Particle Transfer Roller (PTR) — A New Concept in Film Cleaning**, John P. Pytlak and Fernando Ramos, Jr., *Eastman Kodak Co., Rochester, N.Y.*

Automation Systems Using Kodak's Key-Kode, Nigel Varian, *Filmlab Systems International Ltd., High Wycombe, England*

### Session B: TV Production I — Equipment

The Accordion Charge Transfer Mechanism: A New Development of the FT CCD Image Sensor, Filippus L. Stok, *BTS Broadcast TV Systems B.V., Breda, Netherlands*

Movement-Compensated TV Standards Converter Using Motion Vector System, Norihito Ouchi, Tauso Yamuachi, and Hirohisa Yamaguchi, *Oki Electric Industry Co., Ltd., Tokyo, Japan*

Highly Versatile Camera Mounting System for All Vehicles, Robert Eidschun, *Kinetic Support Systems Inc., Southfield, Mich.*

A New High-Speed Camera System for Broadcast Use, Yoshihiro Fujita, Fumihiko Andoh, Koji Mitani, Masayuki Sugahara, and Masao Fujiwara, *NHK Science and Technical Research Laboratories, Tokyo, Japan*

Application of Digital Processing in Color Cameras, Author to be Announced, *Panasonic Broadcast Systems Co., Secaucus, N.J.*

The First Color Television Camera, John W. Wentworth, *Wentworth Training Services, Cherry Hill, N.J.*

New Video Processing for New CCD Cameras, Bernard Tichit and Jean-Pierre Lacotte, *Thomson Video Equipement, Cergy St. Christophe, France*

History of Television Imaging Pickup, Robert Neuhauser

### Session C: TV Post-Production

The Link Editor: A New Concept in Film-Style Video Editing, Arthur Schneider, *Link Systems, Ltd., Los Angeles, Calif.*

A Complete Post-Production System for All Video Formats, Michael Guess, *Grass Valley Group, Inc., Grass Valley, Calif.*

A Closed-Loop Digital Video Editing System, Larry J. Gardner and David H. Scoggins, *Videofonics Inc., Raleigh, N.C.*

Color Correction — A Digital Approach, Vince Harradine, *Sony Broadcast and Communications Ltd., Basingstoke, England*

Graphics and Component Video Editing for the 1988 Olympics, Steve Fastook, *NBC*, and Phil Shaw, *South Jersey Broadcast Assoc., New York, N.Y.*

Desktop Computer Technology in the Post-Production Environment, David G. S. Wood, *Ensemble Designs, Grass Valley, Calif.*

S-VHS Signal Processing in Post-Production Systems, David E. Acker, *FOR-A Corp. of America, Newton, Mass.*

A Real-Time, Object-Oriented, Nonlinear Editing System for Film and Video, Eric C. Peters, *Avid Technology Inc., Burlington, Mass.*

History of Electronic Video Editing, Adrian Ettlenger, *Cinedco, Inc., Glendale, Calif.*

The Latest Developments in Electronic Editing for Film Shows Released on PAL Television, Richard Roberts and Andrew Maltz, *Cinedco Inc., Glendale, Calif.*

### Monday Afternoon

#### Session A: Sound Technology I

Extended Range Cross-Modulation Testing, Charles Nairn, *Com Tec, Inc.*, and Bruce Hofer, *Audio Precision, Inc., Detroit, Mich.*

Acoustical Design for Sound Stages and Post-Production Facilities at the Disney/MGM Studio Tour, Lake Buena Vista, Florida, David R. Schwind and Thomas A. Schindler, *Charles M. Salter Associates, Inc., San Francisco, Calif.*

Digital Sound Feasibility Study Update, Ronald E. Uhlig, *Eastman Kodak Co., Rochester, N.Y.*

Technical Requirements of Theaters Playing Back Dolby Spectral Recording Photographic Sound Tracks, Ioan Allen, *Dolby Laboratories, San Francisco, Calif.*

3-D Sound Fiction, Fantasy, and Fact: Benchmark Standards and Common Sense for Cinema and Video, Elizabeth A. Cohen, *Charles M. Salter Associates, Inc., and Stanford University, San Francisco, Calif.*

Film Applications of High-Definition Video, J. Galt and R. West, *Sony Advanced Systems, Hollywood, Calif.*

A Practical Approach to the Preparation, in the Digital Domain, of Audio Material for Presentation to the Film or TV Rerecording Stage, David Collie and Chris David, *Solid State Logic Inc., Hollywood, Calif.*

#### Session B: TV Production II

EMPHASYS — An Advanced Encode System for NTSC and PAL Applications, Ray Dulye, *Grass Valley Group, Grass Valley, Calif.*

New News Studios in NHK, Ryo Yoshida, *NHK, Tokyo, Japan*

A Single-Chip Transmission System for Digital Studio, Takeo Eguchi and Toshio Shimano, *Sony Corp. Atsugi Plant, Atsugi, Japan*

