Welcome to the 128th SMPTE Technical Conference.

The 128th SMPTE Technical Conference

The 128th SMPTE Technical Conference and Equipment Exhibit, held October 24-29, 1986, in New York, was an event of great significance. Located for the first time at one of the city's newest facilities, the Jacob K. Javits Convention Center, the conference attracted a record crowd of approximately 16,500, making it the largest New York conference held by the Society.

A total of 113 papers were presented during the technical sessions, on the theme "Today's Technology — Tomorrow's Reality?" The conference program was inaugurated with a special technical presentation by Mark L. Sanders, Ampex Corp., which was enthusiastically received by the audience.

The equipment exhibit was the largest in the Society's history, with a record 260 companies participating. A total of 805 booths were occupied at the Convention Center, representing a substantial increase over the 1984 New York conference, when 479 booths were taken. The exhibit was officially opened on Saturday, October 25.

The conference was under the overall supervision of SMPTE Conference Vice-President Maurice L. French, Canadian Broadcasting Corp. The technical program was directed by SMPTE Editorial Vice-President Howard T. La Zare, Deluxe Laboratories, Inc.

The meeting proved to be an outstanding one, due in large part to the efforts of the various committees and their chairmen. Program Chairman L. John Spring, Eastman Kodak Co., and Program Vice-Chairman Frank J. Haney, Capital Cities/ABC, Inc., put together an interesting and educational papers program. They were assisted by Topic Chairmen (film and audio) Grant Ireland, Allied Film & Video; and (television) Mike Fisher, Capital Cities/ABC, Inc., and a program committee consisting of Rick Thomas, Eastman Kodak Co. (film); Bob Weisgerber, Modern Telecommunications (film); Murray Allen, Universal Recording (film); and John Belton, Columbia University (archival).

General Arrangements Chairman Irwin W. Young, Du Art Film Laboratories, Inc., was in charge of the many non-program aspects of the conference. He was assisted by Associate General Arrangements Chairman/Transportation Philip Godfrey, Ikegami; Facilities Chairman Charles H. Jablonski, NBC Operations and Technical Services; Banquet/Entertainment Chairman William L. Cooper, Jr., William L. Cooper Productions; Display Chairman Tim Spitzer, Du Art Film Lab-

oratories, Inc.; Registration Chairman Irving Rosenberg; Membership Chairman Guy Beverlin, WPIX-TV; Hospitality and Information Chairman Neal R. Pilzer, Motion Picture Enterprises; Opening Films and Tapes Chairman Arthur E. Florack, Eastman Kodak Co.; PA and Recording Chairman Earl F. Arbuckle, III, WPIX, Inc.; Audio Visual and Projection Chairman Edward J. Messina, Jr., General Camera Co.; Hotel Arrangements Chairman Edward J. Burns, Eastman Kodak Co.; Assistant Auditor James D. Hannafin, Technicolor Inc.; Spouses' Program Chairwoman Linda Young, Du Art Film Laboratories, Inc.; and Awards and Fellows Luncheon Chairman Ed Hobson, The Grass Valley Group.

In addition to the technical program and the exhibit, a full program of social activities was available for those attending the conference. A press briefing was held on Friday evening, October 24, in SMPTE President Harold J. Eady's suite at the New York Hilton. Following the press briefing, Eastman Kodak hosted a welcoming reception at the Copacabana night club. During the entire conference registrants enjoyed a cofeee club sponsored by Fuji Photo Film U.S.A.

The annual Honors and Awards Luncheon was held on Saturday at noon in the Convention Center. Guest speaker at the luncheon was George H. Brown, former engineering executive at RCA Corp., following which the recipients of the various awards were introduced. Preceding the luncheon were a VIP reception sponsored by Dolby Laboratories, Inc., and a general reception sponsored by Agfa-Gevaert, Inc.

On Sunday, at noon, the Fellows Luncheon was held, honoring the new Fellows of the Society. A reception sponsored by Magna-Tech Electronic Co., Inc., preceded the luncheon. On Monday evening, the traditional banquet and dance was held in the Grand Ballroom of the New York Hilton. Guests enjoyed a pre-banquet reception sponsored by 3M Co. and table wines at the banquet courtesy of NBC, Inc. Spouses of those attending the conference had the opportunity of visiting some of New York's most famous attractions in an exciting and varied Spouses' Program.

Further details will follow.

Opening Ceremonies: Today's Technology — Tomorrow's Reality?

The opening session, which was held on Saturday morning, was one of the major highlights of the conference. SMPTE President Harold J. Eady, Novo Communications, Inc., was introduced by Program Chairman L. John Spring, Eastman Kodak Co. After some introductory remarks (see text below), President Eady introduced SMPTE Engineering Vice-President Richard Streeter, CBS Broadcast Group, who delivered a very interesting report entitled "Is Standardization Obsolete?" The text of this presentation appears later.

Following Streeter's address, the main speaker of the day was introduced by SMPTE President Eady. Mark Sanders, Ampex Corp., gave a special technical presentation providing not only an inspiring talk, but a highly effective audiovisual display as well. The text of Sanders' speech appears on the following pages.

A standing-room-only crowd attended the Opening Session.

Harold Eady addressing the audience at the Opening Session.

Opening Address

Harold J. Eady, SMPTE President

Fellow members, guests, ladies and gentlemen, good morning, and welcome to the 128th Technical Conference and Equipment Exhibit. I am sure you had an enjoyable time at last night's reception. The Society's appreciation, of course, goes to Eastman Kodak — but, to borrow part of an old saying, the excitement has just begun. In a few moments we will hear the keynote address from Mark Sanders, Ampex Corp., which will kick off what I am sure will be one of the most successful SMPTE Conferences in our history.

But before we get into all that excitement, I felt that as your President, the duty falls on me to explain that funny feeling you may have of being in this strange place on a Saturday morning instead of being at home with your families. Your Society decided that with all these new VTR formats coming out, we should go modern and try a new conference format as well. So we decided to really test the loyalty of SMPTE members and open on a weekend and see if we can get your attention away from all the other enticing things going on in the Big Apple. After my explanation, you may, in fact, be happy that I am your outgoing President! Of course there has to be a pony in there somewhere, and our Sustaining Members, your employers, probably love the fact that you are here partially on your own time, instead of theirs. As exhibitors, they also save on setup and breakdown labor costs by not working or shipping equipment on a weekend. (Teamsters don't come cheap on Saturdays and Sundays, or any other time, for that matter.)

Why the Jacob Javits Convention Center? Well, we used to overflow the Hilton and Sheraton with our exhibits, and even had to turn away exhibitors, and we got complaints about the inconvenience from the Sheraton exhibitors. Now we have made it equally inconvenient for everyone, with shuttle buses to equalize the situation.

Seriously, however, the 128th Technical Conference marks the first time in New York that the Society has been able to put its technical sessions, equipment exhibit, special demonstrations, and meetings under one roof in a convention center. And what an absolutely stunning place this is! They call it the Crystal Palace, and it has been touted as the premier convention center facility in the Western Hemisphere. This facility, given its dimensions and its flexibility, satisfies the SMPTE's long-standing need for space on the East Coast, and as you can see, nothing is too good for our Society.

The initial search for more space was prompted by the increasing popularity and appeal of the SMPTE Conference and the growth of the Equipment Exhibit. We expect a record-setting 17,000 people to attend this conference. They come from all facets of the motion-picture and television industries.

And what does the SMPTE have planned for all these people? For starters, a technical program featuring a range of subjects wide enough to provide you with the opportunity to decide for yourself if "Today's Technology" can bear the stamp of "Tomorrow's Reality." Program Chair-

man Jack Spring and his committees have solicited 113 papers. As you can see in your program booklet, they have filled 16 topic sessions. Once again, new developments in film and television production and post-production will be addressed, along with new developments in laboratory practices, television cameras, and digital technology. Interesting new sessions include "Archival Film and Video" and a session titled "Audio — Talkies are Back." For all you theater enthusiasts, bear in mind that session No. 9, "Enhancing the Theatrical Experience," will take place next Tuesday at the Loews Theater in midtown Manhattan. Shuttle bus service will be available.

The technical sessions will begin tomorrow and conclude next Wednesday. We have speakers from many parts of the world, including Australia, Canada, Denmark, England, France, Germany, Japan, Sweden, and, of course, the United States. Brushing up on your foreign accents will be a cinch at our conference. Taken together, these sessions are what this SMPTE Conference is all about: the dissemination of timely and important technical information among the very people who use it in laboratories, manufacturing facilities, broadcast networks, and motion-picture and television studios around the world.

This year's Equipment Exhibit is the largest in our history. A record 270 companies have occupied 804 booths, covering 225,000 ft^2. These companies represent most of the major manufacturers and suppliers of professional motion-picture, television, and video equipment from many different countries.

Before we cut the ribbon and open the door to the Exhibit this afternoon, the Society will honor the 14 recipients of 1986 awards at the Honors and Awards Luncheon. Tomorrow, at the Fellows Luncheon, 15 individuals will be conferred that distinguished grade of SMPTE Fellow. Congratulations go to all 29.

Throughout the conference various Society engineering technology committees and working groups will meet. The Board of Governors, administrative, and editorial committees of the Society will also hold meetings. Let's not forget one of the really enjoyable and popular events, the SMPTE Banquet, which is set for Monday at the Hilton. And our spouses shouldn't get too bored — not in this city. (However, a bit of advice, perhaps you can get them to give up credit cards for the duration.) In any case, we have an eventful five days ahead indeed!

The most difficult part of this welcome is the acknowledgments. As you can appreciate, there are many people involved in putting together such a conference, and individual names are far too numerous to mention here. However, on behalf of the Board of Governors, the Society's appreciation goes to the technical program and arrangements committees, organizers, and corporate sponsors — and a special thank you to our arrangements chairman, Irwin Young of Du Art Film and Video, and to Program Chairman, Jack Spring of Eastman Kodak Co.

Engineering Vice-President Richard Streeter is ready to give his engineering report, to be followed by a special keynote address by Mark Sanders of Ampex Corp.

Thank you very much, and have a most enjoyable conference.

Conference Committee — Program Chairmen

Editorial Vice-President
Howard T. La Zare, *Deluxe Laboratories, Inc.*

Program Chairman
L. John Spring, *Eastman Kodak Co.*

Program Vice-Chairman
Frank Haney, *Capital Cities/ABC, Inc.*

Topic Chairmen
Film & Audio: Grant Ireland, *Allied Film & Video Lab*
Television: Michael T. Fisher, *Capital Cities/ABC, Inc.*

Program Committee
Rick Thomas, *Eastman Kodak Co.* (film)
Bob Weisgerber, *Modern Telecommunications* (film)
Murray Allen, *Universal Recording* (film)
John Belton, *Columbia University* (archival)

Conference Committee — General Arrangements

Conference Vice-President
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Irwin W. Young, *Du Art Film Laboratories, Inc.*

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Philip Godfrey, *Ikegami*

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Hotel Arrangements Chairman
Edward J. Burns, *Eastman Kodak Co.*

Engineering Report

Is Standardization Obsolete?

By Richard G. Streeter, SMPTE Engineering Vice-President

The cornerstone of the SMPTE, since the day it was founded, has been standards. In 1916, the first President of the Society, C. Francis Jenkins, stated that "it is our duty, therefore, as engineers to wisely direct this standardization." Since that time the Society has provided a valuable and needed service to the motion-picture and television industries, providing hundreds of standards and recommended practices. You might be interested in knowing that the 24-frame/sec 35mm sound film standard was approved by the Society in 1929. The Society charges no fees to be a part of the standardization effort, and in fact, one does not even have to be member of the Society to participate. Today there are several hundred engineers involved with this work within the SMPTE; they are all volunteers.

But standards do not come free. First, there are the obvious costs of travel and accommodations involved with attending meetings. In addition, there are the many hours that are required not only during the business day, but evenings and weekends as well. Thus, when an individual becomes actively involved, both he and his company make a substantial financial commitment to this effort.

In the past there has been little question that there was value received for these expenditures. But what about today? It certainly is a time when technology is changing even more rapidly. It is a time when the economic climate is also changing, and when many major corporations are reexamining costs closely.

Today we all too often hear the term "down-sizing," and the impact of this is felt throughout our industry. In fact, one writer has referred to it as the end of an era. They expressed it far better than I could.

Richard Streeter, Engineering Vice-President, speaking before the Opening Session audience.

"Perhaps the pioneering is done, perhaps it's time for the MBAs to take over and 'bottom line' it. Perhaps it's really time to consider 'Will we still go on the air if we forego this?' Perhaps technical excellence should be superseded by adequacy in a marketplace satisfied with the present product. Perhaps television has progressed far enough, and the harvest should begin." This is from an editorial entitled, "The Fun is Gone," which appears in the November issue of *Broadcast Engineering*. I think you'll find it makes interesting reading.

But we must not forget where we've been, where we are now, and how we've gotten here. Technology doesn't stand still. We deal with increasingly complex and expensive equipment and systems. The costs of development are enormous, and the end products must all work together.

Digital technology is playing an increasingly important role in our television plants today, and it certainly will in the future. The digital islands are becoming larger. The individual "black boxes" are now being interconnected with each other. Fortunately, these needs were recognized, and digital and component standards are in place.

Without such standards, the manufacturer would be faced with entering a marketplace with equipment that might be incompatible with other equipment. Of course, the user faces the same dilemma.

In the beginning of my presentation, I raised the question of whether standardization is obsolete. I submit that the answer is NO! I feel it is even more important today than ever before. Both the manufacturer and the users benefit from a competitive marketplace which allows them to choose among a multiplicity of products to meet a given need.

From the manufacturer's standpoint, some suggested that it is doubtful that today any manufacturer can afford to risk the large amounts of capital required in developing a product that may not be accepted in the marketplace because it is incompatible. The costs associated with establishing a *de facto* standard may just be too high. Unfortunately, the trend is clear. The number of broadcast equipment manufacturers is decreasing. Some companies have joined forces either by consolidation or acquisition. Others have entered into cross-licensing agreements, and some simply go out of business.

It's an expensive business, and ultimately it is the user that pays the price. Thus, I would like to suggest that the question is not whether one can afford to be involved, but rather whether one can afford not to be involved.

Within the SMPTE, standards are arrived at through due process, which mandates that those affected be represented in a balanced manner. Thus it is essential that both manufacturers and users be represented. While it may be somewhat tempting to let someone else do it, the price for this may well be higher than the costs involved in being a participant. I submit that it is!

This is the text of the remarks delivered by SMPTE Engineering Vice-President Richard G. Streeter, CBS Broadcast Group, at the opening session of the 128th SMPTE Technical Conference and Equipment Exhibit.

Standardization brings with it responsibilities. It would be foolish not to recognize that commercial interests can play a part. But I feel that history speaks for itself. In the vast majority of cases, standards have been arrived at, and they have stood the test of time.

Some may have taken longer than one would like. But it also must be recognized that many address difficult and complex subjects. Alternatives must be carefully considered and decisions reached. In some cases compromises must be made to reach consensus.

Yes, there have been some failures to reach agreement. But if you examine these cases carefully, I believe that you will find that in most cases a technical solution was not at hand.

It is important to recognize that a standard should not be a deterrent to progress. It is a living document, subject to review and change. Many, such as those associated with the D-1 Digital Video Tape Recording Standards, are extremely complex, and through usage, areas may be uncovered where additions or changes may be required. But the framework is there and a lot more, and it was there when it was needed.

Today more than ever we deal on an international basis. Much of our equipment comes from foreign manufacturers. On the user's side we have found commonality of our needs. Thus, more and more we see international agreements. The cooperation between the SMPTE and the EBU is an excellent example of this.

Editorial Vice-President Howard T. La Zare and Conference Vice-President Maurice L. French.

Charles Steinberg, President of Ampex Corp., and SMPTE Executive Vice-President Carlos Kennedy.

No, I don't believe that standardization is obsolete. But we must look for ways to do our job as effectively as possible. And you must also convince the "bean counters" of the world that the costs of not participating are far greater than the cost of being a part of this important work, and this is not easy.

There was an interesting article in the October 14th edition of *The New York Times*; the title was "Cost Accounting's Blind Spot." It tells about a Boston manufacturing company that was considering buying an industrial robot at a cost of $200,000. It goes on to say that there was no way an MBA could have justified this. It was hard enough to convince the company that it was a reasonable risk, let alone a positive investment. They bought it anyway, and it paid off manyfold. The article concludes that standard accounting procedures have great difficulty dealing with intangibles that should be taken into account.

In closing, my mind turns to a quote from one of those papers you find in your pigeonholes at the IBC. One London facility's manager commented, "It's got to the stage that equipment is so expensive and the choice of systems so great that you can't afford to get your sums wrong."

I would only add that standardization plays a large part in helping. That seems to say it all!

Managing for Change with Paradox and Innovation

By Mark L. Sanders

The theme of this year's SMPTE conference is "Today's Technology—Tomorrow's Reality?" I think that is not really a question but a fact. Today's technology *is* tomorrow's reality, and the real question is how we are to deal with it.

In this year when the video industry is celebrating the 30th birthday of the videotape recorder, it is comforting to look back at the progress we have made. However, what many of us see when we look in the other direction is waves of changes accelerating toward us even faster.

It hasn't always been that way. The generations that occupied most of human history perceived no great differences between past and present. Even now, we base our lives on what we remember rather than on what we perceive.

So, today I would like to talk about the nature of change in our industry and how we can not only live with it, but how we can turn it to our advantage — make it part of a strategy for success. There are three chapters to my talk:

- Change itself — how it stems from innovation, which itself stems from creativity.
- How the management of change is the management of paradoxes.
- The techniques we use at Ampex to incorporate and take advantage of change, and an illustration of where this could take us in the 1990s.

First let's look at what we do know about the history of change. Economists, from their point of view, believe that waves of innovation have occurred more or less regularly over the last 250 years in roughly 50-year cycles. From 1790 to 1840, we learned to harness coal and steam power. The years 1840 to 1890 brought us the railroads and the mechanization of production. Then, from 1890 to 1940, we were able to exploit electric power and advances in chemistry. Now, since about 1940, we are in the age of electronics, and, in fact, are nearing the end of its 50-year period.

This keynote address was presented by Mark L. Sanders, vice-president, marketing and new technology, Ampex Corp., at the opening session of the 128th SMPTE Technical Conference and Equipment Exhibit.

Mark Sanders delivering the keynote address.

Sociologists point out that the waves of innovation in the United States have been tied to waves of immigration. The current rash of new startups in the western United States is disproportionately from people from Southeast Asia.

Marketing people contribute the observation that it usually takes between 5 and 15 years for a new technology to supplant an old one. Closer to home, we can see that every 3 years we have doubled the density of recording on tape.

And yet this kind of data has been relatively useless in predicting change, because trends, as Alvin Toffler in *Future Shock* reminds us, are not linear. Just because something happens now, or has been for centuries, doesn't mean it will continue. Our predictions are out of whack, because progress is not a result of time passing but more and more a matter of the effort that is being expended.

