

than before. Therefore, we have the following program topics: Digital Technology, Motion Picture, Non-linear Editing, Video Production, Display Devices, and Archiving and Storage.

In addition to our monthly Section meetings and our technical conferences, our Section officers have been organizing a number of one or two-day technical seminars to enrich our

members' knowledge, with in-depth training by experts whom we appreciate and are indebted to for their continuous generosity and indispensable support. We, the fortunate generation, have been witness to so many stunning technology developments in all directions, happening in just these few decades.

Lifelong learning is a must in our lives. All the SMPTE leaders should

arrange technology updates to our members through section meetings, conferences, seminars, tutorials, and other innovative means. Every member and his or her friends should continuously support the Society to go through many more 80 years successfully in the future. Let all of us continue to keep the SMPTE we are proud of.

— Fung Fai Lam

---

## MEMBERS' REFLECTIONS ON SOCIETY'S ANNIVERSARY

### Preface

#### Edgar A. Schuller

Reading the reminiscences of the many contributors to this 80th anniversary edition of the *Journal* was for me a capsule review of the last 45 years of my association with the industry.

Two incidents relative to SMPTE were crucial in affecting my own future career. The first occurred in 1950 when, with a college degree in broadcasting, I was drafted into the army. As a recruit just completing basic training, I was being interviewed for job classification and was told that an oral and written test the next day would determine my occupational specialty. A rather long story of what happened can be summarized by saying that my reading a brand new technical book that evening until dawn resulted in my being classified as chief instructor of the new Signal C Recording School at Fort Monmouth, N.J. The book was *Elements of Sound Recording* (John Wiley & Sons, 1949) by Dr. Halley Wolf and Dr. John Frayne, both with ERPI Division of the Western Electric Co. Dr. Frayne was later president of SMPTE in 1955 and 1956. Years later, in 1986, I was honored to have him autograph the book when I told him the story of how his book steered me into a career.

The second event occurred a few months later, in 1951. As chief



Edgar A. Schuller

instructor of the sound recording school, the commanding officer had authorized me to travel to New York City to visit the Eastman Kodak headquarters, then on Madison Avenue. I was to obtain information on Kodak's 35mm film stocks for use in single and double system sound cameras. The late Calvin Hotchkiss (Life Fellow and later Chairman of the Board of Editors) gave me the desired spec sheets and then told me that membership in SMPTE was a necessity for anyone intending to enter the commercial end of the newsreel business. (35mm single system newsreel cameras were still used extensively at that time.) His colleagues, Ed Warnecke and Ed Winkler, both Life Fellows of

the Society, also stressed the importance of SMPTE in my forthcoming post-army job search. Soon thereafter I joined the Society as an associate member. In retrospect this was probably the most important date in my career.

When my first issue of the *Journal* arrived (then in 9-in. x 6-in. size and without advertising) it was the beginning of my education by SMPTE. A group of us soon formed the Committee for Education of Sound Technicians, which culminated in a 20-week course at New York University.

Many other courses were developed for NYU with instructors drawn from the engineers in SMPTE. Several of these invited me to join engineering and administrative committees of the Society. I soon realized that a certain collegial relationship develops when working in SMPTE committees. In addition, I have not only learned from my peers but have also formed lifelong friendships. Hopefully I have also made some worthwhile contributions.

I treasure the associations with these fine people and am pleased that so many of my colleagues have taken the time to contribute to this 80th anniversary retrospective. It was heartwarming to hear from old friends again. I thank each of you.

— Edgar A. Schuller  
Chair, Archival Papers  
and Historical Committee

---

Edgar A. Schuller is with Cartridge Display Systems, Inc., and lives in Rego Park, N.Y. He is a Life Fellow of the SMPTE.

## Kenneth M. Mason

It's nice to have an opportunity to make a few comments on the occasion of SMPTE's 80th anniversary (and to be able to do so!). It also gives me a chance to send greetings to old comrades. SMPTE was always important to me because of people.

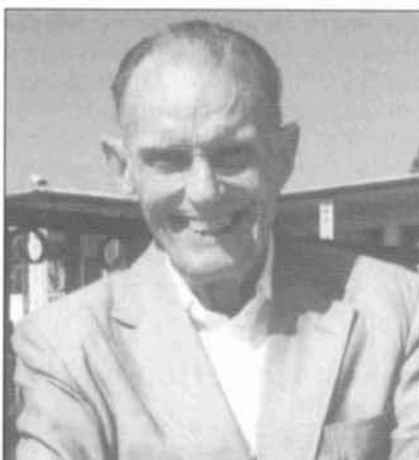
I'm going to dwell on technological milestones only briefly. Anyone can look these up in Progress Reports, *SMPTE Journals*, etc. The fact is that SMPTE played a very significant (if not indispensable) role in the welfare of both motion pictures and television over the past several decades — starting in the 1940s.