Getting More Out of User Bits, Stephen C. Scott, *Skotel Corp., Brossard, Que., Canada*

Plant Philosophy and Systems Concepts for NBC's Olympics Broadcast Center,

Charles Jablonski and Charles Spicer, *NBC Inc., New York, N.Y.*

Architectural and Acoustic Design of Temporary Broadcast Facilities, David Lamberty, *Sandy Brown Associates, London, England*

A Time Code User Bit Hierarchy for Multi-Disciplinary Applications, Anthony Duboyce, *CBC, Montreal, Canada*

History of Television Display Devices, Carl Eilers, *Zenith Electronics Corp., Glenview, Ill.*

#### Session C: Recording

A Personal History of Videotape Recording, Charles E. Anderson, *Monaco Video, San Francisco, Calif.*

An Introduction to Magneto-Optical Media Digital Recording, Koichi Sadashige, *Consultant, Berlin, N.J.*

Recent Technical Developments in the S-VHS VCR for Broadcasting and Professional Applications, Akira Hirota, *Victor Co. of Japan, Yokohama, Japan*, and Neil Neubert, *JVC Professional Products Co., Elmwood Park, N.J.*

Development of a 1/2-in. Composite Digital VTR, Author to be announced, *Panasonic Broadcast Systems Co., Secaucus, N.J.*

A New 8-14 Modulation and Its Applications to a Small Format VTR, T. Uehara, T. Nakayama, H. Minaguchi, and Y. Oba, *NHK, Tokyo, Japan*

The Role of Image Data Compression in a Video Recording Environment, John F. Kearney and Charles H. Coleman, *Ampex Corp., Redwood City, Calif.*

Development of a Portable D-2 Videotape Recorder, S. Carr, S. Koike, H. Sakamoto, and K. Ike, *Sony Communications Products Co., Teaneck, N.J.*

Archiving the Various Videotape Formats, Jim Wheeler, *Ampex Corp., Redwood City, Calif.*

Copyright Protection for TV Programming, Eugene Leonard, *EIDAK Corp.-LRG Labs, Roslyn, N.Y.*

### Tuesday Morning

#### Session A: Film/Electronic Interface I

A Historical Survey of Contributions Made by Agfa-Gevaert to Film and Television, R. Huybrechts, *Agfa-Gevaert N.V., Mortsel, Belgium*

Bar Code Applications, Robert W. Rylander, *Robert W. Rylander & Associates, Woodmoor, Colo.*

High-Performance CCD Telecine for HDTV, W. R. Godden, R. T. Lees, and R. A. Sharman, *Kodak Ltd., Harrow, Middlesex, England*

High-Resolution CCD Film Scanner for Special Effects Applications, Michael H.

Davis, *Eastman Kodak Co., Rochester, N.Y.*, and Scott Squires, *Industrial Light and Magic, San Rafael, Calif.*

The FTV Colourscan Colour Correction, Transfer, and Conform System for Film-to-Videotape Projects, Robert T. Danylak, *Discovery Productions, Toronto, Canada*

Electronic Editing of Theatrical Feature Films, Bruce A. Rady, *BHP, Inc., Chicago, Ill.*

Texture and Depth Image Enhancement for Motion Pictures and Television, Christopher A. Mayhew, *Vision III Imaging Technologies, McLean, Va.*

### Session B: Encoding/Decoding for Composite Video and Techniques for Standards Conversion (with Panel Discussions)

Encoding/Decoding Techniques, Christian Tremblay, *CDL, Montreal, Canada*

Encoding/Decoding Techniques, Yves Faroudja, *Faroudja Laboratories, Sunnyvale, Calif.*

Encoding/Decoding Techniques, Richard Bannister, *Grass Valley Group, Grass Valley, Calif.*

Encoding/Decoding Techniques, Martin Weston, *BBC, England*

Encoding/Decoding Techniques, David Creed, *Sony U.K.*

Standard Conversion for HDTV — A Progress Report, Keith R. Field, *CBC, Montreal, Canada*

Standards Conversion Techniques American Perspective, Gavin Schultz, *Image Transform, Hollywood, Calif.*

High-Definition Standards Conversion — Design Aspects, J. Chatel and G. Briand, *Thomson-CSF/LER, Cesson-Sevigne, France*

Standards Conversion — Techniques for Advanced TV, Author to be determined, *NHK/Sony*

### Tuesday Afternoon

#### Session A: Film/Electronic Interface II

A Comparison of Color Negative Films and HDTV Cameras for Television Program Production, Glenn Kennel, LeRoy DeMarsh, and John Norris, *Eastman Kodak Co., Rochester, N.Y.*

Applications of Machine Readable Keycode in Film and Video Post-Production, Ed DiGiulio, *Cinema Products Corp., Los Angeles, Calif.*

URSA (Telecine), Colin Ritchie and Peter Swinson, *Rank Cintel Inc., Valley Cottage, N.Y.*