Richard Foster, in his book, *Innovation: The Attacker's Advantage*, describes the pattern of innovation in terms of S-curves. The S-curve is a graph of the relationship between effort and result — more specifically, the effort put into improving a product or process and the results one gets back for that investment.

Initially, as a new product or process is being developed, progress is very slow: the bottom of the S. Then all hell breaks loose. The curve goes up dramatically as the key knowledge necessary to make advances is put in place. Finally, as more dollars are put into development, it becomes more and more difficult and expensive to make technical progress. That is because there are limits at the flat top of the S-curve.

The practical significance of the S-curve is that the cycles in technology are not neat and continuous. With technological change in the wind, one competitor may be nearing its limits, while others are exploring alternative technologies with higher limits. The results can be sudden and dramatic. The gaps in periods of change from one group of products or processes to another are technological discontinuities, and they are coming faster and faster.

If you trace the history of modern-day electronics, you see this pattern occurring over and over again. The vacuum tube achieved commercial success through the pioneering work of RCA, which dominated the market for years. And yet, companies like Texas Instruments developed the transistor, quickly making the vacuum tube obsolete and bringing in a new set of dominant companies. Again, a few years later, others developed the integrated circuit, spawning the computer revolution as we know it today.

Logic would dictate that the leader in one technology would have the greatest chance of developing the next technological breakthrough. Yet, in each case, these pioneering companies, with all their resources and engineering talent, failed to recognize the start of a new S-curve, a new technology, and to provide new and better solutions to old problems. Instead, they worked to make better and better vacuum tubes and then better and better transistors, efficiently defending their current technology and leaving the next wave of innovations to someone else. The pattern is clear: the innovation that creates a new technology is often lost as organizations rise

to the top, making them vulnerable to the next innovator.

Another factor that has to be taken into account is that while technology is discontinuous, people are not. They continue to seek continuity. So keep in mind the continuous way that people change and the discontinuous nature of technological change.

For the last two generations the rate of change has accelerated wildly. We have seen more scientific and technological achievement in the last two lifetimes than in the 800 lifetimes that came before. A person who saw the Wright Brothers fly at Kitty Hawk in 1903 could have witnessed *Apollo 11* land on the moon in 1969 and the *Challenger* shuttle explosion in 1986.

The speed of change is unsatisfying and disconcerting, and too often makes us feel out of control. Certainly, in the last ten years in our industry we have felt the acceleration full force. So if that's reality, what are we going to do about it?

Since we're faced with change, we have some choices about how to react. We can try to ignore it. Of course, it's going to happen whether you are looking or not. Ignoring change puts you in the position of reacting to it after it has happened. The best that you can hope for is to survive in some niche, clinging to the old way. The worst case is that it will knock you over and you will not know what hit you.

Your second choice is to resist. This is a popular choice. Even the most innovative minds have had to come to grips with their resistance to change. Thomas Edison, the genius who brought us the light bulb, the phonograph, and the microphone, vigorously fought the idea of alternating current. He even went out in public telling people it was dangerous. Marconi, the inventor of the telegraph, fought against wireless telephones. And Harry Warner, at Warner Brothers, asked, "Who the hell wants to hear actors talk?" If you choose to resist, you're in good company. But if you choose that path, you're condemned to be a follower, always playing catch-up.

The third choice is to manage change. It can be done: not by ignoring or fighting it, but in the same way that a surfer handles a wave or a driver controls a car in a skid. In other words, go in the direction of the force and use it to direct your activities and plans. It's scary, and it involves risk.

Richard Thomas, L. John Spring, and Grant Ireland, members of the Program Committee.

But the only thing more risky is *not* taking the risk.

All this is easy to appreciate in the abstract, but how do we practically incorporate change in our industry, our organizations, and our personal lives? In this business, much of the change comes from technical innovation. Someone innovates and comes up with a new product, a new technique, or a new method. Someone innovates, and we get, for example, time code on film, slow motion, or the camcorder.

One of the reasons we are all here today is that we support technical innovation and that each of us, as right-thinking people, would act on a good idea if we saw it. Taking advantage of technical innovation is the basis of competition in our industry.

Innovation is one resource to which we all have access, whether we're a small company or organization, or a large one. It is not, however, something that happens automatically. John Jewkes, in *The Sources of Invention*, reports that the major inventions from 20th-century Europe and America have been invented by individuals in an "outgroup" of a large company, by individuals in very small companies, or by an individual belonging to no company at all.

This is a particular challenge for an established, large company like Ampex. All the systems — financial management, organizational control, MIS — that are set up to administer a large organization are at odds with innovation. Bureaucracy invests in the strategy of "Keep it stable, profitable — and no surprises." This brings to mind a popular saying, "If a nail sticks up, pound it down."

This makes the job of nurturing innovation somewhat paradoxical. F. Scott Fitzgerald said, "The test of a first-rate intelligence is the ability to hold in the mind at the same time two opposing ideas and still retain the ability to function." Organizational stability and innovation are strangers. It is a management paradox; yet that is what it takes to set up an environment where innovation can have a chance to happen.

A second paradox is that innovation most likely will come from an individual, but teamwork is required to develop today's complex solutions to problems. If you want a track team to win the high jump, you find one person who can jump seven feet, not seven people who can jump one foot. While this is not exactly the way it works in the lab, we find that there are those special people who are brilliant — dreaming fantastic dreams, seeing things the rest of us miss. Our winning high jumpers are frequently unorthodox, undisciplined mavericks who have the least use for management. All in all, the trick is to accommodate and nurture these mavericks in an organization nominally set up to

treat everyone the same. If you can maintain that balance, you can have innovation and organization too.

While innovative ideas are most likely to come from individuals, they seem to come faster if an individual is thrown up against a group of different personalities. We try to pair up diverse people: matching that guy with his head in the clouds with one who has his feet on the ground.

The team that got us an Emmy this year for developing the Zeus was a wonderful hodgepodge of nationalities: a New Zealander, a Pole, two Englishmen, two Australians, a Chinese, and (I think) an American. They had their disagreements. In fact, sparks flew on occasion. But those sparks were the sparks of invention, and they kindled the development of that product. The mix of diverse people was a potent part of what made the project a success.

Managing for innovation means tolerating dissent. Yes-men do not make brilliant new discoveries. Conflict is a part of the innovative process. You can't avoid it if you want the innovation. As they say, the difference between iron and steel is fire. And the steel is worth it.

Another paradox is the question of freedom versus pressure. Can you effectively offer freedom and encouragement while setting limits and applying pressure? You not only can, but you must.

Some time ago in a California research center, there were two tanks of amoebas. In one tank, the temperature, humidity, level of water, and other conditions were constantly adjusted to provide the environment most conducive to proliferation of the amoeba. In another tank, the organisms were alternatively subjected to extremes in heat and cold, fluid level, protein, etc.

To the researchers' amazement, the amoebas in the tank designed to induce rapid growth died faster than those subjected to extremes. They theorize that having things too perfect, too set, and too comfortable actually promotes decay and death, while being forced to adapt — to change — promotes growth. This applies to higher forms of life, too. The freedom to explore an idea must exist, but there must be pressure as well. Necessity is the mother of invention. Goals and schedules, milestones, and deadlines are required.

A fourth management paradox is finding a way to encourage success while creating an atmosphere where it is safe to fail. To have innovation we must take risks, and yet risk-taking is the hardest single concept for any organization to embrace. That is because taking risks promotes failure, and we have been conditioned to reward only success.

Frederick M. Remley, Roland J. Zavada, and Masahiko Morizono.

While I hesitate to say that Ampex *plans* for failure, we do know that occasional failure is inevitable if you are trying to innovate. A failure can be a great motivator for both those involved and those observing, but it's a rare manager who can appreciate a failure as part of the process for success.

To a certain extent we encourage failures. Ampex's past-president was fond of saying to new managers, "If you don't make a mistake in your first six months, you're not doing your job." The truth is that some of Ampex's most notable failures have fueled other successes. The original AVA, Ampex's art paint system, was a technological success but a commercial failure. But it helped stimulate the market for graphics systems and spawned one of our most successful products, the Ampex ADO™ digital effects system.

Individuals or teams, freedom or pressure, reward failures to encourage success — such are the paradoxes of managing for innovation. I stress the word *managing*. This is not a job for administrators. Administrators follow rules and policies that have been set down in a book. Any manager who manages for change knows that the book hasn't been written yet.

This is a naturally unstable, unpredictable, exciting, fun, scary process. Be prepared to let yourself fail. You don't do this from a safe seat.

Walt Disney is one of my favorite examples of a great risk-taker. When he came up with the idea of doing a feature-length cartoon, he was challenged: "Who's going to buy it?" Then it was "Disneyland? A ridiculous idea." Yet time and again he bet his company in order to innovate.

The biggest challenge is on each of us as decision-makers, whether we manage only a few people or an entire organization. We are the reason that great ideas do not see the light of day. The more layers of management, the less likely new ideas will survive to the top. When that employee or colleague approaches us and says he can walk on water, we must be prepared to say, "Well, maybe he can."

There are always a thousand solid reasons why something won't work. These are easy to find. It is vastly more difficult to be ready and receptive to new ideas.

There is a section of your brain in the cerebral cortex known as the reticular activating system, or the RAS. It filters out 99% of your sensory inputs and prevents you from being distract-

ed by ever-present data that does not need to be processed at that moment. It is the filter that allows you to read your newspaper in a crowded airport and what saves your sanity in a houseful of noisy children.

However, this helpful filtering process can also be your enemy because it also closes out new ideas and resists incongruent data. It is the part of your brain that tells you, "Nope, it probably won't work." Only threats to your person and things of pay value break through your RAS. So the trick is to make innovation become a matter of pay value.

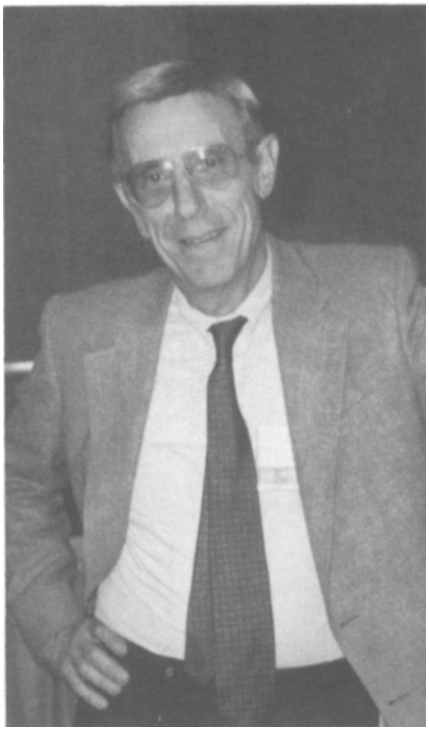
Closing your eyes, turning the problem upside down, asking yourself, "But what if I did the opposite?" are all ways of opening up your RAS. If you don't exercise this part of your brain, it will close off your creativity and restrict your positive response to new ideas. In your company, department, or group, you are a boundary. Your response to a new idea ripples back to reinforce creativity or kill it.

A creative idea is a fragile thing; it only has to get knocked down once or twice to be killed.

Let me tell you how these attitudes about change and innovation have affected some of the ways we look at things at Ampex. We have always prided ourselves on being an innovative company. But for years we defined our business as magnetic recording. For 30 years we kept making better and better videotape recorders. Now we are all proud of the work that Ampex has done in VTRs, but it's like the guy whose only tool is a hammer: he tends to see every problem as a nail.

We tended to see all solutions as VTRs. But gradually our point of view changed. We started making other products for use in television production. One of these was the ESS, a digital electronic still store. We thought it would be used strictly for storing video stills. But we discovered that production people were using it in a way we had never considered: as a device to make multigeneration recordings without the signal degradation that they got on VTRs.

We found studios making commercials in a completely new way. We never guessed that people would use 30 to 40 generations of video recordings for a single 30-second spot. Huge studios of even greater complexity and greater expense were necessary to get around the fact that every time a dub was made, the picture quality would go to pot.



Registration Chairman Irving Rosenberg.

That was when we concluded that digital video recorders were going to be necessary, not just to make better pictures, but to provide producers with easier, cleaner ways of doing effects. Digital gave us the ability to deal with pictures the way we deal with data in our computers. Technically, it was very exciting stuff — a true technological discontinuity.

On the other hand, this time we remembered that markets don't move in this same discontinuous manner. People seek continuity. Asking customers to throw out all of their existing equipment and start over with component digital technology was sure to be disruptive. This is the basis of Ampex's composite VTR strategy. The idea is to provide an intermediate step between analog equipment, most of which is still composite, and the new component digital standard which is the ultimate good.

I don't want to mislead you into thinking that digital VTRs are the final solution and that when we have all converted everything will be stable. Nothing could be further from the truth.

Let me share with you a look into the future at what one of those possible changes might be. I am going to give you a peek at something that we have been working on for a while in the lab. When it becomes a product I cannot say, nor do I know in what form, but it is an important example because it shows what can happen when someone looks at something old and sees something new.

First, some background. As part of being aware of where we are on various S-curves, we analyzed whether magnetic recording was nearing the limits of its capabilities. We found that, in basic recording, we have increased volumetric packing tenfold every ten years. But with existing technology, we are only halfway to the theoretical or ultimate limit that could be achieved; we have not hit the top of the S-curve. If we could proceed at our current rate, we could expect to hit a point in 1991 where 40 days of video could be recorded on the equivalent of a 1-hr roll of quad tape — but mechanical problems are holding us back. Basically, we record video the same way today as we did 30 years ago.

Let's review the process quickly. We send a signal through a coil of wire wound on a metal core with a gap in it — this creates a magnetic head. Magnetism — flux — squirts out of the gap and leaves patterns on magnetic tape. This has been essentially the same process since the beginning of audio recording.

The faster the tape moves, the more information can be recorded. So as we increased the speed, we increased fidelity. Audio recording became pretty fast, not quite one mile per hour, but it wasn't anywhere near fast enough for video.

The development of the quad VTR was a technological jump that solved the problem. By moving the head transverse to the tape and by putting four video heads in a rotating scanner, we got the head-to-tape writing speed that was required, about 85 miles per hour, or 100 times faster than audio. This system worked well, but there were drawbacks, not the least of which was the expense of the head assemblies and the fact that they wore out rapidly.

The next technological jump was helical scan recording. By wrapping the tape at an angle around the scanner, we could reduce the number of heads and still get the writing speed we needed. The development of the digital time-base corrector helped reduce the problems of helical recording.

Over the years, we got extra capabilities by increasing the number of

heads from two to four to as many as ten heads today in digital recording. Early on, head life was improved by changing from metal to hard ferrite heads. Engineers also found that higher output tape, such as new metal particle tapes, led to much higher performance; however, this improvement also came with a new problem. As higher performance tapes require higher flux levels, the ferrite head material becomes saturated and ultimately loses its magnetic properties and ceases to function.

So what do we do? Go back to older tapes or go back to metal heads? Do we use some combination of metal and ferrite heads?

While studying this problem, one of our engineers saw in it a clue to a more basic problem — the complexity of mechanical recording. He theorized that if he deliberately saturated part of the head he could control how much of the head was still active. So he took a coil, a dc signal, and forced the upper half of the head gap to saturate and become nonmagnetic. Then he put another coil down at the bottom of the gap and forced that part to saturate. A narrow area was still effective as a head, recording or playing back a narrow track.

He went even further. Instead of putting a dc voltage on it, he put on a voltage ramp. Now he could actually make the gap go up and down electronically, just as we do mechanically for slow-motion recording. Moreover, with some clever geometry changes, he could also make it move sideways.

Ultimately, as you may have concluded, this leads us to a solid-state scan. Video recordings can then be done with a fixed head at normal tape speeds, as in an audio recorder. Since most of a VTR's complexity is in the scanner and scanning mechanism with its motors, rotary transformers, slip rings, and guides, this presents us with the start of a brand new S-curve. In the future, we can contemplate a fundamentally new way of recording which is simpler, yet pushes forward the limits of magnetic recording.

This is one of the projects that we are working on at Ampex, and I'm sure that other companies have developments that are equally exciting. My point is that these are the kinds of leaps in technology you can expect to see in the next decade.

Alan J. Zauzmer, Earl Arbuckle, III, and Roger Salles at the Conference.

In summary, change is unruly, disconcerting, and uncomfortable. But today's technology *is* tomorrow's reality. Just when you start to get comfortable, it moves again, always faster. Don't ignore it, don't resist it. Instead, find ways to take advantage of it.

Look at the nature of change in your part of the industry. Are you nearing a limit, or have you only been looking at part of the curve?

Look at how you are defining your business. Is it in terms of the past or the future? Is innovation a part of your strategy? Are you nurturing creativity or stifling it?

How are you managing the paradoxes that characterize innovation? Are you taking risks?

When you work this way, I think you will find that change is easier to take. You will have a more exciting environment, you will attract bright people, and your customers will get excited about what you are doing. You will be seen as a change agent.

Last of all, when you feel overwhelmed by the pressure of change, remember, in spite of your best instincts to put on the brakes, resist it. Open up your RAS. Take the force of change and move with it to shape your own future. It may even take you to places you haven't imagined before.

Thank you for your time.

Engineering Vice-President Richard Streeter and Kerns H. Powers.

Board of Governors Meeting

The SMPTE Board of Governors met on Friday, October 25, at the New York Hilton Hotel. As the governing body of the SMPTE, the Board decides policy which determines all Society activities within the framework of the SMPTE Constitution and Bylaws. The Board of Governors holds three regularly scheduled meetings each year, one of which takes place at the annual technical conference.

Members of the Board of Governors who are leaving the Board after five or more years of service were presented with mementos by SMPTE President Harold Eady. Above, Eady poses with recipients: Leonard Coleman, John F. X. Browne, and Bengt Orhall. Others receiving recognition were Si Becker, Roderick Ryan, and Irving Rosenberg. (Photo by John Pytlak)

Outgoing President Harold Eady turning over the gavel to President-elect M. Carlos Kennedy. (Photo by John Pytlak)

Press Briefing

The SMPTE held its Press Briefing on Friday, October 24, in the President's Suite at the New York Hilton Hotel. These briefings have become important parts of SMPTE conferences, since they give the Society's officers an opportunity to provide information to the press about the conference, SMPTE engineering activities, and the Society in general.

SMPTE Public Relations Coordinator John Varrasi introduced SMPTE President Harold J. Eady to the press. President Eady made several comments, after which questions were invited. Officers who participated in the press briefing, in addition to Harold Eady, were SMPTE Editorial Vice-President Howard T. La Zare,

SMPTE Conference Vice-President Maurice L. French at the Press Briefing.

Executive Vice-President M. Carlos Kennedy at the Press Briefing.

Engineering Vice-President Richard Streeter speaking at the Press Briefing.

President Harold Eady addressing the press.

Editorial Vice-President Howard T. La Zare before the press.

Conference Vice-President Maurice L. French, and Engineering Vice-President Richard G. Streeter. A lively question-and-answer period was held, to the benefit to both the press and the SMPTE officers present. More than 25 members of the press attended the press briefing, which was determined to be one of the most successful in recent years.