Everyone knows about the explosion into color that began in the early 1950s, as well as the myriad of new aspect ratios, screen formats, and revolutionary developments in television that followed. SMPTE standards and test films guided manufacturers, cameramen, and laboratories through these changes, and ensured that quality was maintained in theatrical projection. SMPTE's assistance in the television field is no less impressive, providing standards for camera, transmission, videotape, etc. SMPTE won a Citation from the National Television Academy in 1975 for development of the videotape time and control code. Many SMPTE members and supporting corporations have been recognized by both the Motion Picture and Television Academies.

So now, technology aside, what are some of the thoughts that come to mind when one reflects on over 40 years of participation in an organization like SMPTE? There were many exciting times and memorable events. I will mention just a few with comments as appropriate.

- Name change. It was with some trepidation that "T" was added to SMPE in 1950. What a glorious decision that was!

- Section activity. Back in the late 1940s and early 1950s there began an effort, particularly in the Chicago



Kenneth M. Mason

Section, to hold special one or two-day meetings "on location" — away from the headquarters city. This allowed much wider participation and proved to be tremendously successful. Perhaps this had influence on starting a Winter Television Conference (Detroit and snow notwithstanding); and even to think about reducing the number of semiannual National Conferences from two to one.

- Merger!! This is a very popular buzzword today. Back in 1965 and 1966 it had much significance for SMPTE. How many remember how close we came to a merger with the Society of Photographic Scientists & Engineers (SPSE)? This idea originated from a perfectly logical interest in the possibility of benefits in financial and administrative operations. The proposal was discussed and debated for many months and involved thousands of man hours. It came so close to reality that Articles of Incorporation & By-Laws for the Surviving Corporation were actually drawn up (making many lawyers happy!) The issue came to a vote of the membership in mid-1966 and was defeated by a narrow margin!

- Conferences. Perhaps as an outgrowth of the merger episode, there came increasing pressure to consider holding only one National Conference each year instead of two. These were very expensive for exhibitors and an increasing burden for volunteers. There were those that had concern

that there could be a shortage of good papers for the *Journal* if only one meeting took place. The Board of Governors decided to take the plunge, and in 1976 there was only one conference. By this time the Winter Television Conference was alive and doing well, and the change survived.

- High-speed photography. One of my fondest memories occurred during the second year of my presidency (1976). High-speed photography and photoinstrumentation once played a major role in the affairs of the Society. There was a V.P. for Instrumentation and High Speed Affairs on the Board of Governors. Achievements in the field were recognized by prestigious awards: the E.I. duPont Gold Medal from 1960 to 1974, and the Photo-Sonics Achievement Award from 1975 through 1983.

This discipline was important enough that International High Speed Congresses were held biannually from 1952 through 1976 in countries all over the world. The first Congress took place in Washington, D.C., in May 1952, in conjunction with the SMPTE semiannual Conference. Other High Speed Congresses were held separately. They were popular and well attended. The technology was widely used in manufacturing, photo analysis, medicine, etc.

In 1976 (a year in which a High Speed Congress took place in the U.S.), a famous scientist from Russia, Dr. A. S. Dubovic, was selected for the Photo-Sonics Award. Dr. Dubovic was renowned for his work on mechano-optical camera systems used for high-speed analysis. For Dr. Dubovic, this award was the highest possible recognition he could receive for his work. Unfortunately, he was not allowed to come to the U.S. to accept this honor because of the strained political relations that existed at the time in his country. Fortunately, I was able to go to Russia and present the citation to Dr. Dubovic in person and in front of his peers. He was most appreciative.

- International participation. Of great satisfaction was the steady and welcome increase in overseas activity

Kenneth M. Mason retired from Eastman Kodak Co., Rochester, N.Y., and now lives in Oldsmar, Fla. He served as SMPTE President for the 1975-76 term and as Conference Vice-President in 1965-66. He is an Honorary Member of the Society.

that began in earnest in the early 1970s. More and more SMPTE members from the U.S. attended meetings abroad on a regular basis and our conferences came to be increasingly popular for visitors. Organizations such as BKSTS, Photokina, and UNIATEC were mainly responsible for this, as well as the International Standards Organization (ISO), which gained in stature as well as TV technology

groups. And SMPTE Sections outside the U.S. increased in number. There are now ten.

• Intersociety Committee. What a nice segue into retirement, serving on this committee as SMPTE's representative (other member organizations include ACVL, MPAA, NATO, and TEA — all with vested interest in achieving the highest quality and most enjoyable experience in motion picture

theaters). I served as chairman until the early 1990s and was privileged to turn the gavel over to my son, John. Intersociety is still going strong.