High-Resolution Electronic Intermediate System for Motion-Picture Film, C. Brad-

ley Hunt and Glenn L. Kennel, *Eastman Kodak Co., Rochester, N.Y.*

35mm Infrared Laser Film Recorder for an Electronic Intermediate System, R. E. Baldwin and A. A. Muentzer, *Eastman Kodak Co., Rochester, N.Y.*

The Pros and Cons of Electronic Editing for Feature Films, Herbert H. Dow, *Cinedco, Inc., Glendale, Calif.*

### Session B: Automation and Robotics

Improving Operational Efficiency, Lionel Hightower, John Prager and Mark Richer, *Public Broadcasting Service, Alexandria, Va.*

Traffic Interface Issues in Real-Time Automation, John Tolochko and Phil Livingston, *Panasonic Broadcast Systems Co., Secaucus, N.Y.*

System Interface for the Library Management System at CBS, John Beyler, *CBS Inc., New York, N.Y.*

"Roboped," a Fully Robotic Pedestal, Marc Bressack and Jon Pannaman, *A. F. Associates Inc., Northvale, N.J.*

Engineering Solutions for the News Director's Robotic Requirements, Rob Saltarelli and John Parnum, *Vinten Broadcast Ltd., Bury St. Edmunds, England*

Robotic Pedestal, Robert Gonelli, *Total Spectrum Manufacturing Inc., Valley Cottage, N.Y.*

History of Development of Television in Britain, Author to be determined, *BBC, England*

### Wednesday Morning

#### Session A: Digital Tutorial I

Note: *The following papers will be divided between this session and Digital Tutorial II, to be presented Wednesday afternoon. See the conference program booklet for the order of presentation.*

Video Processing and the Post-Production Environment, David Scammell, *Quantel Ltd., Newbury, England*

Digital Video Techniques: True Confessions of an Everyday User, Michael Taylor, *Editel-Chicago, Chicago, Ill.*

The Easy Way from Analog to Digital, Jürgen K. R. Heitmann, *BTS, Darmstadt, W. Germany*

Is Digital Really Perfect? Fraser Morrison, *Ampex Corp., Redwood City, Calif.*

User Experiences in Digital Post-Production, Peter D. Symes, *Grass Valley Group, Grass Valley, Calif.*

Video Rate Conversion, Kevin Stee and Jerome Shields, *Matsushita Applied Research Laboratory, Burlington, N.J.*

Digital Video Signal Transcoding, Philip J. Bernosky, *Ampex Corp., Redwood City, Calif.*

Keying in Digital Video Switchers and Effects Systems, Richard S. Bannister, *Grass Valley Group, Inc., Grass Valley, Calif.*

Routing Distribution and Interfacing in the Digital Edit Suite, Kevin Prince, *Alpha Image Ltd., Newbury, England*

Digital Production Switchers — Evaluating the New Technology, John O. Abt., *Grass Valley Group, Nevada City, Calif.*

CCD Telecine in Broadcast and Post-Production, Anthony J. Magliocco, *BTS, Sherman Oaks, Calif.*

Digital, What's in It for Me? Patrick Howley, *Post Perfect, New York, N.Y.*

Title to be announced, Marcos Obadia, *Limelight Video, Miami, Fla.*

OCTOPUS: A 250 MOPS Digital Processor for Standard (Sampling Rate) Conversion, Ajay Luthra, Ganesh Rajan, and Scott Davidson, *Tektronix Inc., Beaverton, Ore.*

### Session B: Television Sound Technology

Innovative Sound on a Historic Soundstage, William C. Harrington, *Paramount Pictures Corp., Los Angeles, Calif.*

A Professional DAT System, Author to be announced, *Matsushita Technology Center, Secaucus, N.J.*

Audio Criteria for Advanced Television, Randall Hoffner, *NBC Inc., New York, N.Y.*

The Preparation of an Engineering Guideline on the Implementation and Use of AES/EBU Digital Audio Interface, Stephen B. Lyman, *CBC, Montreal, Canada*

A Digital Audio Routing Switcher System, David L. Bytheway, *BTS, Salt Lake City, Utah*

The Development of a Digital Dialogue Editor and Its Application in Film and Video Post-Production, William Elswick, *Cinedco, Inc., Glendale, Calif.*

Transferring the Experience — From the Dubbing Stage to Home, Tomlinson Holman, *USC School of Cinema-Television and Lucasfilm Ltd., San Rafael, Calif.*

3-1 Quadraphonic Sound Reproduction System for HDTV, Eiichi Miyasaka, K. Kurozumi, S. Komiyama, K. Tujimoto, and J. Ujihara, *Science and Technical Research Laboratories of NHK, Tokyo, Japan*

### Wednesday Afternoon

#### Session A: Digital Tutorial II

Note: *The session Digital Tutorial I (Session A, Wednesday morning) has the complete list of papers for this topic. Those papers will be divided between this session and this one. See the conference program booklet for the order of presentation.*