A view of the Luncheon.

The Honors and Awards Luncheon

The annual Honors and Awards Luncheon was one of the major focal points of the conference. Held on Saturday, October 25, at the Convention Center, it was attended by a full house of approximately 800 people.

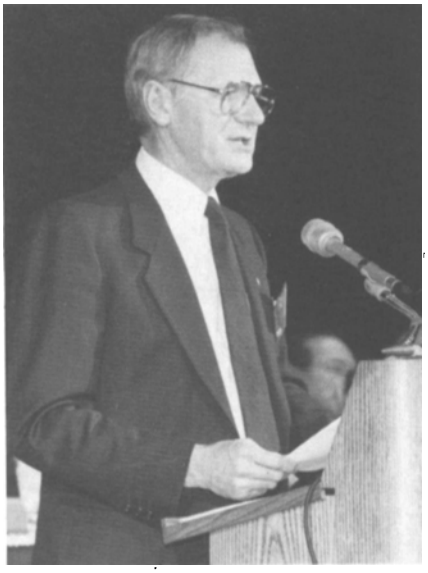
The Honors and Awards Luncheon has become one of the most important events of the year in the motion-picture and television industries, since it is there that SMPTE awards are presented recognizing outstanding achievements in the fields of motion pictures and television and for service to the Society. It is traditional that a prestigious speaker addresses conference attendees, and this year was no exception. The Society had the good fortune to have the eminent television engineer, Dr. George H. Brown, formerly of RCA (now retired), provide members and guests attending the luncheon with a highly interesting speech.

President-elect M. Carlos Kennedy after receiving, from outgoing President Eady, the gavel signifying the office of president.

SMPTE Secretary Stephen D. Kerman, Tektronics, Inc., opened the luncheon and introduced President Harold J. Eady, Novo Communications, Inc., Eady made a number of comments, welcomed attendees to the luncheon, and then introduced the guest speaker. Following Dr. Brown's speech, the various SMPTE awards were presented. SMPTE Executive Vice-President M. Carlos Kennedy, Ampex Corp., introduced the winners of the Society's awards for 1986, which were presented by SMPTE President Eady. A description of the awards and recipients follows. The awards presentations were followed by the SMPTE Annual Meeting.

Honors and Awards Luncheon Address

Harold J. Eady



Harold Eady addressing guests at the Honors and Awards Luncheon.

Ladies and gentlemen, good afternoon, welcome to New York City and the Honors and Awards Luncheon of the 128th SMPTE Conference. Our appreciation goes to the Agfa-Gevaert Co. and Dolby Labs for sponsoring the luncheon reception.

Today, the Society honors 14 individuals with its prestigious service and achievement awards. These award recipients are men of outstanding rank and technical accomplishment, whose engineering activities, inventions, and ideas have contributed enormously to the progress of the motion-picture and television industries.

Before the introductions, the featured luncheon speaker, and the presentations of the 14 achievement awards, allow me just a moment or two to talk to you about the significance of 1986. This year is memorable in many ways. First, it is our Society's 70th anniversary, it is the 50th anniversary of the first television service by the BBC in England, and the 50th anniversary of the first television coverage of the Olympic Games held in Germany. This is also the year of the adoption of the D-1 component digital recorder standard by the SMPTE, EBU, and the CCIR. Also, 1986 is the year your Society relocated into a new and expanded headquarters building. Yes, 1986 is truly a memorable year, and it represents one more very important anniversary.

American technology is evident everywhere in the world. However, I would hazard a guess that no other U.S. invention has had more impact worldwide than the videotape recorder. Yes, 1986 is the 30th anniversary of the invention of the first successful videotape recorder by a group of American engineers from Ampex Corp. led by Mr. Charles Ginsburg. In recognition of this anniversary, I would like to read you a short letter:

"It gives me great pleasure to extend warm greetings to the members of the Society of Motion Picture and Television Engineers on the occasion of your national conference.

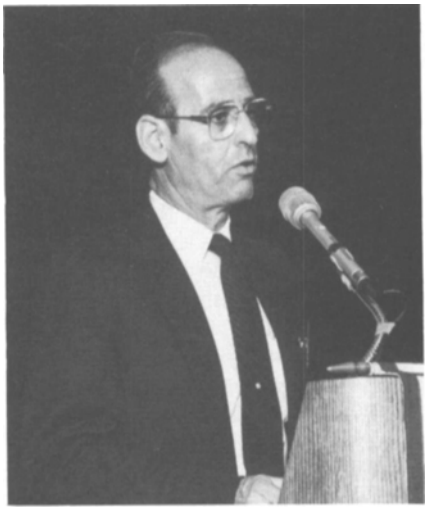
"Thirty years ago in Redwood City, California, a six-man team of Ampex engineers developed the world's first practical videotape recorder. Their brilliant technological breakthrough is yet another example of how American inventiveness and the 'can do' spirit has helped revolutionize the communications industry. Today, half the homes in America have at least one videocassette recorder and television broadcasters and producers throughout the world depend on this modern miracle of technology.

"Your organization is to be commended for its dedication to the advancement of communications technologies and the creation of worldwide standards of technical excellence. It is our fervent hope that you will do all that you can to encourage the continued development and wholesome use of this marvelous invention.

"Nancy joins me in saluting our six technological pioneers and in wishing you a successful and memorable conference.

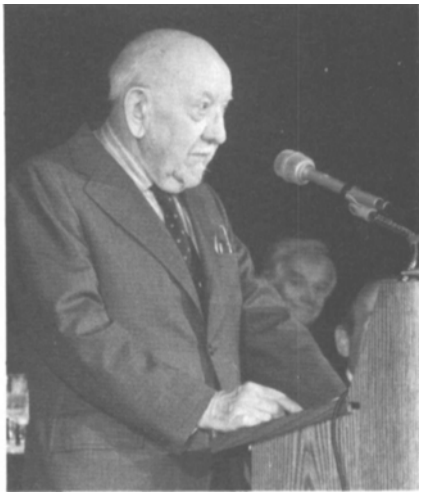
"God bless you.

—Ronald Reagan"



Ampex Corp. President Charles Steinberg speaking at the Luncheon after receiving a framed letter from President Reagan congratulating Ampex on the 30th anniversary of the invention of the videotape recorder.

SMPTE Secretary Steve Kerman opening the Luncheon.



Guest Speaker Dr. George H. Brown at the Luncheon.

Former SMPTE, Manager of Engineering, Alex Alden accepted a plaque of appreciation from Harold Eady upon his retirement from the Society staff after more than 25 years of service.

To commemorate this occasion, I would like to present to Mr. Charles Steinberg, the president of Ampex, this letter from President Reagan. Would Mr. Steinberg please come forward.

Mr. Steinberg expressed appreciation to President Reagan and the SMPTE for conveying this recognition of the 30th Anniversary of the VCR.

Now it is my pleasure to introduce the distinguished guests on our dais. I will ask each to stand. Please hold your applause till all have been introduced.

Our guest speaker this afternoon is a former engineering executive at RCA Corp. Our speaker joined RCA in 1933 and eventually became executive vice-president. In that position he was responsible for the company's research, engineering, patenting, and licensing operations. He also served on the Board of Directors of RCA for many years. He is the author of over 100 technical papers plus an autobiography, *And Part of Which I Was*. He spearheaded that company's effort to develop the technology for color television. He is a recipient of many prestigious awards, and a holder of numerous patents. He is truly a big name in the television industry. It is my pleasure to introduce Dr. George H. Brown.

My two-year term as the 34th President of the SMPTE is now winding down. It has been a period of my life I shall never forget. It has provided me the opportunity to make many new acquaintances from many parts of the world.

There is an old saying I sincerely believe in: "You are only as good as the people around you." I have indeed been most fortunate during my two years as President with the crew I had on the Executive Committee and the Board. To the Board of Governors, and particularly to Carlos, Richard, Maurice, Blaine, Howard, Irwin, and Si, my thanks and appreciation.

And, in case you thought I forgot, my special thanks to Len Coleman, who, as Past-President, has provided me so much assistance, counsel, and advice. I only hope that I can serve my successor to the extent that Len served me.

I would also like to express my appreciation to the Headquarters staff headed by Executive Director Lynette Robinson, to Alex Alden, and now Si Becker, Manager of Engineering, for their support. And to my staff at Novo Communications (where I sometimes work): Len, David, Jeff, Bernie, and Laurie. Also, my appreciation to Novo Corp. and its Chairman, Mr. Bronston, for their continued support.

And, lastly, to my wife, Dorothy, for her understanding, patience, generosity, and most of all, for the many personal sacrifices that she made to assist me in my career. Thank you, ladies and gentlemen of the SMPTE.

I would like now to present the presidential gavel to your new President. This man has given of his time and energies to the Society in a most exemplary fashion and has been a tremendous help to me in fulfilling my duties. No question the Society will be in good hands. Ladies and gentlemen — President-elect Carlos Kennedy.

Among the award winners present at the conference were (top row) John L. E. Baldwin, Herbert E. Farmer, W. Tuckerman Blays, and John L. Baptista; (bottom row) Richard J. Stumpf, Vernon L. Kipping, Guy Gougeon, Leonard A. Green, and Roland J. Zavada.

The Honors and Awards Presentations of 1986

The Society presents a number of awards in recognition of outstanding achievement and confers certain grades of achievement annually.

Certain practices and rules are common to all the awards. Award committees consist of five Honorary, Fellow, or Active Members of the Society appointed annually by the President and confirmed by the Board of Governors. The Journal Award Committee is appointed by the Editorial Vice-President. Membership in the Society is not a prerequisite for an award.

Any member of the Society is entitled to make a nomination for an award. Such nominations should be made in writing to the chairman of the appropriate committee, giving the reason why the writer believes the award justified. The committees forward their reports to the Secretary of the Society in time for presentation to the Board of Governors at their mid-year meeting. Normally, awards are presented by the President at the national conference of the Society following approval of the award by the Board of Governors.

The highest award and greatest distinction that can be conferred by the Society is Honorary Membership, which includes eventual inscription on the Honor Roll of the Society. The Progress Medal is the premier medal award of the Society. The Agfa-Gevaert Gold medal, the Eastman Kodak Gold Medal, the John Grierson International Gold Medal, the Journal Award, the Herbert T. Kalmus Gold Medal, the Presidential Proclamation, the Citation for Outstanding Service to the Society, the Alexander M. Poniatoff Gold Medal Award, the David Sarnoff Gold Medal Award, and the Samual L. Warner Memorial Award recognize achievement in the special fields of accomplishment described under each award on the following pages.

Masahiko Morizono receiving the Progress Medal from SMPTE President Harold Eady.

The Citation for Outstanding Service to the Society

1986 Award Winner — Vernon L. Kipping

The purpose of this citation is to recognize individuals for dedicated service to the Society over a sustained period of time.

The 1986 Citation for Outstanding Service to the Society is presented to **Vernon L. Kipping** for giving untiringly of his time and efforts in the SMPTE San Francisco Section.

Vernon L. Kipping has retired following more than 30 years of technical service with the Federal Bureau of Investigation. Now acting as a consultant, Kipping is the holder of 19 U.S. and foreign patents in motion-picture technology and marine science.

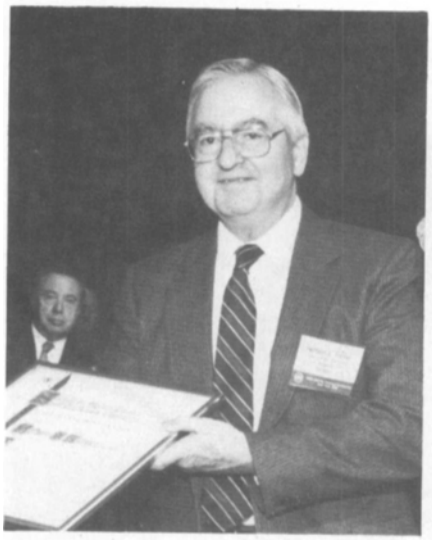
Kipping is a graduate of Multnomah College and the University of San Francisco Law School. During his tenure with the FBI, Kipping produced several training films and supervised motion-picture and still photography in connection with the Bureau's investigations. In the bank-robbery trial of Patricia Hearst, Kipping devised a technique for converting the bank's still pictures into motion pictures. During that widely publicized trial, Kipping gave testimony as "a photographic expert."

Vernon L. Kipping has been issued patents for many inventions, among them a wide field motion-picture system, curved film gate (for projectors), in-camera preflash, and a shutter and intermittent film advance mechanism. Other patents are pending, both in the U.S. and abroad.

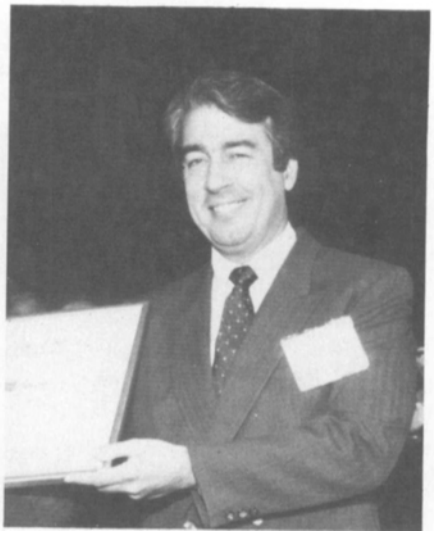
Kipping's record of service to the SMPTE has been extensive. He served as A/V chairman at five consecutive Society television conferences held in San Francisco, providing innovative solutions to the unique requirements of both film and video projection. He has served as manager of the SMPTE San Francisco Section, and has been the section's Membership Chairman for the last three years — a period marked by exceptional membership growth. He has served as program coordinator and photographer at many of these section meetings as well.

A special prize was awarded to Kipping in the 1967 San Francisco Film Festival. In 1976, he received the U.S. Government's Incentive Award. Kipping is affiliated with the California Academy of Science, Mechanic's Institute, and the Speech Arts Association of California.

Vernon L. Kipping, winner of The Citation for Outstanding Service to the Society.



Herbert E. Farmer, winner of The Presidential Proclamation.



Guy Gougeon, winner of The Presidential Proclamation.

Daniel E. Slusser, winner of The Presidential Proclamation.

The Presidential Proclamation

1986 Award Winners —
Herbert E. Farmer
Guy Gougeon
Daniel E. Slusser

The Presidential Proclamation recognizes individuals of established and outstanding status and reputation in the motion-picture and television industries worldwide.

The Presidential Proclamation for 1986 is awarded to **Herbert E. Farmer,** in recognition of the many years he has contributed towards the advancement of educational opportunities for engineering students; to **Guy Gougeon,** in recognition of his outstanding engineering leadership, and for his continued support of SMPTE activities in general and to the Canadian Sections in particular; and to **Daniel E. Slusser,** in recognition of his significant role in supporting the first spring tutorial of the Hollywood Section in 1984 and his continuing support of Society activities.

Herbert E. Farmer is a professor of cinema at the University of Southern California, and serves as associate director of business affairs in the university's School of Cinema-Television. From the time he was appointed lecturer in cinema at USC in 1942, Farmer has been a leader in assembling the necessary instructional technology so that engineering students may combine motion-picture production experience with theory, and hence obtain the most from their technical training. In recognition of his many outstanding contributions to the process by which engineering students are educated and trained, Farmer was awarded the SMPTE Eastman Kodak Gold Medal in 1976.

Farmer has been affiliated with the SMPTE since 1943, becoming a Fellow in 1957. He served as SMPTE Secretary for the 1961-62 term, and as Editorial Vice-President from 1963-1966. Farmer has served as a regional governor during three separate terms, and has also held the office of Vice-President, Educational Affairs. He has contributed numerous articles to the *SMPTE Journal*, including many education updates for the annual Progress Report issue. Often referred to as one of the pioneers of the SMPTE, Farmer helped to organize the structure of the Society as it exists today.

Herbert E. Farmer has been involved with several other organizations. He is currently trustee and secretary of the University Film Foundation, and director of the Council on International Non-Theatrical Events (CINE). During 1952-54, Farmer served as president of the University Film Association. He is a Fellow of the Audio Engineering Society (AES) and received the AES Award in 1957.

Guy Gougeon is vice-president of engineering for the Canadian Broadcasting Corp., Montreal, Quebec. He is responsible for the planning and design of the broadcasting company's production and distribution facilities. A graduate of McGill University, Gougeon is a member of the Institute of Electrical and Electronics Engineers (IEEE) and director of Telesat Canada. Gougeon serves on the SMPTE Presidential Advisory Council.

Daniel E. Slusser is vice-president and general manager of Universal City Studios, Inc., Universal City, Calif. He has held important executive positions in the motion-picture business since 1967.

Daniel Slusser began his college education in 1961 at Union Junior College, N. J. He graduated a year later with an associate degree in business administration, then transferred to nearby Rutgers University. Slusser received a degree in industrial management from Rutgers in 1966.

In 1967, Slusser joined Deluxe Laboratories, Hollywood, Calif., as director of industrial relations. He moved to Deluxe's parent company, 20th Century Fox, in 1970, assuming the position of director of industrial relations and employment. Slusser joined Universal in 1974.

Slusser serves as executive vice-president of the Los Angeles Film Development Council, and as chairman of the Los Angeles County Filming Advisory Commission. He is a member of the State of California Motion Picture Council.

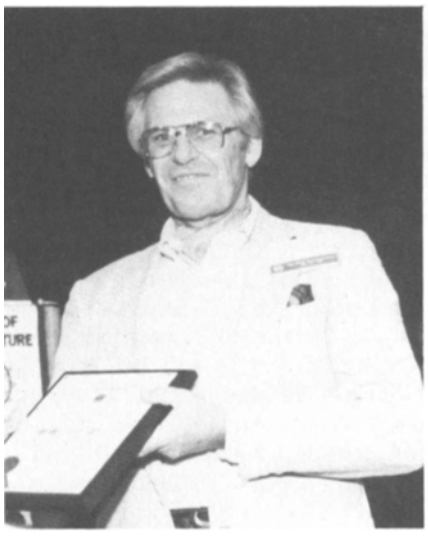
The Journal Award

1986 Award Winners —
(Motion Pictures)

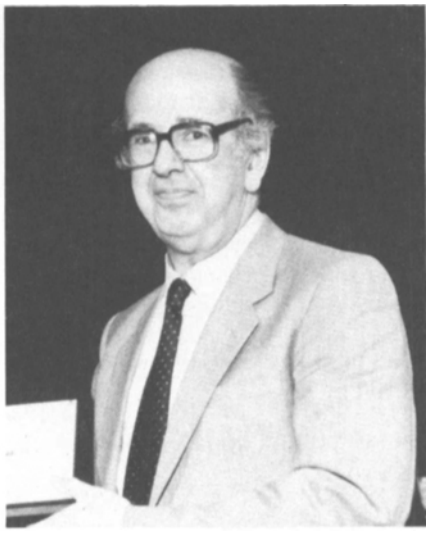
W. Tuckerman Biays

(Television) John L. E. Baldwin

It is the purpose of this award to recognize the two outstanding papers



W. Tuckerman Biays, winner of The Journal Award for motion-picture papers.



John L. E. Baldwin, winner of The Journal Award for television papers.

originally published in the Journal *of the Society during the previous calendar year; one in the field of motion pictures and the other in the field of television.*

Motion Pictures

The Journal Award for a motion-picture article is presented to **W. Tuckerman Biays** for his article, "Aquacolor® Underwater Cinematography: Breaking the Available Light and Color Barriers Underwater," published in the March 1985 *SMPTE Journal.*

W. Tuckerman Biays is owner of Aquacolor® Pictures, based in Key Largo, Fla. Since 1966, Biays has researched, designed, developed, and implemented equipment for improved underwater color photography.