So, it was an exciting time and good to be a part of this vibrant organization. I predict the future will produce new technology beyond our imagination and that SMPTE will be an important partner.

— Kenneth M. Mason

## Edward P. Hobson II

In the last few decades the most important developments in my mind have been the invention of videotape recording; the subsequent D-1 digital video recorder standard; and the standardization of the serial digital television standard, SMPTE 259M. These

Edward P. Hobson II is vice-president, marketing, Sony Electronics Inc., San Jose, Calif. He currently serves as SMPTE Conference Vice-President and is a Fellow of the Society.



Edward P. Hobson II

have laid the foundation for the Advanced Television Committee and the all-digital transmission system about to debut. It is through the untiring work of the many volunteers that the production, transmission, and recording standards have been developed, assuring all consumers of a system that should last for another 50 years.

— Edward P. Hobson II,  
Conference Vice-President

## Herbert Barnett

Reflecting on the over five decades of association with SMPTE, it is gratifying to note its invaluable contributions to the entertainment fields it serves. The SMPTE demonstrated excellent foresight in its decision to extend its field of interest to television, becoming SMPTE.

The Society is continually contributing technical innovations and techniques. These are important but none are more valuable than its program of standardization. On two occasions — the late 1920s and 1950s — tendencies to innovate without regard to universal application have threatened the economic well-being of exhibitors in particular.

Herbert Barnett is retired from V & O Press Co. and lives in Greenwood, Ark. He served as SMPTE President for the 1953-54 term and is a Life Fellow of the Society.



Herbert Barnett

Cinerama appeared on the scene in 1952 as a new and interesting picture form. While clearly an impractical standard format, it instigated the most intense search for alternate, but similar widescreen and simulated three-

dimensional effects. This led to the aforementioned 1950s innovations. It was my privilege to reconcile actions of the studios with concerns of the exhibitors.

While some good has come from these searches, the principal benefit has come from their stimulation of interest in research and development, continuing with remarkable results.

The practical application of magnetic recording of sound and picture, instituted some time ago, represents an important development both technically and economically.

Past decades were not without their contributions and desire to improve. The tools the engineer has available today provide great opportunity to advance the entertainment and information arts and are commended for the resulting accomplishments.

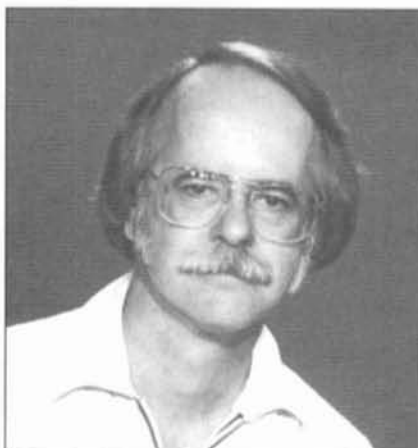
— Herbert Barnett

## Glen Pensinger

As a college student in the late 1950s, the *Journal* taught me the intricacies of magnetic video recording. My mentors, courtesy of its pages, were Charlie Ginsberg and Charlie Anderson, Ray Dolby, and Kurt Machien. Thanks to them, I felt comfortable with that big gray VR-1000 when I finally got my hands on one in 1960.

Through the *Journal*, Otto Schade and LeRoy DeMarsh tutored me on color perception; Carlton Winckler gave me lighting tips; and Bill Glenn, Bill Schreiber, and Stan Baron taught me about video compression. Although I've had the honor of meeting some of these people in later years, it was the *Journal* that gave me the opportunity to learn from them.

During my 40 years in this business, the *Journal* has documented the major technical milestones: the beginnings of videotape and color in the 1950s; Plumbicons, semiconductor



Glen Pensinger

circuitry, and computer control in the 1960s; nonlinear editing, digital video, and HDTV in the 1970s; internationally standardized component digital video, CCD sensors, and video compression in the 1980s. In the 1990s, the *Journal* is documenting refinements to all of these, as well as the apparent move to computer synthesis of practically everything.

Glen Pensinger teaches television engineering at San Jose State University, San Jose, Calif. He is a Fellow of the SMPTE.

Of course, our *Journal* has noted a few promising video technologies that didn't last, most of them recording schemes: thermoplastic in 1960; EVR in 1967; a photographic disc proposal in 1970; one using holographic storage in 1973, and a magnetic sheet in 1975. There were also more than a few hybrid digital/analog HDTV transmission schemes documented in the 1980s that didn't make it into the 1990s. Nonetheless, the *Journal's* peer review process insures that technical papers have passed muster with other workers in the field. Popularity or commercial success may not be guaranteed, but technical accuracy is.