W. Tuckerman Biays attended the U.S. Naval Academy from 1951-1953. Following a tour in the Korean War, during which Biays performed duties as a combat construction engineer, he enrolled in courses at the University of Washington. He concentrated his studies on mathematics, physics, and engineering.

Biays' technical activity in the field of underwater photography began in 1966, when he designed and constructed a steel vessel for the purpose of shooting film in the water. Much engineering activity was to follow. Biays developed a workable wireless communications system for underwater filmmaking, a double lens reflex viewfinder for an underwater motion-picture camera, and an action viewfinder for the camera. He has conducted research with battery-operated, one million candle power, xenon-arc underwater movie lights, and with dive masks. Currently, Biays and Aquacolor Pictures are involved in research and development to obtain scientifically color-correct films underwater with the use of subtractive filtration.

Biays has been the recipient of the Cine Golden Eagle Award, Silver Screen Award, and Gold Cindy Award. Earlier this year, at Southcon '86, he won the award for the Best Film of Show. Biays, who sets time aside for lecturing and writing, is co-founder of the Coral Reef Community Foundation, Inc.

Television

The Journal Award for a television article is presented to **John L. E. Baldwin** for his article, "Enhanced Television–A Progressive Experience," published in the September 1985 *SMPTE Journal.*

John L. E. Baldwin is staff engineer, development, for the Independent Broadcasting Authority in England. He serves as a consultant on advanced television, including digital component standards, recorders, and systems. Baldwin is the holder of some 70 patents for his inventions in the television field, and his technical achievements have been recognized internationally.

Baldwin received a B.Sc. degree in physics from London University. He joined Rank-Cintel in 1950, and spent a total of 14 years in a research and development capacity with that company. He went to Philips in 1964, and joined the Independent Broadcasting Authority in 1967.

John L. E. Baldwin has participated in the engineering work of several Society groups, including the Task Force on Digital Standards and the Digital Television Tape Recording (DTTR) Working Group. Additionally, he has served on the Video Coding Standards and MAGNUM Digital Television Recording groups of the European Broadcasting Union (EBU), and on the International Radio Consultative Committee's (CCIR) Joint Interim Working Party on Digital Recording.

Baldwin has been the recipient of the Geoffrey Parr and PYE Colour Television Awards of the Royal Television Society (1972), the David Sarnoff Gold Medal Award of the SMPTE (1975), and the Achievement Gold Medal at Montreux in 1977. He was presented the SMPTE Journal Award (in the field of television) in 1984 for his paper "Analog Components, Multiplexed Components, and Digital Components — Friends or Foes," which was published in the December 1983 issue.

Baldwin is a Fellow of the Royal Television Society and a member of the Institute of Physics.

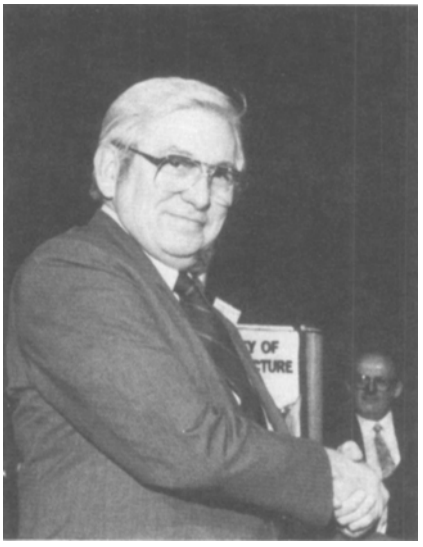
The Agfa-Gevaert Gold Medal Award

1986 Award Winner — Roland J. Zavada

It is the purpose of this award to honor the recipient by recognizing the individual's outstanding leadership, inventiveness, and/or other achievements in the research, development, or engineering of new techniques and/or equipment which result in a significant improvement to the interface between motion-picture film and television imaging systems, whereby the combined advantages both contribute to the further development of visual communications systems.

The 1986 SMPTE Agfa-Gevaert Gold Medal Award is presented to **Roland J. Zavada** for his outstanding contributions to the advancement of motion-picture and television technology. He has advanced greatly the interface between motion-picture and television imaging systems.

Roland J. Zavada received a degree in chemistry from Purdue University, an Associate degree in photo science



Roland J. Zavada, winner of The Agfa-Gevaert Gold Medal Award.

from the Rochester Institute of Technology, and an M.B.A. from the University of Rochester. He has been with the Eastman Kodak Co. for 35 years, and is currently a technical associate with the Photographic Technology Division. Zavada has been involved in both television and film-related activities, and has played an active role in the development of the Instamatic, Super 8, and instant photography systems.

Zavada's first committee work was in 1962 as a member of the SMPTE Film Dimensions Committee. In 1966, he assumed responsibility for the national and international standardization of the Super 8 system, becoming chairman of the SMPTE 16 and 18mm Technology Committee and chairman of the Super 8 Technology Committee of ISO TC-36. In 1968, he became a member of the American National Standards Institute (ANSI) Photographic Standards Management Board, and in 1969, he became chairman of ANSI's Committee PH-22-Cinematography. In 1971, Zavada assumed the leadership of the U.S. delegation to ISO TC-36-Cinematography, a post he still holds. He recently became chairman of the Joint ISO/IEC Steering Committee on Imagery. In 1977, Zavada became a member of the U.S. delegation to the International Radio Consultative Committee (CCIR) of the International Telecommunications Union, and he continues to participate in its national study groups.

Zavada was elected SMPTE Engineering Vice-President in 1975, and held that position for eight years. He became vice-chairman of the Image Technology Standards Board of ANSI in 1982, and is currently serving as chairman. Zavada is a Fellow of the SMPTE; the British Kinematograph, Sound and Television Society (BKSTS); and the Audio Engineering Society (AES). He is also a member of the Society Fernseh-und Kinotechnische Gesellschaft (FKTG) of the Federal Republic of Germany.

Roland J. Zavada received the 1985 Progress Medal Award from the SMPTE.

The Eastman Kodak Gold Medal Award

1986 Award Winner — Arthur Knight

It is the purpose of this award to honor the recipient by recognizing outstanding contributions which lead to new or unique educational programs utilizing motion pictures, television, high-speed and instrumentation photography, or other photographic sciences. The award shall recognize developments in equipment, systems, or instructional applications which result in advancing the educational process at any or all levels.

Arthur Knight is a professor at the University of Southern California at Los Angeles. As a teacher, Knight has made many outstanding contributions to the academic world; as a remarkable writer and film critic, he has received honors from the Directors Guild of America (1957) and the Screen Publicists (1963).

A graduate of CCNY, Knight worked as assistant curator of the Museum of Modern Art's film library from 1939-1949. In 1949, he joined *The Saturday Review* as a film critic. During the 1950s, Knight was active both as a lecturer and as a film consultant to the CBS Television Network.

In 1960, Knight moved from New York City to California, joining the faculty of USC as an associate professor. During 1962-63, he served as film curator for the Hollywood Museum. Knight became a full professor at USC in 1967. He joined *The Hollywood Reporter* in 1972 as a writer of film critiques, a position he still holds.

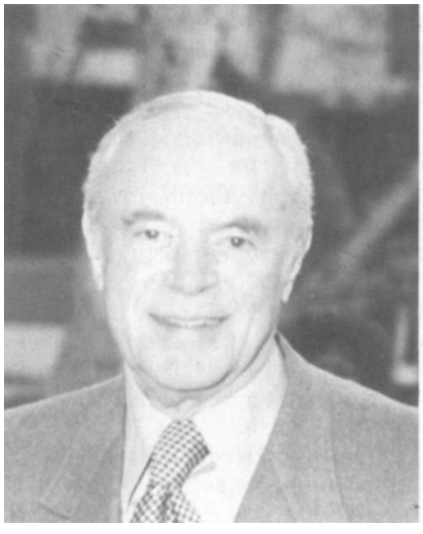
Knight is one of the founders of the Writers Guild Film Society, and is also a founding member of the Los Angeles Film Critics Association. He is affiliated with the Society for Cinema Studies, and serves on the Board of Trustees of the American Film Institute.

The John Grierson International Gold Medal Award

1986 Award Winner — Leonard A. Green

It is the purpose of this award to honor the recipient by recognizing significant technical achievements related to the production of documentary motion-picture films.

The 1986 John Grierson International Gold Medal Award is presented to **Leonard A. Green** in recognition of his techniques and engineering designs in sound and audio recording, and for his technical involvement in



Arthur Knight, winner of The Eastman Kodak Gold Medal Award.

Leonard A. Green, winner of The John Grierson International Gold Medal Award.

coordinating facilities for the photography of a 3-D IMAX documentary film.

Leonard A. Green is former assistant director of Technical Services for the National Film Board of Canada. Currently a consultant to the motion-picture industry, Green has been influential in advancing the technology of sound recording throughout Canada.

Green attended Hull Technical College in England, and later held technical positions at the British Broadcasting Corp. and the Canadian Broadcasting Corp. In 1964, Green became director of engineering for Film House Ltd., Toronto, Ontario. He joined the NFB three years later to design and develop the recording and projection systems which were used in the Labyrinth Pavilion at Expo 67. Following that project, Green became permanently attached to the Film Board, serving first as chief of sound and, most recently, as NFB's assistant director of technical services.

Leonard A. Green is a Fellow of the SMPTE and the British Kinematograph, Sound and Television Society (BKSTS). Green has been an active and involved member of the SMPTE from the time he joined in 1957, and has contributed a number of technical papers to the *Journal*. He was chairman of the Society's Committee on Audio Technology, and currently serves on the SMPTE Board of Editors. He is also affiliated with the International Standards Organization (ISO).

The Herbert T. Kalmus Gold Medal Award

1986 Award Winner — John L. Baptista

It is the purpose of this award to honor the recipient by recognizing outstanding contributions in the development of color films, processing, techniques, or equipment useful in making color motion pictures for theater or television use.

The 1986 Herbert T. Kalmus Gold Medal Award is presented to **John L. Baptista** in recognition of his significant contributions to the development of the Eastman Color Print-II Film Process System.

John L. Baptista is vice-president of engineering and technical services at MGM Laboratories, Inc. He supervises all engineering activities at the Culver City, Calif.-based company.

John L. Baptista, winner of The Herbert T. Kalmus Gold Medal Award.

Baptista graduated from the University of Massachusetts in 1964, with a B.S. degree in chemistry. Shortly after his graduation, Baptista joined Eastman Kodak Co., Rochester, N.Y. He worked in both the research laboratory and the Photographic Technology Division of the company, and played an active role in the development of motion-picture films and processes. In 1978, he joined Technicolor, Inc., Hollywood, Calif. Baptista's engineering efforts at Technicolor resulted in the optimization of silver recovery and greater efficiency in chemical use. He joined MGM as director of Processing Technology in 1983.

Baptista was elected a Fellow of the SMPTE in 1983. He is chairman of the Society's Laboratory Services Technology Committee, and a member of the American Chemical Society (ACS), the Society of Photographic Scientists and Engineers (SPSE), and the British Kinematograph, Sound and Television Society (BKSTS).

The Alexander M. Poniatoff Gold Medal for Technical Excellence

1986 Award Winner — Charles E. Anderson

It is the purpose of this award to honor the recipient by recognizing outstanding technical excellence of contributions in the research or development of new techniques and/or equipment that have contributed significantly to the advancement of audio or television magnetic recording and reproduction.

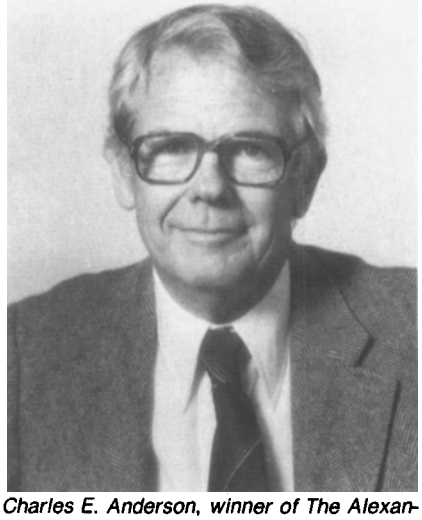
The 1986 Alexander M. Poniatoff Gold Medal for Technical Excellence is presented to **Charles E. Anderson,** in recognition of his outstanding work in pioneering the FM system which was the principal breakthrough to make analog video recording commercially feasible.

Charles E. Anderson, managing partner, Monarch Video, San Francisco, Calif., is a former product planner in the Audio-Video Systems Division of Ampex Corp., where he was a member of the original design team which developed the first practical magnetic videotape recording system. The former President of the SMPTE was the recipient of the first Alexander M. Poniatoff Award for technical excellence, an honor bestowed upon engineers by Ampex.

Anderson received a B.S. degree in electrical engineering from the Case School of Applied Science, Cleveland, Ohio. Prior to joining Ampex in 1954, Anderson held positions at ElectroCircuits Inc. and Consolidated Engineering.

Following the introduction of the quadruplex videotape recorder in 1956, Anderson remained associated with VTR design. In 1973, he assumed the position of product planner. Anderson's primary work was the development of the FM signal system for the VTR. He also participated in the development of automatic time-base correctors and a high-band tape recording system. He was awarded six patents between 1955 and 1961.

Charles E. Anderson, a member of the SMPTE since 1957, and an elected Fellow, served four terms as a regional governor in addition to his ser-



Charles E. Anderson, winner of The Alexander M. Poniatoff Gold Medal for Technical Excellence.

vice as President and Past-President of the Society. He was an original member of the Society's Video Tape Recording Committee, and chaired the Standards Committee between 1974 and 1977.

The David Sarnoff Gold Medal Award

1986 Award Winner — Michael O. Felix

It is the purpose of this award to honor the recipient by recognizing outstanding contributions in the development of new techniques or equipment which have contributed to the improvement of the engineering phases of television, including theater television.

The 1986 David Sarnoff Gold Medal Award is presented to **Michael O. Felix** for his prolific and inspiring contribution to the science of video recording. His pioneer work to quantify the videotape recording process is an important element in the foundation upon which an entire industry was built.

Michael O. Felix is a retired engineering executive of Ampex Corp. The former vice-president and general manager of the company's Advanced Technology Division worked on many important video recording development projects at Ampex, and is the holder of eight patents.

Felix received the B.Sc. degree in telecommunications from City & Guilds College, London, in 1942. Following a tour of duty with the Royal Air Force during World War II, Felix joined British Telecommunications Research. There he assisted in the development of the first 160-MHz battery-operated transmitter/receivers. Felix then went to work for Canadian Westinghouse, where he helped develop the first 4-GHz wideband tropospheric scatter system.

Michael O. Felix, winner of The David Sarnoff Gold Medal Award.

Felix joined Ampex in 1960. In 1964, he developed the theory of VTR FM recording. Other engineering projects on which he worked include the AVR-2 quad recorder, the VPR-2 helical recorder, auto scan tracking, a digital television recording system based on computer disk technology, and the first television graphics system. For these and other pioneering achievements, Ampex, in 1981, bestowed upon Felix its highest technical honor, the Poniatoff Award. He was also the recipient of SMPTE's Alexander M. Poniatoff Gold Medal Award, in 1983.

Michael O. Felix is currently a consultant.

The Samuel L. Warner Memorial Award

1986 Award Winner — Richard J. Stumpf

It is the purpose of this award to honor the individual by recognizing outstanding contributions in the design and development of new and improved methods and/or apparatus for sound-on-film motion pictures, including any step in the process.

The 1986 Samuel L. Warner Memorial Award is presented to **Richard J. Stumpf** for his continuing efforts to maintain and advance motion-picture sound in production and exhibition.

Richard J. Stumpf is vice-president of engineering and development for Universal City Studios, Universal City, Calif. His technical career in sound engineering spans 38 years, a period during which Stumpf has made an indelible mark on the motion-picture industry.

Richard Stumpf received a B.S. degree from the University of California at Berkeley in 1948. Shortly after graduation, he joined the NBC Radio Network in Hollywood, Calif. He worked as a senior engineer at Bendix-Pacific, then as an engineering leader in RCA's Broadcast and Communications Division, before joining Universal City Studios in 1969.

One of Stumpf's initial projects at Universal was the development of an octave-based noise gating system for re-recording. He also developed the

Richard J. Stumpf, winner of The Samuel L. Warner Memorial Award.

first crystal-controlled motor system for Arriflex cameras. In 1974, Stumpf was named principal inventor of Sensurround, a system that generates audible and sub-audible frequencies which enhance the sensory experiences of viewers during a movie's special effects scenes. Stumpf was the recipient of a scientific/technical award from the Motion Picture Academy of Arts and Sciences for the development of Sensurround. He received a second Academy Award in 1982 for the engineering of a color television system which generates 24-frame video display for direct photography with a production motion-picture camera.

Much of Richard Stumpf's current activity at Universal involves the application of Eastman Kodak's Datakode magnetic control surface technology to motion-picture studios.

A member of the SMPTE since 1968, Stumpf was elected a Fellow in 1980. He served as governor of the Hollywood region for the 1985-86 term. Currently, Stumpf is a member of the Audio Recording and Reproduction Committee and chairman of the Working Group on High-Definition Electronic Production. He is a member of the Audio Engineering Society (AES).

The Progress Medal Award

1986 Award Winner — Masahiko Morizono

It is the purpose of this award to honor the individual by recognizing outstanding technical contributions to the progress of engineering phases of the motion-picture and/or television industries.

The 1986 Progress Medal, the premier award of the Society, is presented to **Masahiko Morizono** in recognition of his contributions to the advancement of motion-picture and television technology. Morizono, through his leadership and technical achievement, has contributed to the development of electronic news gathering, Type-C recording, electronic editing, portable cameras, and digital videotape recording. His guidance has advanced the technology of high-definition television for use in both television and motion pictures.

Masahiko Morizono, deputy president and representative director of Sony Corp., Japan, has worked in the video manufacturing industry for more than 30 years.

After graduating from the University of Tokyo in 1949 with an M.S. degree in electrical engineering, Morizono worked for three years at Nishikawa Sempa K.K. He joined the Tokyo Tsushin Kogyo K.K. (Tokyo Telecommunications Engineering Corp.) in 1953. At Sony, Morizono worked on dozens of products, both professional and consumer. In 1959, he was assigned the responsibility of developing the first helical scan VTR. In 1971, the company brought out, under Morizono's direction, its U-Matic cassette recorders and electronic editing machines.

Masahiko Morizono became general manager of Sony's Audio Division in 1971. Later in the same year, he became a director of the Board, and in 1972 was appointed director and general manager of the Video Division. Morizono became the managing director of the Video Products Group in 1978.

Following industry acceptance of electronic news gathering, Sony appointed Morizono to head a team of engineers to develop professional broadcast equipment, including studio and portable 1-in. VTRs, time-base correctors, and cameras and related accessories. In connection with Sony's interest in the development of the 1-in. VTR, Morizono played a key role in the SMPTE working group which achieved standardization of the C format.

Morizono was the recipient of the David Sarnoff Gold Medal Award from the SMPTE in 1978. He was also honored at the 10th Montreux International Television Symposium for his contributions to electronic news gathering.

Honorary Membership

It is the purpose of Honorary Membership in the Society to honor an individual who has performed eminent service in the advancement of engineering in motion pictures, television, or in the allied arts and sciences.

No award was given this year.

Gold Medal Sponsors

The Agfa-Gevaert Gold Medal Award: Agfa-Gevaert N.V.
The Eastman Kodak Gold Medal Award: Eastman Kodak Co.
The John Grierson International Gold Medal Award: National Film Board of Canada
The Herbert T. Kalmus Gold Medal Award: Technicolor, Inc.
The Alexander M. Poniatoff Gold Medal for Technical Excellence: Ampex Corp.
The David Sarnoff Gold Medal Award: RCA Corp.
The Samuel L. Warner Memorial Award: The Estate of Samuel L. Warner
The Progress Medal Award: The Society of Motion Picture and Television Engineers, Inc.

Honors and Awards Committees for 1986

HONORARY MEMBERSHIP
Leonard F. Coleman, *Chairman*
Charles E. Anderson
G. Carleton Hunt
Kenneth M. Mason
Robert M. Smith

PROGRESS MEDAL AWARD
M. Carlos Kennedy, *Chairman*
Sherwin H. Becker
Leonard F. Coleman
Maurice L. French
Richard G. Streeter

AGFA-GEVAERT GOLD MEDAL AWARD
Irwin W. Young, *Chairman*
John F. X. Browne
John W. Caluger
Murray Forrest
Philip Godfrey

PRESIDENTIAL PROCLAMATION
Harold J. Eady, *Chairman*
Blaine Baker
Sherwin H. Becker
Leonard F. Coleman
Maurice L. French
M. Carlos Kennedy
Howard T. La Zare
Richard G. Streeter

EASTMAN KODAK GOLD MEDAL AWARD
Roderick T. Ryan, *Chairman*
John Belton
Michael M. Mirabito
Gerald Finn
Roman I. Harte

JOHN GRIERSON INTERNATIONAL GOLD MEDAL AWARD
James D. Caron, *Chairman*
Ivan Barclay
L. John Spring, Jr.
John F. Swanson
Findlay J. Quinn

HERBERT T. KALMUS GOLD MEDAL AWARD
Howard T. La Zare, *Chairman*
Anthony Bruno
Manfred G. Michelson
Roderick T. Ryan
Irwin W. Young

ALEXANDER M. PONIATOFF GOLD MEDAL AWARD
Craig Curtis, *Chairman*
Tom T. Kobayashi
Richard J. Stumpf
Hal Landaker
Michael J. Strong

DAVID SARNOFF GOLD MEDAL AWARD
John Streets, *Chairman*
Nick Hudak
Louis L. Pourciau
Grant M. Smith
Gary E. Thompson

SAMUEL L. WARNER MEMORIAL AWARD
Richard J. Stumpf, *Chairman*
Tomlinson Holman
Donald C. Rogers
Waldon Watson
Dana B. Wood

JOURNAL AWARD
John L. Baptista, *Chairman*
Edward J. Blasko
Lincoln L. Endelman
Donald C. McCroskey
Frederick M. Remley

CITATION FOR OUTSTANDING SERVICE TO THE SOCIETY
Sherwin H. Becker, *Chairman*
Howard T. La Zare
Maurice L. French
Murray Forrest
Richard G. Streeter

Fellows Luncheon

The Annual SMPTE Fellows Luncheon took place on Sunday, October 26, at the Convention Center. The luncheon was held to honor the newly elected Fellows and to present them with their plaques. Attendance at the luncheon is limited to Fellows and Life Fellows.

SMPTE President Harold Eady opened the luncheon by greeting all those present. After a brief humorous interlude supplied by Joe Roizen, Eady introduced the guest speaker, Roland J. Zavada. The text of Zavada's speech appears below. After Zavada's presentation, Eady introduced former SMPTE President John Frayne. Frayne delivered a few brief comments and recollections of his days in SMPTE, after which BKSTS President Dennis Boxall made some brief remarks. This was followed by the presentation of the Fellowship Awards to the 15 newly elected Fellows.

Introductory Speech at Fellows Luncheon

Harold J. Eady

Fellows and Life Fellows of the SMPTE and distinguished guests, welcome to our 1986 Fellows Luncheon. First, I would like to thank Magna-Tech Electronic Co. for once again sponsoring the very enjoyable pre-luncheon reception.

I would now like to introduce our dais (which is a little smaller than yesterday's): Carlos Kennedy, Executive Vice-President; Lynette Robinson, Executive Director; and Len Coleman, Past-President.

Our purpose this afternoon is to formally honor 15 new Fellows of the SMPTE and to welcome them into your special companionship. These new Fellows are engineers or executives of the motion-picture and television fields who, like yourselves, have attained an outstanding rank. A quick glance at the individual profiles in your conference program booklet should tell you that these gentlemen most certainly deserve to bear that special rank of SMPTE Fellow, so outstanding and truly remarkable have been their contributions both to this Society and to the industries in which they work.

It may take a while before you get to actually meet the new Fellows today — the reason being our "guest speaker." I am sure that those among you who have served on engineering committees can attest to the length of our guest speaker's reports. He is the only man I know who can turn ten minutes of information into a two-hour presentation. If he has slides, it takes a little more time!

When he was serving the Society as Engineering Vice-President a few years back, the Executive Committee would have to set aside at least an hour for his meeting reports. Invariably, at least one full hour! We got used to him, however, and became very conditioned; when he rose from his chair, the other members of the committee sank into theirs. He would then commence his protracted report, a clue to the rest of us to get as comfortable as possible. Some would doodle nervously with pen and paper; some would stare at him so as to give a sort of subtle hint; others dissolved into past memories and thoughts of more exciting times; while still others, inevitably, fell asleep. No, our speaker was never short on words.

In all seriousness, ladies and gentlemen, our speaker is a good friend and well known to you, an accomplished engineer, and a true leader in our industry. He has spent almost 36 remarkable years with Eastman Kodak Co. and is currently a member of the senior staff of their Corporate Research Division.

He was responsible for drafting the standards of Super 8 for the American National Standards Institute and the International Standards Organization. He currently serves as chairman of the ANSI Image Technology Standards Board.

He has a long record of service on the engineering committees of the SMPTE and other professional technical organizations. As I mentioned earlier, he was Engineering Vice-President of the SMPTE, elected in 1975 and holding the position for eight years. Last year, he was awarded the SMPTE Progress Medal, the premier medal award of our Society, and this year, at yesterday afternoon's Honors and Awards Luncheon, he was honored with the Agfa-Gevaert Gold Medal Award. He also recently received the Rochester Engineer of the Year Award.

I had no idea what our guest speaker was going to talk about, so last evening I asked him. He wrote out the title: "What is SMPTE's Future Along the 'Z' Axis?" Well, I still don't know. But I'm sure you are in for a great — and probably long — speech. Let's get him to the podium without any further ado, lest we all miss tomorrow night's banquet.

It is indeed a real pleasure for me to introduce our guest speaker, Mr. Rollie Zavada.

Is SMPTE'S Future Along the "Z" Axis?

Roland J. Zavada

There once was a speech that began, "Four score and seven years ago," that was significant in our nation's history. It's been memorized by schoolchildren, and it was notably brief.

The comments I want to share with you today are significant to our Society's history and future. They're *not* going to be memorized by schoolchildren, and I won't disappoint you by making them brief! My Sunday sermon is as follows.

Two score and 13 years ago, our forefathers introduced a new category of Society membership known as "Fellows." The criteria for membership that Fellows have attained an outstanding rank among engineers or executives remains unchanged today. In January, 1934, the Board members unanimously elected *themselves* to the new elite status of Fellows. At that meeting, they also created new officers. They established Engineering, Editorial, Conference, and Financial Vice-Presidents, *and elected them Fellows too.* The fact that the Fellow grade of membership is an elite distinction goes without question. As Fellow members, you get to pay twice the annual dues each year.

Between 1934 and 1938, our records are a little vague, but in April 1938, a special Board committee studying the qualifications for membership made its report. It contained the following key features:

1. It was the consensus of the members that the grade of Fellow should be regarded as a form of honorary recognition by the Society.

2. Among the suggestions made was that the grade of Fellow should be abolished for a number of years, after which it should be restored, and a new set of Fellows created by a mechanism set up for the purpose.

3. The double differential between the dues of Active members and Fellow members should be eliminated.

4. The current regulations for Fellowship should continue in force, and the Board should be more strict in interpreting those regulations.

Text of speech given at the Fellows Luncheon by former SMPTE Engineering Vice-President Roland J. Zavada, Eastman Kodak Co.

Roland J. Zavada, guest speaker at the Fellows Luncheon.

5. No one should apply directly for Fellowship; rather, one should first be an Active member for a stated period of time, after which he could be nominated for Fellowship.

Subsequently, the Membership Committee records show some discussion about whether the regulations for Fellowship qualifications were too flexible; referring particularly to the meaning of the word "outstanding," and also the question (and you've heard this one before) whether the eligibility of industry executives should be based upon their executive positions rather than upon their technical qualifications.

With regard to holding office in the Society, the consensus of the group was unanimous — officership in the Society should not be restricted to Fellows, but should also include Active members. When comparing then with now, we essentially recognize that the parameters for establishing an elite membership grade is based upon the consistent criteria of an individual being outstanding!

Whether you are engineers or executives, and outstanding members of an engineering society, you know that consistency is the basis of standardization. With your background, you know that a standard must contain certain essential elements — it needs a title, a scope, a list of specifications, and sometimes a tutorial appendix. But most important, it must fulfill an industry need, and therefore have significance in application.

Let's look and see if you are a "standard Fellow."

Scope: to establish the criteria for honoring members who attain outstanding rank by their proficiency and contribution.

Specifications:

1. A member who has been exemplary in supporting the Society's aims, goals, and constitution with respect to good business and technical ethics

2. One who is known to be of good character and reputation

3. One who has demonstrated noteworthy participation in the field for at least five years

4. One who has been recognized for having achieved outstanding distinction by his important contributions to the science and technology by invention, application of design, education, or executive leadership.

Now for the next specification. Let's get serious for a moment! [The author reaches into a bag and puts on a Tina Turner-type wig.] If standards represent consistency, there is one that represents more than 99 $^{44}/_{100}$% pure — and, if you get the picture, it will save more than 1000 words to your tired ears. The designation of "Fellow" is not sexist, but the company of Fellows we have is! Think for a moment, smile and reflect, but a change could be refreshing. [Speaker returns wig to bag.]

Next is the most important part of a standard — its application. The specifications have provided for recognition of your individual achievements and contributions. But once you have been so honored as to become a Fellow member, how many of you have acquired the complacency, and possibly a tired reserve, classically typified in the old English movies? You know — like being part of a club where, if the waiter brought you a

Ninety-two-year-old John Frayne, former President of the Society, comments about his many years as an SMPTE member.

SMPTE Executive Vice-President Carlos Kennedy addressing the Fellows at the luncheon.

glass of challenging new technology but his shoes squeaked, you'd look down your nose and say, "Bah! Humbug!"

In my standards book, the honor you received for your recognized outstanding contributions in becoming a Fellow brings with it the expectations of new roles of leadership because you are the elite members of this great Society.

I believe this "standard Fellow" application need is there because of the challenges our Society has faced and will face. As we look to the future, let's glance at the past challenges, a decade at a time.

We started with the need for standards. In the 20s, there were 28 different film dimensional formats that were resolved to the one B&H perforated 35mm film format. The move to talking pictures upset theater owners because it required a constant velocity and defined screen time for each film. Previously, on Sundays, they could double their audience by showing the 16-frame/sec film at about 32 frames/sec.

In the 30s, the disciplines of optics, film, hardware, and sound were directed to a common application. The theater experience provided another challenge — the formation of a coordinated standards effort that evolved into today's ANSI Standards Board.

The 30s also provided leadership. The first television committee meeting was held on March 9, 1938. Chairman Goldsmith stressed the confidential nature of the work, lest premature publicity about the imminence of commercial television might cause undue concern to the motion-picture industry.

In the 40s, the Society was in a position to encourage theatrical television because failure to do so would allow television to find its way into the home and jeopardize the theaters' potential.

In the 50s, we sought to standardize the wide-screen films developed as the Grandeur process in the 30s. Color was based on choice, and there were moves to make it consistent. Later, the "T" in SMPTE gained significance, as the NAB and IEEE looked to the SMPTE to standardize video recording.

The challenge of whether or not the Society addressed consumer needs was an issue of the 60s, when you asked the question, "Was Super-8 film an amateur or a professional audiovisual medium?"

In the 70s, we were challenged with the questions of television color consistency and electronic news gathering, and we began to study digital video and HDTV.

You are all intimately familiar with our challenges for the 80s. Aren't you?

But, what about the next decade, the 90s, just four years from now? Have you "Fellows" put a future perspective in place with regard to your outstanding rank and elite status? Can we put your technological genius and executive leadership to the test of where this Society is going to be with regard to being responsive to new technology?

With a group like yours, there should never be a need for a long-range planning committee — there are about seven Fellow members for each Board member. You are the elite! The Board and officers shouldn't have to look to you for direction and support! You should be beating on their doors with your ideas and concerns!

Where are the emerging technologies taking us, and what is our engineering role, responsibility, and opportunity? Let me offer some food for thought.

We have the privilege of being at the forefront of a significant part of the future. Film is a high-density, high-quality originating, and excellent display, medium. Video offers immediacy, post-production flexibility, transmission, and instant-access soft display. The digital systems born in office computers have escalated in capability.

We no longer have motion pictures and television — we have image technology. The analog electronics of our half-sampled domain and the full tone-scale film images are moving toward pixelization, and they are moving in the fast company of medical digital display, electronic prepress of the graphic arts, consumer still video, synthesized computer graphics, and entertainment production special effects.

Have you looked at these common denominators as potential for the Society's service or expansion? If not *you* outstanding and elite Fellows — then, who?

In the pixelization of an image from an original scene or scanned film, the spatial domain is established by little x and little y — the x,y axis. Along the z axis, we can define the luminance levels and chrominance characteristics of the pixel. Will the sample size specified be at 6-8-12 or more bits? Will the chrominance be specified as R,G,B; or $R\text{-}Y,B\text{-}Y$; or C,M,Y,K; or L,U,V; and at how many levels? Will the number of files be established for convenience, efficiency of processing, or efficiency of transmission and storage? We don't yet know.

The specification of a color pixel needs a documented format and procedure. Other organizations are looking to ways to define their needs. Will we lead or join some of this effort, or shall we confine our thinking to the reconstituted series of still images depicting motion? The z axis needs specification — does the SMPTE's future lie along the z axis? You, our elite members, must provide the guidance, direction, and answers.

Thank you.

New Fellows of SMPTE

A Fellow of the Society is one who is no less than 30 years of age and who has, by his proficiency and contributions, attained an outstanding rank among engineers or executives of the motion-picture, television, or related industries.

Stanley N. Baron has been involved in the design and development of digital television systems for over 20 years. In his current position as managing director of Technical Development at NBC, Inc., New York City, Baron evaluates new and developing technology, and carries out plans to incorporate the new technology into the NBC Television Network.

Stanley Baron received B.S. and M.S. degrees in electrical engineering from New York University. He worked at General Electric Co., the CBS Laboratories in Connecticut, Microtime, Inc., and Thomson-CSF Broadcast before joining NBC. He has been awarded several patents, including one in 1973 for the Vidifont character generator, which was the first graphics machine for professional broadcast television. While at Thomson, Baron designed and developed a frame store device, X-ray processor, time-base corrector, and the Vidiplexer.

Baron has had a key role in the development of SMPTE standards for digital video. He has been a member of the SMPTE Working Group on Digital Video Standards since 1977, serving as the group's chairman from February 1984 to February 1986. Baron currently serves the Society as Engineering Director for Television. He is also active in the engineering technology groups of the European Broadcasting Union (EBU), and is a senior member of the Institute of Electrical and Electronics Engineers (IEEE).

New Fellow Stanley N. Baron, Past-President Leonard F. Coleman, and President Harold J. Eady.

New Fellow Max Berry.

Max Berry is vice-president of broadcast engineering at Capital Cities/ABC, Inc., New York City. In this position, he is administrator of RF allocations, audio/video systems engineering activities, and equipment planning for the ABC Television Network. Berry has shown technical leadership in his ability to effect a marriage between graphic artists and the realities of video technology. The Dubner CBG, a color graphics system developed jointly by Berry and Dubner Systems, earned Berry a 1982 Emmy Award from the National Academy of Television Arts and Sciences.

Berry received a B.A. in electrical engineering from Cooper Union, and an M.A., also in electrical engineering, from New York University. In 1951, he joined NBC, Inc., as a development engineer. At NBC, Berry designed scrambled television systems and the color film chain. Three years later Berry joined the Commercial Broadcast Equipment Division of RCA Corp., where he managed development projects relative to the color slow-motion disc, the hand-held color camera, and the color background generator. In 1961, Berry transferred to RCA's Astro Electronics Division to serve as an engineering leader in the design of TV cameras for use in unmanned space satellites. He joined ABC in 1965.

Another of Max Berry's technical contributions was a solid state video routing switcher, developed jointly with the Grass Valley Group.

Berry has served the SMPTE as a governor, and was Engineering Director, Television, during 1984-85. He is a member of the Engineering Advisory Committee of the National Association of Broadcasters (NAB).

New Fellow David Ferrand E. Corley.

David Ferrand E. Corley is president of DSC Laboratories. Under his direction, the Ontario, Canada-based firm since 1962 has been involved in the development of precision test films and slides. These test materials have enabled the broadcast and video production industries to standardize scanner and camera alignment to a high level of accuracy. Currently, DSC Laboratories is designing a large format viewer for critical alignment and evaluation of video cameras.

Corley studied at Kings College, in Canterbury, U.K., during 1946-47. He worked as a film technician, camera operator, editor and producer at Ministar Films from 1950-1960. In 1960, Corley joined C.I. Television as a vice-president.