Over the years, I've learned a great deal from SMPTE conferences and seminars, but I have a special feeling for the *Journal* because it provided up-to-date information when I was starting out, and that sort of thing was hard to come by. As a teacher, the *Journal* has been second only to the many friends I've made in SMPTE.

— Glen Pensinger

## C. Russell Dupree

The request for commentary relating to significant events in our history brings forth thoughts of many breakthroughs in our craft. Some of the advances that I feel have had a strong impact include: the introduction of high-quality non-nitrate-base films for motion picture use; the increase in safety of operation and the improved stability, which have been a boon to the industry; the advent of monopack color and the related processes, as well as the introduction of magnetic sound recording and the electronic color analyzer. Each of these advances has had great impact on the industry.

The move of the SMPTE to offer exhibits at its conferences was a major nontechnical advancement. This move allowed members direct access to the manufacturers of equipment and the



C. Russell Dupree

chance to see and discuss their products. The interchange of ideas resulted in ever better and less costly products.

While many of the developments had a significant effect on our craft, many other advances were incremental, such as the design of high-speed

production color printers, film processing equipment, film processing chemistry, water conservation, and waste treatment. These developments greatly improved the quality and quantity of our product while making excellent progress in reducing the detrimental effects on our environment. Perhaps none of these could be classed as a major event, but the cumulative effect was of great importance.

All of the above came about, to a great degree, because we as members of the SMPTE felt free and were encouraged to share our ideas and experiences. I cherish the memories of the many fine people that I have come to know and admire while a member of the SMPTE.

The most important event in my career was joining the SMPTE. This gave me many chances to meet with leaders in our industry; it was my entry to working with various techni-

C. Russell Dupree is a consultant in Green Valley, Ariz. He served as a Regional Governor in 1966-67 and is a Life Fellow of the SMPTE.

cal committees and eventually to work through Section offices and become a member of the Board of Governors.

The following are ramblings of one who is old enough to sit on the sidelines and usually does.

My interest in this industry started about 1925 when my buddy, whose father was a theater manager in a small town in Illinois, and I used to project the second show on Saturday night so that the "operator" could sit in the balcony with his "significant other." One of the first things he showed us was

how to slowly speed up the projector, thereby trimming at least ten minutes off the second show. That worked, but it also made Tom Mix and Tony the fastest pair in the West.

The thought of a couple of pre-teenagers running nitrate film in a theater has a high "shudder" factor. The only nitrate film fire I ever had occurred in a sound-on-film recorder. After the smoke cleared away I was assured by the head of one of the Hollywood Studio Sound Departments that such a thing could not possibly happen.

Although I started my professional career in sound recording, I drifted into the engineering area with design efforts in the areas of special-purpose cameras, projectors, printers, and film processors. Side ventures took me into television, ultrasonics, and consulting activities. My last venture in the business was to design and help commission a small color film laboratory for Brigham Young University in Provo, Utah, as an adjunct to their studios. All in all, a very satisfying series of happenings.

— C. Russell Dupree

### Frederick M. Remley, Jr.



Frederick M. Remley, Jr.

I had the good fortune to begin my work in television at a time when the only means available for distributing television programs was to make motion picture films of video images displayed on CRTs (kinescopes). These kinescope recordings were nicknamed, and occasionally cursed, as "kines." Some old-timers in the business may raise their graying eyebrows at my enthusiasm, but the technical challenge of making kines was stimulating. These old-time recordings were difficult to do well, as archives of classic television programs often demonstrate, but good results were achievable.

My first and last employer following college graduation was the University of Michigan. In 1952 and 1953, a few of us in Ann Arbor worked energetically to complete the first campus TV studio. In 1954, we began producing programs for distribution to TV stations around our state and later to stations around the nation. These programs were recorded on 16mm film because that's what there was to use!

Film technology was soon to become almost as important to us as video technology, but local knowledge was hard to come by. Fred Anderegg (SMPTE Life Member), then the head of Photographic Services at the University, told me about SMPTE and

insisted that I read some of his copies of the *Journal*. He also loaned me a densitometer so that I could learn something of sensitometry. My staff and I learned by listening, reading, and doing. The office copy of the classic book, *Sound Recording*, by Frayne and Wolf, was our photographic bible; it thoroughly covered photographic sound recording and film sensitometry. Before long, with the help of an excellent film laboratory in New York, we were doing acceptable work.

As our need for information increased there were good reasons to attend meetings of the SMPTE Detroit Section and the national SMPTE conferences. I was hooked by the Society almost before I knew it.

Ampex introduced the videotape recorder in 1956. That event was surely one of the most important television announcements of the 20th century, and in due course SMPTE accepted

the challenge of standardizing the new technology. Before long the kinescope recorder was a part of history in most television facilities, mine included. We who had experienced the challenges of kinescope recording became immediate enthusiasts for videotape recording; life became easier (but not simple) with a VTR in the recording room.