Corley holds a patent for precision gray-scale and color bar slides, and another for a color film evaluating system. He has developed a soft-edged masking system for the 35mm slide format, 16mm color bar and gray-scale test films for scanner alignment, a 12-field AV grid, and a computer-automated multi-imager. Corley's engineering accomplishments have been recognized internationally. He received a special technical award at the New York Film Festival in 1962, a "Bronze Medal" at the International Film and Television Festival of New York in 1967, a "Gold Camera" at the U.S. Industrial Film Festival in 1978, and the AV Canada Award in 1982.

David Ferrand E. Corley is a member of the British Kinematograph, Sound and Television Society (BKSTS) and the Association for Multi-Image (AMI International).

Allan "Craig" Curtis is director of recording and post-production for NBC, Inc., Burbank, Calif. His outstanding technical work in the areas of post-production and videotape editing has resulted in many honors and awards, among them the SMPTE Eastman Kodak Gold Medal Award (1985), an Emmy Award (1965), and several Emmy nominations.

Craig Curtis received a B.A. degree in cinema in 1950 from the University of Southern California, and remained there until 1951 to pursue graduate work in special effects. Curtis joined the NBC Television Network in 1952, and the following year became co-holder of the RCA Corp. patent on its kinescope recording camera. From 1959-1964, Curtis participated in the technical development of the off-line videotape editing system. The system featured the first time-referenced audio and videotape recordings that were capable of being edited on a double-system basis. Curtis and his staff at NBC utilized the new system to edit several of the network's entertainment programs, including "The Bob Hope Show," "The Bing Crosby Show," and the popular "Laugh-In." He was awarded an Emmy in 1965 for the editing of "The Julie Andrews Show."

New Fellow Allan "Craig" Curtis.

Curtis's involvement in SMPTE affairs has been extensive. He has served as manager, secretary/treasurer, and chairman of the Society's Hollywood Section. During 1984-85, Curtis was chairman of the Hollywood Section/USC Educational Committee. He currently serves the Society as a governor. Curtis is a member of the Academy of Television Arts and Sciences (ATAS) and the Society of Television Engineers.

New Fellow Peter A. Dare.

Peter A. Dare is vice-president of product management and product development in the Communications Products Group of Sony Corp. During his five years with the company, Dare has been associated with the introduction of a second-generation multicassette machine and the development of the Sony 4:2:2 digital television tape recorder. As a company executive, writer, lecturer, and manufacturing representative on international engineering committees, Dare has contributed significantly to improving the overall quality of transmitted and recorded images.

Following his graduation from the Royal Melbourne Institute of Technology in 1961, Dare went to work for the General Television Corp., Melbourne, Australia. At General Television, Dare assisted the Australian equivalent of the Federal Communications Commission (FCC) in adapting testing techniques using sine squared pulse and bar. In 1963, Dare joined RCA as a project engineer, later becoming chief engineer. He joined Sony as manager of product development in 1982.

Peter Dare has been responsible for many technical accomplishments. He participated in the development of an off-tape commercial identification system. In addition, he assisted in the development of PAL/SECAM encoders, field detectors, and the TK-47 triax system.

The focus of Dare's engineering activity has been on proposing and implementing VTR standards. He is a member of SMPTE's Video Recording and Reproduction Technology (VRRT) Committee, and serves on the Society's Digital Video Tape Recording (DVTR) Working Group. He is co-author of the paper, "The SMPTE D-1 Cassette Design Considerations," which was presented at the Society's 20th Annual Television Conference and subsequently published in the September 1986 issue of the *SMPTE Journal*. Dare is also a member of the Audio Engineering Society (AES).

New Fellow Yves Charles Faroudja.

Yves Charles Faroudja is founder and president of Faroudja Laboratories, Inc. The focus of his current technical work is on optimizing NTSC signal performances at all stages, in order to approach performances of high-definition television without a change in standard or bandwidth.

Faroudja graduated from the Ecole Superieure d'Electricite, Paris, with a master's degree in electrical engineering, in 1958. A year later, he joined ITT Research Laboratories, France, as a research engineer. He worked in a similar capacity at NATO, Italy, from 1962-1965, then moved to the Bay Area of California. Faroudja worked as a magnetic tape engineer at Memorex Corp. from 1965-1968, and from 1968-1971 served as a development engineer at IVC. He founded Faroudja Laboratories in 1971. The Sunnyvale, Calif., company has been instrumental in improving noise-reduction and enhancement technologies and, more recently, in developing NTSC encoders and decoders.

While working as an engineer in Europe, Faroudja participated in the development and implementation of the first tide-power plant in the Rance estuary, the first transistorized Doppler radar, and the first laser ever activated on that continent. He has developed and patented a number of significant new techniques for the improvement of color television images on professional and consumer VTRs, VCRs, cameras, and monitors. In total, Faroudja has been issued more than 20 U.S. patents.

Yves Faroudja is a member of the Institution of Electrical and Electronics Engineers (IEEE), and has acted as a technical consultant to various U.S. and foreign companies, including Data Memory, Tektronix, and Conrac.

Christoph Geyer is technical coordinator of Geyer-Werke GmbH, a technology-based enterprise in West Germany which is made up of film and video laboratories and a sound studio. His outstanding work in the design, engineering, construction, and application of wetgate systems is well known in technical circles. His design for a total immersion wetgate system has been commercially manufactured and installed in telecine equipment in facilities throughout the world.

New Fellow Christoph Geyer.

Geyer studied chemistry, optics, and physics at the Technical University of Berlin from 1959-1966. During 1967-68, he worked at Agfa-Gevaert, Belgium; Rank Film Laboratories, England; and CFI, Los Angeles, Calif. In 1969, he began at Geyer-Werke.

Christoph Geyer was elected a Fellow of the British Kinematograph, Sound and Television Society (BKSTS) in 1983. The following year, he received the SMPTE Herbert T. Kalmus Gold Medal Award. Geyer has presented technical papers at conferences of the SMPTE, BKSTS, and the Association of Cinema and Video Laboratories (ACVL).

New Fellow Makoto Hara.

Makoto Hara is technical manager of the Motion Picture Products Division of Fuji Photo Film Co., Ltd., in Japan. From the time he joined the company in 1951, Hara has been directly involved in the overall planning and development for new motion-picture films and user technical services. He was a technical leader in the development of the first High Speed Color Negative Film, the 8518, for which Fuji received a Class One Academy Award from the Academy of Television Arts and Sciences.

Hara, who attended Tokyo Technical College, has had four papers published in the *SMPTE Journal*. He is a member of the SMPTE, the Society of Photographic Scientists and Engineers (SPSE), and the Society of Photographic Science and Technology of Japan. He is a Fellow of the Motion Picture and Television Engineering Society of Japan. Since 1979, Hara has been the Japanese specialist on the Film Technology Working Group I of the International Standards Organization.

New Fellow Arthur Kaiser.

Arthur Kaiser is a retired executive of the CBS Technology Center, Stamford, Conn. His 19-year career at CBS was marked by many outstanding achievements. Kaiser was part of a research team which patented the 1978 Emmy Award-winning Digital Noise Reducer for color television, a device which improved picture quality by eliminating the source noise in the ENG video signal.

Art Kaiser attended the College of the City of New York (CCNY), earning a B.A. degree in 1942. He continued his technical training at Yale University, Harvard University Graduate School of Engineering, Massachusetts Institute of Technology (MIT), and the Polytechnic Institute of Brooklyn's Graduate School. He worked at Sperry Rand Corp. and General Electric Co. before joining CBS Laboratories in 1966. Kaiser also was an instructor in television engineering at Connecticut State Teachers College.

In addition to the noise reducer, Kaiser has contributed to the television industry low-light color imaging systems and a system for adaptive comb filtering. He holds 15 patents.

Kaiser, who remains active in the color television field as a consultant, has had 24 technical papers published. He is a registered Professional Engineer in Connecticut, and a member of the Institute of Electrical and Electronics Engineers (IEEE) and the National Society of Professional Engineers (NSPE).

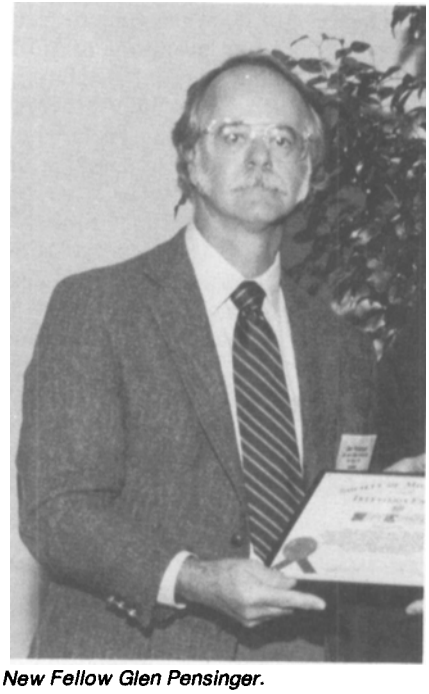
James A. Merkle is vice-president/general manager at Allied Film & Video, Detroit, Mich. As both an administrator and technician, Merkle has played an important role in the recent expansion of Allied as one of the major film and video service facilities in the country.

Merkle received a B.S. degree in chemical engineering from the University of Rochester in 1963. In 1967, he joined Eastman Kodak Co., working first as a technician, then as a sales and engineering representative. Merkle moved on to Producers Color Service, Inc., in 1978. There, he managed the firm's motion-picture laboratory and video duplication facility.

James Merkle joined Allied Film & Video as a general manager in 1980, at a time when the company — and the film and video industries — were in the midst of major change. Allied was converting from film to video, a process which necessitated the installation of new systems for video duplicating and film-to-tape and tape-to-film transfers. The planning and implementation of the new equipment were done under Merkle's direction. His six years at Allied also saw the company expand to Dallas, while facilities in two other cities were increased in size. Merkle still has maintained overall responsibility for operations in all Allied Film & Video locations.

Merkle has served the Association of Cinema & Video Laboratories (ACVL) both as treasurer and director. He was also the recipient of a medal from the U.S. Navy.

New Fellow James A. Merkle.



New Fellow Glen Pensinger.

Glen Pensinger is a television engineer at San Jose State University, San Jose, Calif. He is responsible for the design, development, and technical operation of the university's video-based instructional systems. Previously with Western Electric Co.; KNTV; KTVU-TV; and ABC, Inc., Pensinger has more than 26 years of experience in the television industry as a designer, videotape editor, operating engineer, and technical consultant. Among his technical accomplishments are a wideband distribution system for feeding instructional programming, the first time-code editing facility in Northern California, a "film style" video field production system, and a four-channel ITFS instructional distribution system.

Pensinger, who received B.A. and M.A. degrees from San Jose State University, has been contributing articles to the broadcasting trade press since 1962. He is currently a consulting author for *Television Broadcast*. In addition, Pensinger is co-author of McGraw-Hill's *AV Instructional Technology Manual*, and has presented papers on instructional communication at SMPTE symposiums.

Glen Pensinger has served the SMPTE in a variety of positions. He was manager, secretary/treasurer, and then chairman of the Society's San Francisco Section. Pensinger currently serves the Society as a governor. He is also a member of the British Kinematograph, Sound and

Television Society (BKSTS); the Society of Broadcast Engineers (SBE); the Audio Engineering Society (AES); the International Industrial Television Association (ITVA); and the Association for Educational Communications and Technology (AECT).

New Fellow James Redmond.

James Redmond had a long and distinguished career at the British Broadcasting Corp. Joining the BBC in 1937 as a junior sound engineer and retiring 41 years later as director of Engineering, Redmond helped to spread the BBC Television Service throughout the U.K. Much of his technical work was in television recording and color television development. Redmond is currently a broadcast engineering consultant to several organizations.

James Redmond enrolled in courses at Heriot Watt College, Edinburgh, Scotland, in 1935. In 1939, after just two years at the BBC, he began a tour of duty in England's Merchant Navy which lasted through the end of World War II.

In 1945, Redmond rejoined the BBC, where he was involved in the design, installation, operation, and maintenance of VTRs, transmitters, and other broadcast systems. During his ten years as director of engineering, the BBC was widely recognized as the standard of quality throughout the world.

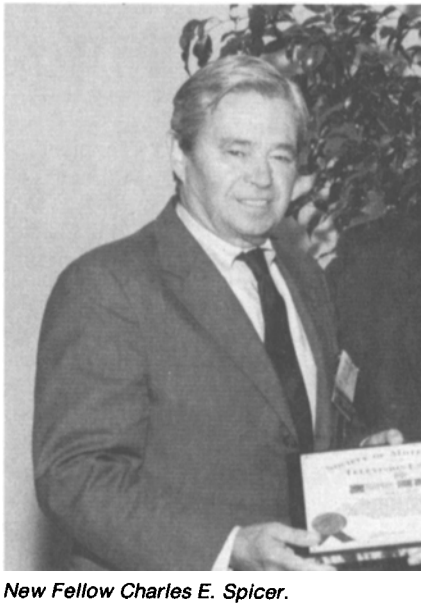
In 1978, Redmond was elected a Fellow of Engineering in the U.K. The following year, he was honored with a knighthood for distinguished service to his country's broadcasting industry.

Redmond has served several associations in official capacities. He was president of the Society of Electronic and Radio Technicians from 1970-1975, and in 1978-79 served the Institution of Electrical Engineers (IEE) as president. Also, he was vice-president of the European Broadcasting Union's Technical Committee (from 1970-1978), and vice-president of Engineering for the Commonwealth Broadcasting Association (from 1974-1978). Redmond is a Fellow of the IEE and Royal Television Society.

Charles E. Spicer is director of technical development for NBC, Inc., in New York City. In this position, he is responsible for evaluating and selecting the equipment and systems which the network will employ during its television coverage of the 1988 Olympics. Spicer has over 35 years of experience in the television broadcast equipment industry, and had an instrumental role in the introduction of three-tube color cameras in the U.S.

Charles Spicer received a B.S. in electrical engineering from Princeton University in 1943. He has held engineering and executive positions at General Electric Co., DuMont Laboratories, Visual Electronics Corp., and Video-Inflight Cinema International. Spicer joined NBC in 1980.

Spicer has participated on several SMPTE engineering committees, and served on the Digital Television Tape Recording (DTTR) Working Group which developed, in cooperation with the European Broadcasting Union, the D-1 videotape standard. He has presented technical papers at conferences of the SMPTE and Institution of Electrical and Electronics Engineers (IEEE). Spicer is affiliated with the Advanced Television Systems Committee (ATSC).



New Fellow Charles E. Spicer.

New Fellow Carlo Terzani.

Carlo Terzani is director of International Television Relations at RAI Radiotelevisione Italiana, Rome, Italy. He coordinates European and U.S. proposals, documents, and studies on high-definition television, satellite broadcasting, and sound broadcasting. Terzani was a leader in obtaining universal agreement on the digital television studio standard, its related parallel and serial interfaces, and digital television tape recording standards.

Terzani received a doctorate in electrotechnical engineering from Rome University in 1946. He served on the faculty of Rome University as a professor of electrotechnics from 1948-1970.

Carlo Terzani has held chairmanships on various international engineering technology committees and study groups. He has been chairman of the International Radio Consultative Committee (CCIR) Study Group 10 (on sound broadcasting) since 1974, and chairman of EBU's Technical Committee since 1976. From 1975-1985, he served as chairman of the Satellite Broadcasting Advisory Group of the European Space Agency.

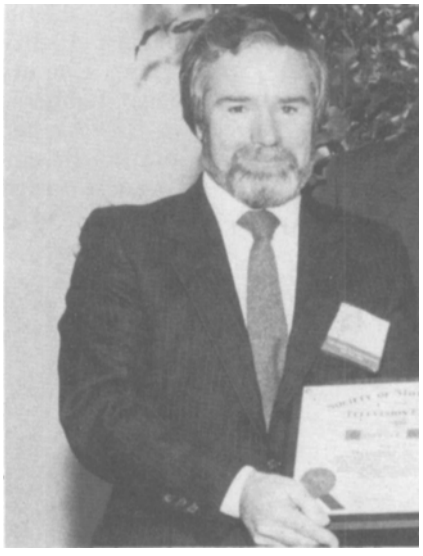
Terzani has been the recipient of many very distinguished service and

achievement awards. In 1982, the SMPTE, in recognition of his leadership in expanding the exchange of technical information between the European Broadcasting Union (EBU) and the Society, awarded Terzani the Presidential Proclamation. He was awarded the Diploma of Honor from the CCIR in 1978. Terzani is Resident Academician of the Tibernia Academy of Rome, and Knight of Merit of the Italian Republic.

Laurence J. Thorpe is director of Studio Product Management for Sony Broadcast Products Co., Teaneck, N.J. His work involves a full range of planning and marketing responsibilities relative to Sony's Betacam field equipment, high-definition television equipment, and the company's broadcast camera line.

Thorpe attended the College of Technology in Dublin, Ireland, earning a degree in electrical engineering in 1961. He then joined the British Broadcasting Corp. in London, England, becoming involved in the design and development of semiconductor television equipment for Monochrome, NTSC, and PAL systems. In 1966, he moved to RCA Broadcast Systems, Camden, N.J. During his 16 years at RCA, Thorpe was issued 10 patents for his color camera and telecine development work. He joined Sony in 1982.

As a member of the engineering groups of both the SMPTE and Advanced Television Systems Committee (ATSC), Thorpe has contributed his expertise on technical matters relating to television production equipment. Thorpe is also a member of the Institute of Electrical Engineers (IEE) in England.



New Fellow Laurence J. Thorpe.

Elected Fellows — 1986

Stanley N. Baron
NBC, Inc.

Max Berry
Capital Cities/ABC, Inc.

David Ferrand E. Corley
DSC Laboratories

Allan "Craig" Curtis
NBC, Inc.

Peter A. Dare
Sony Corp.

Yves Charles Faroudja
Faroudja Laboratories Inc.

Christoph Geyer
Geyer-Werke GmbH

Makoto Hara
Fuji Photo Film Co., Ltd.

Arthur Kaiser
CBS Technology (retired)

James A. Merkle
Allied Film & Video

Glen Pensinger
San Jose State University

James Redmond
British Broadcasting Corp.

Charles E. Spicer
NBC, Inc.

Carlo Terzani
RAI Radiotelevisione Italiana

Laurence J. Thorpe
Sony Broadcast Products Co.