In 1966, by a stroke of good fortune, I was asked by then chairman Tony Lind (SMPTE Life Fellow) and Engineering VP Bill Wintringham (SMPTE Honorary Member) to chair the SMPTE Video Tape Recording Committee. I accepted and did not look back to film recording after that; my four years as chairman of the VTR Committee (now the TRRT Committee) were filled with excitement. The ongoing project of standardizing the quadruplex recorder was at its peak, the IEC began to standardize VTRs in 1968, and lasting contacts with CCIR (now ITU-R) and EBU were established during the 1966 to 1970 period. Subsequent involvement in the efforts leading to agreement on the Type-C and D-1 television recorder formats, plus chairing IEC SC 60B for 13 years, kept me involved for most of my career with SMPTE and video recording standards. More importantly, this work resulted in lasting friendships with many of the fine people who were and are members of the SMPTE and its engineering committees.

— Frederick M. Remley, Jr.

Frederick M. Remley, Jr., is retired from the University of Michigan, and lives in Ann Arbor, Mich. In addition to the positions mentioned above, he served as Chairman of the Board of Editors of the *SMPTE Journal* and currently chairs WG-ATVF. Remley is an Honorary Member of the Society.

## Richard S. O'Brien

There are many events in which I have been involved or have been, at least, a witness. Not all have involved any specific action by the SMPTE, but the good work done by the Society in establishing standards and publishing papers provided a valuable support for their occurrence.

Probably the most important event was the development and application of videotape recording. We at CBS were very much a part of this one, and the SMPTE was also deeply involved. Probably next was the introduction of digital computer automation of station and network operation. The first use of Plumbicon color cameras was important in its day. Completion of CBS Television City, the first TV studio plant built from the ground up, and design of Broadcast Center, the first computer-automated network plant, are considered important achievements. The film recording of the British Coronation by CBS, NBC, and CBC was a major task and the only time such a technique was used for a world event. Finally, the creation of what was originally named the SMPTE Winter Television Conference was something in which I had a hand.

I have written up two of these episodes, which were especially important to progress in the development of television technology and directly involved the SMPTE: the invention, development, and operational usage of videotape and the efficient response by SMPTE to provide the needed standards; and the SMPTE Winter Television Conference.

### Videotape Recording

During the early 1950s, several organizations were working on development of videotape recording systems. RCA was working with a multi-longitudinal track system; GE was following a similar approach, as was Bing Crosby Enterprises. In England the BBC had a two-track system in development. All of these required



Richard S. O'Brien

very long lengths of tape to record very short programs. Ampex was quietly working on a different system in which a rotating head cross-scanned the tape, drastically reducing the length of tape required.

Ampex showed the late Charlie Ginsburg team's development breadboard to industry executives in early 1956. Based on one viewing and a judgment that the remaining problems could be solved, the late Bill Lodge placed an order for CBS. The late Blair Benson was with Bill at Ampex in Redwood City.

The first showing to the world was made on April 14, 1956, at the CBS Television Affiliates Meeting in the Conrad Hilton Hotel in Chicago. In the meeting room there was a television camera and a number of monitors — not unusual at such a meeting. Bill Lodge, vice-president for engineering and affiliate relations, gave his usual progress report on engineering matters. However, as his talk ended, the monitors suddenly began a repeat of his talk. The picture was hardly distinguishable from the original. A curtain was pulled back and there was the Ampex recorder calmly playing back the recording. The room was in a state of high pandemonium!

The NAB Convention opened the next day and the Ampex machine was the hit of the show. It was first used on-air on November 30, 1956, to time-delay "Doug Edwards and the News" for the West Coast. RCA

announced a machine using the Ampex system but adding color handling capability in 1957. Videotape was off and running!

The role played by the SMPTE was most important, and the way it was done most impressive. In 1958, the SMPTE appointed the Video Tape Committee, with the late Howard Chinn as Chairman. It was charged with establishing standards that would ensure interchangeability of tapes among machines of various manufacturers. With full cooperation by both manufacturers, Ampex and RCA, and by all using networks, the committee worked quickly and efficiently to resolve the growing interchangeability problem in a record short time.

### SMPTE Winter Television Conference

In Seattle, Washington, on February 1 to 3 of this year, 1996, the 30th Winter Television Conference was held. Now called the Advanced Motion Imaging Conference, it is an outgrowth of what began as the Detroit Annual Color Television Conference in 1967.