Fellow Membership Committee

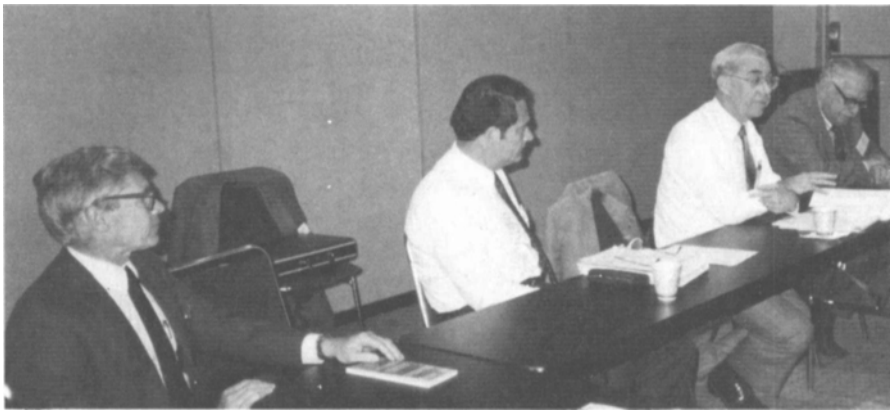
Leonard F. Coleman, *Chairman*
Earl F. Arbuckle III
Herman Badler
Blaine Baker
John L. Baptista
Paul Beck
Sherwin H. Becker
Stanley Baron
Edward J. Blasko
John F. X. Browne
James D. Caron
Patrick Coakley, Jr.
Leonard F. Coleman
Allan "Craig" Curtis
Kenneth P. Davies
Birney Dayton
Jeffrey W. Deal
Grant Dearnaley
Bernard L. Dickens
Christian Didier
Edmund M. DiGiulio
Harold J. Eady
Robert Erskine
Herbert E. Farmer
Neal Feldman
Michael T. Fisher
Arthur E. Florack
Murray T. Forrest
Donna Foster-Roizen
Maurice L. French
John C. Gates
Philip Godfrey
Frank J. Haney
Donald W. Henderson
Earl V. Higgins
Tomlinson Holman
Nick Hudak
Joseph J. Kelly
M. Carlos Kennedy
Richard L. Kennedy
Stephen D. Kerman
Fung F. Lam
David Layne
Howard T. La Zare
Charles J. Lipow
Donald C. McCroskey
M. A. McDaniels
Edward J. Messina, Jr.
Bengt O. Orhall
Glen Pensinger
Kerns H. Powers
Frederick M. Remley
Roderick T. Ryan
L. John Spring, Jr.
Richard G. Streeter
John Streets
Richard J. Stumpf
John Swanson
Joseph P. Ulasewicz
Robert M. Vaive
Rene Villeneuve
Ernie D. Walker
Bill R. Watson
Edward Watton
Howard E. Wilkinson
Louis Wolf, Jr.
Irwin W. Young
William Young

Editorial Meetings

SMPTE's three major editorial committees met on Monday, October 27. The Papers and Publication Advisory Committee, chaired by SMPTE Editorial Vice-President Howard T. La Zare, Deluxe Laboratories, Inc., was the first of the three meetings to convene. The committee discussed a number of subjects, particularly the programming of future SMPTE conferences.

Next, the SMPTE Board of Editors met, with Chairman Frederick M. Remley, University of Michigan Media Resource Center, presiding. The turnout for this particular meeting was one of the best in recent years, which was fortunate because the meeting had a full agenda. The Board of Editors has the responsibility for passing on the suitability of all manuscripts submitted for publication, and it determines the editorial content of the *Journal* from all the material submitted each year. The meeting was a highly productive one.

The final editorial meeting of the morning was of the Progress Committee, chaired by SMPTE Conference Vice-President and Executive Vice-President-elect Maurice L. French, Canadian Broadcasting Corp. The Progress Committee is responsible for the preparation of the annual report on world progress in motion pictures and television. The Progress Report, which is published in April, is seen as one of the most significant issues of the year. The SMPTE Editorial Department was in the process of bringing together all the material at the time of this meeting, and so the future thrust of the report was heavily discussed. A few changes were recommended, including the reorganization of the report for easier readability and greater emphasis on its international aspects and significance.



The Board of Editors meeting. Ray Hallows, Howard T. La Zare, Frederick Remley (Chairman), and Pablo Weinschenk-Tabernero.

The Board of Editors meeting. K. Blair Benson, Herb Farmer, Don McCroskey, and Kerns Powers.

The Board of Editors meeting. Maurice L. French, Howard Wilkinson, Kenneth Davies, Koichi Sadashige, Richard Marcus, and Adrian Ettlinger.

The Board of Editors meeting. Joseph Kelly, Ed Schuller, Len Green, and Ed Blasko.

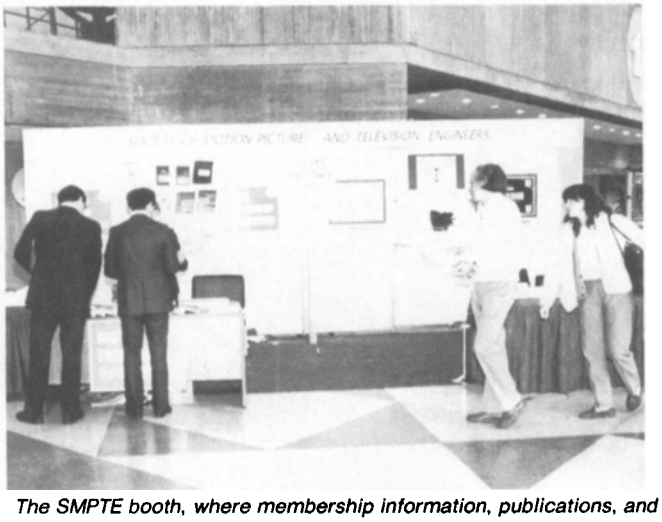
The Papers and Publications Advisory Committee. Irwin Young, Howard T. La Zare (Chairman), and Frederick Remley.

Progress Committee meeting. Frank Haney, Len Green, Dollie Hamlin (Headquarters Conference Program Coordinator), Alberto Sciarretta, and Maurice L. French (Chairman).

SMPTE Booth

The SMPTE had a large and effective booth in the registration area of the conference. There attendees could join the Society, purchase books and preprints, and obtain other information about the Society. Membership Chairman Guy Beverlin, WPIX-TV, supervised the booth and was present throughout most of the week to recruit new members. According to Mary Connolly, SMPTE Manager, Membership Services, 106 new members were signed up at the conference. Among the Headquarters staff who served at the booth during conference week were Daureen Matera, John Lolis, and Anne Seminara.

Membership Chairman Guy Beverlin welcoming a new member at the SMPTE booth.



The SMPTE booth, where membership information, publications, and test materials were available.

Friday Evening Reception

SMPTE registrants and guests were treated to the generous hospitality of Eastman Kodak Co. at the Friday evening reception.

New York's glamorous Copacabana night club was the scene of a cocktail party and reception for conference registrants and other guests, hosted by Eastman Kodak Co. The reception was held on Friday evening, October 24, and was the opening social event of the conference. Guests enjoyed dancing, cocktails, and delicious hors d'oeuvres, courtesy of Eastman Kodak. It was a highly enjoyable event, attended by hundreds of people.

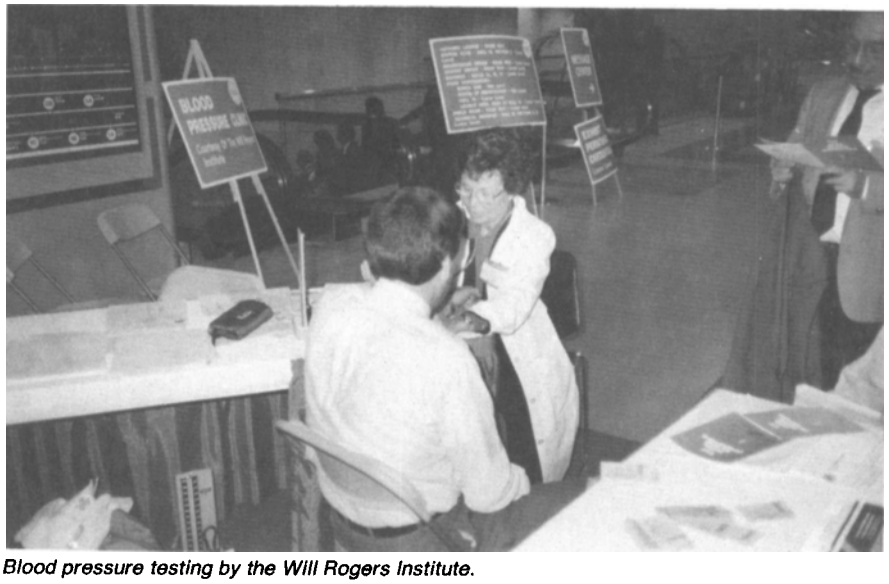
Leonard F. Coleman, left, and William Koch, right, and their wives at the Friday evening reception.

Coffee Club

Conference activities got off to a good start each morning with a coffee club sponsored by Fuji Photo Film, U.S.A., Inc. Facilities were available to registrants from 8 a.m. to 10 a.m. each day of the conference.

Blood Pressure Testing

Conference attendees were given the opportunity of having their blood pressure checked through the courtesy of the Will Rogers Institute of White Plains, N. Y. Many conference attendees took advantage of the screening program. The screening, which was free, took place in the registration area during registration hours.



Blood pressure testing by the Will Rogers Institute.

SMPTE Banquet

One of the major social highlights of the 128th Conference was the cocktail party, banquet, and dance that was held on the evening of October 27, in the Grand Ballroom of the New York Hilton Hotel. Many of the guests who attended commented on the beautiful decorations and attractive setting of the banquet. After the Banquet Reception, the guests went into the Grand Ballroom for an evening of dining, dancing, and entertainment. Everyone agreed that this was one of the best banquets in recent years.

President Harold Eady welcoming guests at the SMPTE Banquet Reception.

Conference Vice-President Maurice L. French making a few comments at the Banquet.

Everyone had a wonderful time at the SMPTE Banquet.

SMPTE President Harold Eady congratulating Linda Young on her work as chairwoman of the Spouses' Program.

The Banquet had some of the most distinctive decorations, including this replica of the George Washington Bridge.

Spouses' Program

An outstanding Spouses' Program, under the direction of Chairwoman Linda Young, was available to companions of those attending the conference. The program featured visits to many of New York's most exciting attractions.

On Friday, October 24, a Welcoming Tea and Activities Sign-Up were held at the Hilton. On Saturday, the program got under way with continental breakfast at the Hilton. Following a lecture by architect Andrew Dolkart on "Trends in New York Architecture," with an accompanying slide presentation, the spouses were invited to attend the SMPTE Honors and Awards Luncheon at the Javits Convention Center.

On Sunday morning, bus transportation was arranged to the Greene Street Restaurant in Soho for brunch. As time permitted, they could explore the area's many art galleries and shops. Later, the spouses were taken to Greenwich Village for a bus and walking tour.

Following continental breakfast on Monday, participants traveled to Battery Park, where they boarded the ferry to visit the Statue of Liberty. In the afternoon, they lunched at the Russian Tea Room, another of the city's landmarks.

On Tuesday, the group traveled to the American Museum of Natural History for a tour of Margaret Mead's Hall of Pacific Peoples and the Hall of Gems. At lunch, they had

The Spouses' Committee. Bottom row, Judith Hunt, Alice Rosenberg, Dorothy Eady. Top row, Patsy Spitzer, Linda Young (chairwoman), Diane Young, Edna Smith, and Pucki Pilzer.

a chance to relax at one of New York's most beautiful restaurants, Tavern on the Green, in Central Park.

On Wednesday, after breakfast, the group visited the Whitney Museum to view the John Singer Sargent Retrospective. The program concluded with lunch at Maxwell's Plum, one of the city's trendiest watering spots.

Chairwoman Linda Young was assisted in arranging this excellent program by a committee consisting of the following members: Mrs. Dorothy Eady, Mrs. Judith Hunt, Mrs. Pucki Pilzer, Mrs. Alice Rosenberg, Mrs. Edna Smith, Mrs. Patsy Spicer, and Mrs. Diane Young. The Society is grateful to the many sponsoring organizations who helped make the Spouses' Program at the 128th Conference an outstanding one.

Acknowledgments

The Society wishes to express its thanks to the following companies and organizations which acted as sponsors for the 128th Conference: *Lounge Area:* Abekas Video Systems, Inc; *Honors and Awards General Reception:* Agfa-Gevaert, Inc.; *Program Printing and 1-in. Tape Machine:* Ampex Corp.; *Pages:* Capital Cities/ABC Inc.; *Honors and Awards VIP Reception:* Dolby Laboratories, Inc.; *Copier and Welcoming Reception:* Eastman Kodak Co.; *Coffee Club:* Fuji Photo Film U.S.A., Inc.; *Projectors:* General Electric Co.; *Monitors:* Ikegami Electronics (USA) Inc.; *Theater for Session:* Loews Corp.; *Fellows Reception:* Magna-Tech Electronic Co., Inc.; *Banquet Wines:* National Broadcasting Co.; *Banquet Reception:* 3M Co.; *Blood Pressure Clinic:* Will Rogers Institute.

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Association of Cinema and Video Laboratories (ACVL) Fall Meeting

The Association of Cinema and Video Laboratories met at the Javits Convention Center in New York City on Saturday, October 25, 1986. The Technical Forum consisted of presentations of interest to post-production facilities. The keynote speaker was Richard Schafer, director of market development, Eastman Kodak Co. Mike Michelson, president, Technical Film Systems, presented a paper and videotape demonstrating the installation and operation of a continuous feed printer at Metro Laboratories in Hollywood. Fred Lemmin, president, PFA, Toronto, chaired a presentation of "The New Generation of VTRs." Giving the backgrounds of the two products were David Fibush, product line manager, Ampex Corp., and Dr. Peter Smith, director, Equipment Development Laboratory, National Broadcasting Co.

After a break for lunch with the SMPTE, the program continued, with Demeitrius Yackanich, U.S. Dept. of Labor, discussing an "Employee's Right To Know" with regard to chemicals. Thomas Dufficy, executive vice-president, National Association of Photographic Manufacturers, then explained "Complying With Environmental Regulations." A panel chaired by Jim Merkle, Allied Film & Video, compared "Secondary Color Correctors." Participating were Robert Nollner, engineering vice-president, MPL Film & Video; John Carlson, vice-president, Monaco Video; and Mark Anzicek, video engineering supervisor, Allied Film & Video.

The previous day the Board of Directors of ACVL elected the following, to serve in 1987: Burton Stone, Deluxe Laboratories, Inc., president; Ed Watton, Forde Motion Picture Labs, first vice-president; Anthony Bruno, Metro Laboratories, second vice-president; Jim Merkle, Allied Film & Video, treasurer; and Gail Ringer, RVS Video, secretary.

Engineering Technology Committee Meetings

"Today's Technology — Tomorrow's Reality?" the theme for the 128th SMPTE Technical Conference, was the topic of the meetings of the committees on engineering technologies, their working groups, subcommittees, and study groups, held at the Jacob K. Javits Convention Center October 24-October 29, 1986. Synopses of the meeting, showing the progress made by the committees, are presented herein, with additional information available from Si Becker, Manager of Engineering, or Barry C. Detwiler, Staff Television Engineer.

Working Group on High Definition Electronic Production (N15.4)

The meeting opened with a report from Keith Field, Chairman of the Ad Hoc Group on High-Definition Studio Systems. This group is collecting data from all manufacturers and users of current HDTV production equipment. The goal of the group is to completely document existing practice in connection with 1125/60/2:1 HDTV production equipment. Documentation will be framed in the format of a standard, which will rigorously define the existing system. In pursuing this work the WG-HDEP is not ignoring other HDTV systems which may be proposed, but it is defining the parameters of the existing system. Interface conflicts uncovered in the course of the work will be identified and, if not resolved by the deadline of March 1987, will be included in the resulting report to the WG-HDEP.

A report was received of progress in Colorimetry and Television Amplitude Transfer Characteristic (gamma) Subgroup from LeRoy DeMarsh. This group has collated the results of an extensive literature search and is in the final phases of issuing a "strawman" proposal as a working tool toward development of a complete specification for HDTV colorimetry and gamma. There is widespread support to deprecate the word "gamma" because its connotation in television does not coincide with usage in film cinematography. Here, it commonly deals with artistic aspect of the D-log E curve, while in television circles it refers to a correction applied in the camera to compensate for the grid voltage vs. light output of cathode ray displays.

A consensus could not be reached by the committee on a term to replace the word "gamma" in the deliberation of DeMarsh's Subgroup. The HDTV production system being considered by the WG-HDEP in the future could feed a wide range of display devices with various transfer characteristics. More significant, however, the WG-HDEP is committed to arriving at an optimum signal specification for images captured in production to yield the widest range of transparent flexibility in image processing. This tack imposes a greater need for care in arriving at an optimum gray scale transfer characteristic than was needed in past TV production systems. Suitable terms to replace "gamma" were reviewed with the committee considering proposals of words such as brightness, light, luminance, video signal amplitude, and gray scale to define the transfer function in question. The subject will be considered again at the next meeting of WG-HDEP. The findings of DeMarsh's group will be considered by WG-HDEP in recommending standards for HDEP systems when the results of Keith Field's group are presented to WG-HDEP.

Ben Crutchfield, NAB, reviewed the background and progress of the NAB (MST)-sponsored Advanced Television Terrestrial Demonstration project utilizing MUSE Transmission. This demonstration is now scheduled for January 1987 in Washington, D.C. Ryo Mochizuki, director, engineering headquarters, NHK, gave a comprehensive overview of the state of development of HDTV equipment by various Japanese manufacturers. An important part of the work under way in Japan is to implement flexible HDTV systems to link with film at various stages of post-production, including film-to-tape and tape-to-film. Off-line editing of HDTV products on economical 525-line systems is envisioned. Also discussed was the high priority given to developing a truly bright large-screen projector for theater applications of HDTV. A chart of HDTV equipment available from various Japanese manufacturers was distributed.

Charles Sandbank and David Wood reviewed the work going on in Europe and indicated the 1125-line, 60-Hz system is a major focus of their work. Arpad G. Toth, North American Philips, spoke of the Eureka Program of the EEC (European Economic Community) to develop a 50-Hz HDTV system due to the large investment in TV sets and production equipment. The goal here is to evolve toward HDTV by intermediate steps which are compatible with existing 50-Hz systems based on MAC. Concentration is on optimal signal processing for bandwidth economies and division of processing before and after transmission.

Dimitri Balachoff commented on the need for further psychological studies on the difference in perception of TV and film images. His work indicates the two types of images affect the left and right sides of the brain differently.

No voting or other due-process transactions were held at this meeting.

The next meeting of the WG-HDEP is scheduled for Sunday, February 8, 1987, the day following the SMPTE 21st Annual Television Conference in San Francisco.

—Richard J. Stumpf, Chairman

Working Group on Broadcast Picture Monitor Colorimetry Meeting (T14.4/2)

Approximately 20 people from three continents were in attendance.

After a lengthy discussion on the reorganization of the Working Group, a consensus was reached to request that the parent committee, Television Video Technology, consider expanding and changing the name and scope to Professional/Studio Picture Monitor Systems, charged with the study of the specifications, methodology, metrology, alignment, assessment, and viewing environment of professional picture monitors and displays.

A meeting of the Committee on Theatrical Projection Technology.

Specialists representing production houses, network broadcasters, monitor manufacturers, and an instrument manufacturer actively engaged in the Working Group will pursue the objectives.

Topics such as European versus North American monitor alignment practices, viewing environments, the various PLUGE signals, and the impact of "setup" versus "no setup" for monitors were also discussed.