This important national conference has become a valuable annual technical session for those involved in the advancement and application of television technology. It began through the efforts of the Detroit Section, led by the late Howard Town. Through their efforts, a number of important engineers were attracted to Detroit for a concentrated two-day session with papers and discussions relating to the newest technology for television. Howard, who was a Governor, managed to get the Board to tell its winter meeting at the conference.

Two meetings took place in Detroit, the first in 1967. At the second get-together, in 1968, the Board discussed the value of the conference as a part of the Society's international conference schedule and decided that it should be set up on such a basis. The author, at the time Vice-President for Television Affairs, supported this arrangement and contributed the name, "SMPTE Winter Television Conference," which lasted for many years.

Richard S. O'Brien is retired from CBS Television Network, New York City. He served as SMPTE Vice-President for Television Affairs for the 1968-69 term, and as Secretary in 1975-76. He lives in Briarcliff Manor, N.Y., and is a Life Fellow of the Society.

The first meeting, incidentally, underwrote the word "winter" with a vengeance! The whole area was overwhelmed with a massive blizzard on the night before the first day. The program chairman, Fred Remley, was desperately looking for his scheduled

speakers to arrive. To provide something for those of us who were there, the late Hank Kozanowski was talked into giving an informal review of what was going on in the development field. Hank did a marvelous job, taking up most of the morning session

until some snow-covered authors began to show up.

From this beginning, the Winter Conference has established itself as a valuable and popular SMPTE annual session.

— Richard S. O'Brien

## M. Carlos Kennedy



M. Carlos Kennedy

In my opinion the developments that I have been most important for television in the past five decades are as follows:

- 1946-55. First, the real start of black-and-white television in this country; and second, the color battle with the final selection of NTSC, a compatible system.

- 1956-65. The development of a practical VTR by Ampex signaled the start of the production industry, and the eventual conversion to color in the mid 1960s was the start of the industry as we know it today.

- 1966-75. Electronic editing and the SMPTE time code allowed further, development of the production/post-production industries. Also, the development of the cart systems by RCA and Ampex automated the playing of commercial spots, the money machine of commercial TV stations. In addition, the first digital time base corrector was developed, paving the way for helical formats to play a role in professional broadcasting.

- 1976-85. Quad was finally challenged by the 1-in. helical recorder with its picture in shuttle, slow motion, and lower tape costs, which greatly expanded the recorder market. SMPTE standardized both the Type-B and Type-C formats. ENG was the second major breakthrough, making film obsolete in the TV station news department.

- 1986-95. Digital became the future of TV operations with Rec. 601 and the D-1 format. This continues with tapeless systems for storing program material in the TV industry. Also, during this time ATV became the next generation and was only five years off

during each of the years of the 1990s.

SMPTE has affected my career in many, many ways. Being the SMPTE President was the ultimate. I had been active in the EIA standards efforts for industrial TV for over five years when in early 1964 I joined SMPTE and attended the first standards meeting for helical recording in Ann Arbor, Mich. This started my efforts in SMPTE standards.

In late 1976 the first discussions of a single standard for 1-in. helical recording began. Ampex and RCA/Sony had very similar systems but they were not compatible. Bosch Fernseh had their segmented 1-in. format. The American broadcasters demanded that these systems become standardized before they would purchase any of the units. The committee for Type-C was formed at the Winter Television Conference in San Francisco in February 1977. In a record short eight months we reached agreement, and at the fall SMPTE Conference in Los Angeles the last of the details were finalized for the new Type-C format to begin production early in 1978.

The dream of a single format was not achieved due to the Type-B format, already in use in Europe, from Bosch Fernseh. SMPTE also standardized this format at the same time the Type-C was in process. This gave the market a choice, but the Type-C won in the market due to its picture in shuttle, its ease of editing, and the slow-motion feature that automatic scan tracking offered. The Type-B format was still a segmented format like the Quad even though it was a fine recording format producing excellent pictures.

Being a part of the standardization of the Type-C format under SMPTE really got me started with real enthusiasm for the SMPTE standardization efforts. The power of a voluntary standard in the market spawned a revolution of the broadcast market. Had the user still be left with the choice of the two separate nonsegmented helical 1-in. formats, orderly growth would not have resulted and the both the users and the manufacturers would have suffered. Had the Type-B and Type-C formats not been in direct competition but rather a single 1-in. format, the manufacturers could have worked harder to develop features for the format and the price likely would have been lower for the user. Instead, these two formats had to try to demonstrate their superiority. The manufacturers and the users both spent a lot of time and money with format shoot-outs.

I still believe in a single format in the marketplace for each application as the most efficient method. The manufacturers can show their strengths in their execution on an equal format basis. I guess this is a little idealistic, and history has shown that multiple new formats are, unfortunately, still the way the manufacturers are addressing the marketplace.

— M. Carlos Kennedy

M. Carlos Kennedy retired from Ampex Corp., Redwood City, Calif., and now lives in Flat Rock, N.C. He served as SMPTE President for the 1987-88 term and is a Life Fellow of the SMPTE.

## John P. Pytlak

I believe one of the most significant developments in motion picture technology was CinemaScope by 20th Century-Fox, introduced with the picture, *The Robe*, in 1953.

Faced with increasing competition from the young television industry in the early 1950s, movie companies looked for ways of offering something different to attract people from their living rooms and back into theaters. A variety of innovative technical approaches were taken, including Cinerama (three synchronized projectors to project a very widescreen image); wide-format films (e.g., 70mm Todd-AO); stereophonic sound; and 3-D stereographic films (synchronized projectors with polarized glasses for the left and right image).

Although all these systems enjoyed commercial success, the 35mm anamorphic process popularized by CinemaScope was the most successful and has flourished for over 40 years. Today, about 20% of feature films are released in the anamorphic "scope" format, and they account for the majority of box office income. This summer's blockbuster films — *Twister*, *Mission Impossible*, *The Rock*, *Phenomenon*, *Eraser*, *Multiplicity*, and *Independence Day* — were all released in the anamorphic format, attesting to the lasting success and popularity of "scope."

The development of CinemaScope represents a fine example of building on previous developments and using a systems approach. The Scottish physicist, Sir David Brewster, discovered anamorphic optics in the early 1800s. Professor Ernst Abbe and Zeiss Optical experimented with anamorphic movies as early as 1898. And the Anamorpho-



John P. Pytlak

scopen camera lens used for photographing *The Robe* in 1953 was designed and built by Professor Henri Chrétien decades before. The four-channel magnetic sound track used for early CinemaScope pictures drew heavily upon magnetic recording technology developed by Germany prior to World War II, and the development of magnetic-oxide coating technology. Despite the vacuum tube technology of the early 1950s, four-track magnetic sound was "state of the art" and was unsurpassed in its day.

Other examples of the systems approach were the design of the high-reflectance curved screen, and the 20th Century Fox engineers who "hit the road" to set up theaters for road-show premieres of CinemaScope productions. (Retired SMPTE Engineering Director Alex E. Alden has many fascinating stories from his days as a Fox "roadie.")

The continuing success and popularity of the anamorphic format are a tribute to the motion picture engineers who have taken a proven technology and made it even better. In 1956, Robert Gottshalk founded Panavision, leading to a host of improvements including the Panatar lens for projec-

tors, anamorphic printer lenses, and new camera lenses that minimized the "anamorphic mumps" of earlier lens designs. Tremendous improvements in film sharpness and grain structure (e.g., T-grain technology) have made "Super-35" a viable way of shooting a picture with spherical (nonanamorphic) camera lenses and still produce a quality anamorphic print with a 2.4:1 aspect ratio, despite the smaller image area on the negative. And new projector lens designs with multicoated optics have helped theaters put all that film image quality on the screen. Expensive mag-stripe prints were replaced by Dolby Stereo optical sound prints with the release of *Star Wars* in 1977. Today, digital sound systems from Dolby, Sony, and DTS take theater sound to new heights, but build on the audience demand for high-quality sound started by four-channel magnetic sound.

The real technical triumph of the anamorphic format is its elegant simplicity. Instead of cropping the print film frame to achieve a widescreen image, the anamorphic lens allows the use of the maximum image area on the film, and puts it up on the screen to improve quality. With only a change of projector lens, the image is brighter, sharper, and less grainy.

When I was working my way through college as a projectionist at the Grandview Drive-In in Angola, N.Y., I was always impressed with the quality difference between "scope" and "flat" when trying to fill a 100 ft wide outdoor screen. Almost 30 years later, I have a better appreciation for the technology and still feel CinemaScope ranks as one of the greatest developments in motion picture technology.

— John P. Pytlak  
Chairman, SMPTE Projection  
Technology Committee

## Roderick T. Ryan

In my opinion the most significant developments in motion pictures in

Roderick T. Ryan is a technological consultant in Encino, Calif. He is a Life Fellow of the Society.

the last 50 years have been the introduction of color negative and positive films and processes and the introduction of magnetic sound and picture recording. These inventions and the

equipment that accompanied them changed the entertainment industry on a worldwide basis.

— Roderick T. Ryan

## Glenn Berggren

### Film Projection

#### *Decade of the 1940s: New Coatings, New Projection Lenses, New Projector*

The research and development of the war effort aided the film industry. The new optical antireflection coatings were applied to projection lenses, with the result of at least 30% increase in light output and substantial boost in image contrast on the screen. In 1948, a newly designed series of projection lenses was released by Kollmorgen Corp. with a new  $f1.9$  aperture, all six-element double gauss designs, from 2 in. to 7 in. and beyond, including a new large-diameter lens of 4-in. OD and from 5-in. to 7-in. focal length. These lenses were a substantial improvement in both image quality and light output, especially between 5 in. and 7 in.