Three major tasks assigned to the group will be completed within the year:

(1) The development of picture monitor specifications based on the evolutionary work of RP 37, Color Temperature for Color Television Studio Monitors; RP 71, Setting Chromaticity and Luminance of White Color Television Monitors Using Shadow-Mask Picture Types; and Proposed RP 145, Color Monitor Phosphors

(2) Development of the methodology and metrology of picture monitor alignment and measurement that satisfy the practical industry requirements

(3) Development of a suitable critical viewing environment for North America.

Preliminary material exists on picture monitor alignment and critical viewing conditions based on CBC, CCIR, and EBU documents. The original luminance value of RP 71 was established in 1977 at 30 fL. Users and manufacturers of professional picture monitors will be contacted to reaffirm or modify the present value as still applicable.

Liaison has been established with IEEE/BTS 2.1.7 on metrology of self-luminance displays.

The meeting concluded with an informative monitor alignment demonstration. The Working Group expressed its appreciation for the equipment provided through the combined efforts of Mr. Kane of Philips Test Equipment and Mr. Godber of NBC.

—R. Zavada, Chairman, and F. Benedikt, Secretary

Committee on Television Video Technology Meeting (T14)

Important changes in the objectives and structure of the Television Video Technology Committee took place at this meeting. The Committee notes the lack of an integrated approach to the setting of standards for use in television program production due to the current division of responsibilities between EIA, IEEE, NAB, and the SMPTE, and proposes that appropriate jurisdictional and structural changes be made to allow the creation of integrated packages of documents concerning 525-line NTSC, analog components, and digital components. The packages would cover the essentials of interchange in electrical and recorded media forms, including methodology for assuring conformity with these standards. Initial work is already underway.

The meeting approved the creation of new subgroups, including:

- Study Group on Colorimetry and Transfer Characteristics for 525/60 Television Systems (T14.29), C. B. Neal, Chairman
- Working Group on Broadcast Picture Monitors (T14.28), R. J. Zavada, Chairman
- Ad Hoc Group to Review PH22.96-1982 (T14.2/2), E. Ancona, Chairman
- Working Group on Studio Video Standards (T14.22), formed by the amalgamation of the Working Groups on Digital Video Standards and on Component Analog Video Standards, M. Weiss, Chairman.

The current Subcommittee on Colorimetry and the Working Group on Subjective Test Films were disbanded, with a vote of thanks to their Chairpersons, S. F. Quinn and J. West-Cyr, for their past efforts on behalf of the SMPTE. Review of RP 7-1982 and RP 27.7, was entrusted to L. DeMarsh.

In reviewing the report of the subgroups of the Television Technology Committee, good progress is reported in component video standards, both digital and analog, by M. Weiss, chairman of the new WG-SVS, and in digital control by Chairman T. Meyer of SC-DCT.

—K. Davies, Chairman

Subcommittee on Digital Control for Television Meeting (T14.10)

The subcommittee discussed the status of standards. All basic standards for the SMPTE-EBU Control Systems (ES Bus) now exist: ANSI-SMPTE 207M, Electrical/Mechanical; RP 113, Supervisory; RP 139, Tributary to Tributary Interconnect; and RP 138, Control Message Architecture. EBU Tech 3245 contains functionally identical sections for all of the SMPTE standards.

Two message standards are nearly complete: System Service and Common Machine Messages, and VTR Control Messages. The EBU has published functionally identical message sets as supplements 1 and 2 to Tech 3245.

Work has started on control messages for audio tape recorders, production switches, MERPS, routing switchers, and telecine.

The Eastern Bloc countries have recently adopted the EBU standards verbatim as their own control standards.

The Subcommittee is investigating possible interconnection with the MIDI Bus. This work is directed by Ted Steros, Sony Corp.

—T. R. Meyer, Chairman

The Equipment Exhibit

One of the major attractions of the conference, the Equipment Exhibit, was officially opened on Saturday, October 25. It ran for four days, concluding on October 28. The exhibit was the largest in the Society history, with a record 260 companies participating. A total of 805 booths were taken, occupying approximately 170,000 ft^2 in the brand new Jacob K. Javits Convention Center, one of the latest and most exciting additions to the New York City skyline.

A list of exhibitors follows.

List of Exhibitors

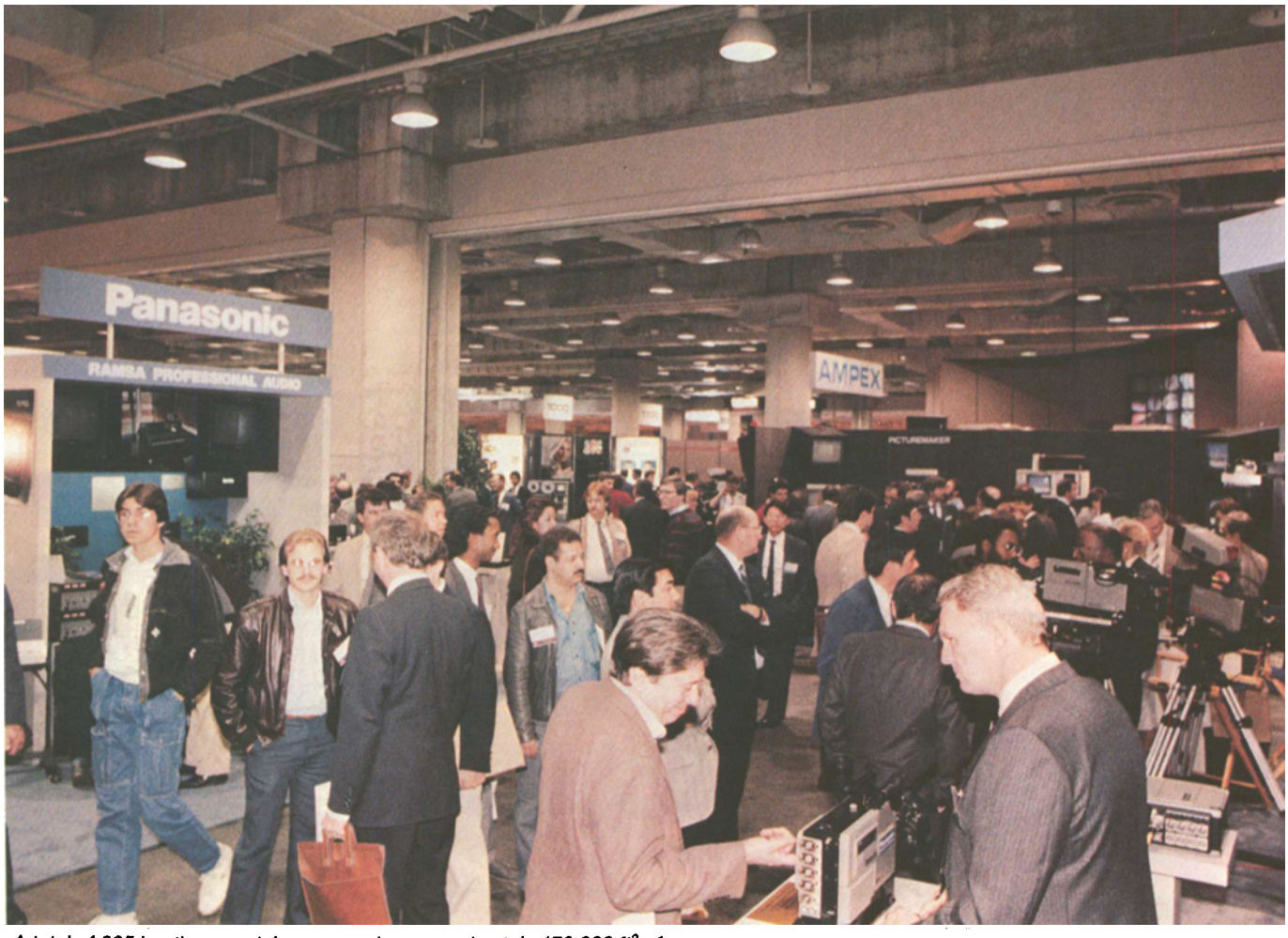
Abbott & Co.
Abekas Video Systems, Inc.
Acmade Technologies Inc.
Adams-Smith
Adcom Communications Inc.
AEG Corp.
A.F. Associates, Inc.
Agfa-Gevaert, Inc.
AKG Acoustics, Inc.
Alamar Electronics USA, Inc.
Alexander Manufacturing Co.
Alpha Audio
Alpha Video & Electronics Co.
ALTA Group, Inc.
American Studio Equipment
American Theatre Products Co., Inc.
Amherst Electronic Instruments, Inc.
Amperex Electronic Corp.
Ampex Corp.
Amtel Systems, Inc.
Andiamo, Inc.
Angenieux Corp. of America
Anton/Bauer, Inc.
Anvil Cases, Inc.
Aphex Systems, Ltd.
Arriflex
Artel Communications Corp.
Artronics Inc.
Asaca/Shibasoku Corp. of America
Aston Electronics, Inc.
Audico, Inc.
Audio Services Corp.
Aurora Systems
Band Pro Film/Video, Inc.
Barco Industries, Inc.
Franklyn R. Beemish & Co., Jem-Fab Corp.
Belar Electronics Laboratory, Inc.
Belden Communications
Beyer Dynamic, Inc.
BHP, Inc.
Bi-Tronics Inc.
Robert Bosch Corp. (see BTS)
BTS Broadcast Television Systems

Conference Vice-President Maurice L. French (left) and SMPTE President Harold Eady participate in the ribbon-cutting ceremony opening the equipment exhibit.

The New York exhibit broke a record for attendance.

Branch & Appleby Ltd.
Calaway Engineering
Calzone Case Co.
The Camera Mart, Inc.
Canon U.S.A. Inc.
Dwight Cavendish
CEI Technology
Central Dynamics Ltd.
Centro Corp.
Century Precision Optics
Cetec Vega
Chyron Corp.
Cine 60 Inc.
Cinema Products Corp.
Cinematography Electronics, Inc.
Cipher Digital, Time Code Tech.
Clear-Com Intercom Systems
CMX Corp.
Coherent Communications
ColorGraphics Systems, Inc.
Colortran, Inc.
Comprehensive Video Supply Corp.
Compu=Prompt
Computer Prompting Corp.
Convergence Corp.
Corporate Communications Consultants Inc.
Crosspoint Latch Corp.
Datum Inc.
Davis & Sanford Co., Inc.
DeSisti Lighting/Desmar Corp.
Di-Tech Inc.
Dolby Laboratories, Inc.
Dorrough Electronics
DSC
Dubner Computer Systems, Inc.
Dynair Electronics, Inc.
Dyna-Might Sound & Lighting, Inc.
Eastman Kodak Co.
ECHOlab Inc.
Editron
Elcon Associates
ESE
Ethereum Scientific Corp.
Eventide Inc.
Evertz Microsystems Ltd.
Excalibur Industries
Fairlight Instruments, Inc.
Faroudja Laboratories, Inc.
FGV Panther
Film Processing Corp.
FOR-A Corp. of America
Forecast Installations Inc.
Fortel Inc.
Fostex Corp. of America
Frezzolini Electronics Inc.
Fries Engineering, Inc.
Fuji Photo Film U.S.A., Inc.
Fujinon Inc.
Future Productions
General Electric Co.

More than 16,000 people viewed the vast equipment exhibit.



A total of 805 booths were taken occupying approximately 170,000 ft² of space.

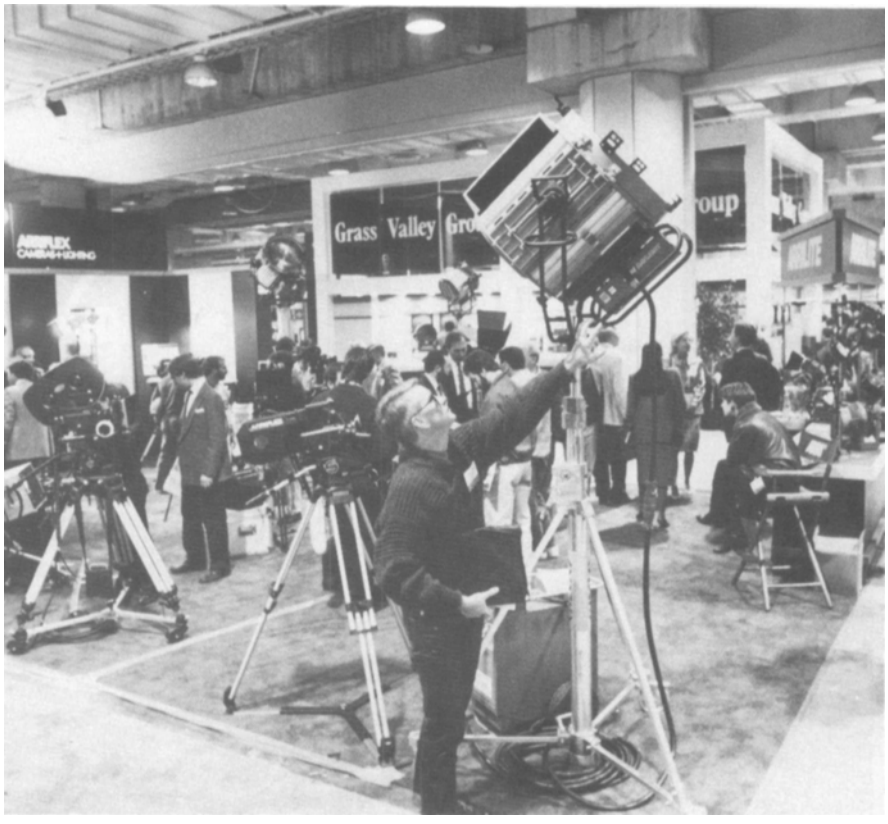
G & M Power Products Inc.
Alan Gordon Enterprises, Inc.
Gotham Audio
Graham-Patten Systems, Inc.
Grass Valley Group, Inc.
The Great American Market
James Grunder & Associates, Inc.
Harris Corp., Broadcast Div.
Harris Sound, Inc.
Harrison & Harrison Optical Engineers
Harrison Systems, Inc.
HEDCO
Karl Heitz, Inc.
Hewlett Packard
Hitachi Denshi America
HM Electronics, Inc.
Hollytronics, Inc.
Hollywood Film Co.
Hotronic, Inc.
ICM Video
Ikegami Electronics (USA) Inc.
ILC Technology, Inc.
Image Video Ltd.
Innovative TV Equipment
Integrated Technologies, Inc.
Interactive Motion Control
Intergroup Video Systems
The International Film & Television Workshops
J-K Camera Eng. Inc.
The J-Lab Co.
J & R Film/Magnasync Moviola
KEM Elektronik Mechanik GmbH
K & H Prods.
Kinotone, Inc.
Kintek, Inc.
Kliegl Bros.
Lake Systems Corp.
Laumic Co., Inc.
Leitch Video of America, Inc.
Lenco, Inc., Electronics Div.
Lexicon Inc.
Listec Video Corp.
Lowel-Light Manufacturing, Inc.
L.T.M. Corp. of America
M/A-Com Mac, Inc.
Magna-Tech Electronic Co., Inc.
Magni Systems, Inc.
Martin Audio Video Corp.
Matthews Studio Equipment, Inc.
Merlin Engineering Works
Micron Audio
Microtime, Inc.
Midwest Communications Corp.
L. Matthew Miller Associates Ltd.
Miller Fluid Heads (USA) Inc.
Mini-Spec
Mitchell Camera Corp.
Mitsubishi Pro Audio Group
Modulation Sciences, Inc.
Mole-Richardson Co.
Motion Picture Enterprises
Motorola C&E Inc.
Moviecam F.G. Bauer Film Technik
Multi-Track Magnetics, Inc.
Mycro-Tek
Nagra Magnetic Recorders, Inc.
NCE/Ultrascope
NEC America, Broadcast Equipment Div.
L. E. Nelson
Ness Imports Inc.
Neumade Products Corp.
Rupert Neve Inc.
New England Digital
North American Philips Lighting Corp.
Nova Systems, Inc.
NovoMagnetics, Inc.
Nurad Inc.
O'Connor Engineering Labs
Odetics, Inc.
Optical Disc Corp.

A record 260 companies participated in the exhibit.

Most people agreed this was one of the SMPTE's most interesting exhibits in its history.

OSRAM Corp.
Otari Corp.
Oxberry Corp.
Paco Electronics
PAG America, Ltd.
Paltex
Panasonic Broadcast Systems Co.
Peerless Sales Co.
Perrott Engineering Labs, Inc.
Peterson Enterprises, Inc.
Philips Television Equipment (see BTS)
Photo Micro Systems Ltd.
Pinnacle Systems, Inc.
Pinzone Communications Products, Inc.
Plastic Reel Corp. of America
Polaroid Corp.
Pro Battery Co., Inc.
Q-TV
Quanta Corp.
Quantel
Rank Cintel Inc.
Rank Precision Industries, Inc.
Recortec, Inc.
Research Technology International
R.F. Technology
Riviera Broadcast Leasing
RJO Productions, Inc.
Rohde & Schwarz-Polarad, Inc.
Rosco Laboratories
Ross Video Ltd.
RTS Systems, Inc.
Sachtler Corp. of America
Schneider Corp. of America
Schwem Technology
Scientific-Atlanta (Digital Video Systems Div.)
SciTech Corp.
Sennheiser Electronic Corp.
Sescom, Inc.
Sharp Electronics Corp., Broadcast Group
Shure Brothers Inc.
Sigma Electronics, Inc.
Skotel Corp.
Warren R. Smith, Inc.
Solid State Logic
Sondor AG
Sony Corp. of America
Sound Ideas
Sound Technology, Inc.
Soundmaster International Inc.
Steadi-Film Corp.
Steenbeck, Inc.
Strand Lighting
Studio Consultants, Inc.
Superedit
Super8 Sound
Sylvania Lighting IC
TASCAM/TEAC Corp. of America
Technisphere Corp.
Tekskil Industries Inc.
Tektronix, Inc.
Telemetrics

Most major manufacturers of motion-picture and television equipment participated.



The SMPTE exhibit has grown dramatically in the last five years, having expanded by more than 240%.

Telescript
Television Equipment Associates Inc.
Telex Communications, Inc.
Tentel
TFT, Inc.
Thomson-CSF Broadcast, Inc.
3M Co.
Tiffen Manufacturing Corp.
TimeLine, Inc.
Total Spectrum Manufacturing, Inc.
Triconcept
Trompeter Electronics, Inc.
Turner Engineering Inc.
Union Connector Co., Inc.
United Media, Inc.
Ushio America, Inc.
Utah Scientific, Inc.
Vertigo Systems International, Inc.
Vid Video, Inc.
Video Design Pro
Video Services Unlimited
Videomedia, Inc.
Videotek
Viking Cases
Vinten Equipment Inc.
VTA Technologies, Inc.
Winsted Corp.
Zaxcom
Zellan Optics, Ltd.
Zonal Magnetics/Mag-Zon Inc.

A remarkable array of film and video equipment was on display.