The new Simplex XL projector was released to the industry in 1948, with an enclosed oil-bath design, and a conical shutter which provided 5% more screen light than the usual 90° flat shutters. These developments improved screen images, but not in a revolutionary way; each was a marginal element of progress, made within the confines of the cinema projection equipment business and its tight cost structure.

#### *Decade of the 1950s: Cinerama, 3-D, Widescreen in Both 35mm and 70mm*

By 1952, heavily engineered Cinerama was a smashing success, with its huge wraparound screen and dramatic cinematography. It would forever change the cinema industry, creating first a specialty venue in its midst, and then demonstrating the power of widescreen movies.

Also in 1952, *Bwana Devil*, a movie in 35mm 3-D with polarizing glasses was released, beginning a trail of 3-D that started in the Chrysler Display at the New York World's Fair in 1939,

lasting all the way to now.

The largest effect of the 1950s was the introduction of 35mm widescreen in Fox's Cinema-Scope, then Paramount's VistaVision (8-perf 35mm), then 70mm Todd-AO. These three film developments were created in the studio and caused enormous interest by the public, which was being diverted away from the cinema to home black-and-white television.

But the studio engineers never solved all the projection problems. All the Todd-AO projection lenses were replaced with other types by 1965; VistaVision was dropped as a projection format and transferred onto normal 4-perf 35mm film, and the CinemaScope lack of new projection lenses limped through 15 years before its errors were uncovered in the UltraVision® program (1967-1974).

The vertically curved projector gate was developed and applied by both Simplex and Century before 1956, to cope with the visible film flutter of the new widescreen processes in 35mm, and also applied to 70mm projectors. All this left the cinema industry with insufficient depth of focus to cover the design errors in the existing lenses in use at the time, and further led to the widespread practice of "averaging focus" — antagonism toward curved screens, and other myths, which actually had a serious negative effect on the field of projection. The great expansion of home TV led to closing of half of the 20,000 movie houses!

#### *Decade of the 1960s: Dichroics, UltraVision, Shopping Center Cinemas*

During the cinema near-slump of the 1956 to 1963 era, the unique development of dichroic optical coatings (OCLI) was promoted, obtaining a Technical Award from the Academy, and ready to eliminate the serious heat of infrared (IR) rays from the carbon arcs. Also, the option of super-efficient HEA antireflection coatings for projection lenses was offered. The industry was reluctant to adopt the cost of IR filters, even to this day, and the HEA coatings were never used on projection lenses for 20 years!

The UltraVision R&D program grew from a theater circuit in Atlanta that was fed up with the new film systems proposed but unable to solve the old projection problems, from the 1953 to 1955 era. This unique program led to totally new information on curved screens; on the shape of the film in the projector gate (which must be included in the design of the newer projection lenses); and the total use of xenon bulb illumination for the ultrasteady, continuous light output that, in certain forms, created improved screen images for existing films. The UltraVision program received the first-ever Technical Academy Award for an advanced cinema-projection system for existing film formats.

One bit of fallout from the UltraVision program was the use of high-resolution test films to determine screen image quality — this led directly to the development of the SMPTE Test Film RP-40. Also from this program came the first definitive data on the topics of contrast testing and use of chromaticity in testing projection (SMPTE paper in 1969). This program also created the first VKF sprocket for testing in 1970.

During the latter half of the 1960s, the cinema industry started building new shopping center theaters, improving parking accessibility, and opening the concept of exhibition replacing all its cinemas in time.

#### *Decade of the 1970s: New Screen Light Standards; RP-40 Test Film; All New ISCO-MC Lenses; Development of IMAX 70mm and Showscan 70mm at 60 Frames/sec*

The 1970s saw a cinema design change from the single large auditorium to two or more under the same roof — the multiplex was born! Test efforts from the late 1960s with the SMPTE screen light standard upgrades was approved. Efforts by Kodak's Dr. Frederick Kolb and Paul Preo led to the design and production technique of RP-40 high-resolution test film, given to SMPTE. (Later they received an Academy Technical Award for it.) The IMAX 70mm system, developed in the 1960s and installed at the 1970 Osaka

Glenn Berggren is a cinema design consultant, Sigma Design Group, Claremont, Calif. He served for several years as Chairman of the SMPTE Technology Committee on Projection and is a Fellow of the Society.

World's Fair, opened a new specialty venue opportunity, vacated by Cinerama. By the mid-1970s, Showscan "fast-frame" 70mm opened another specialty venue direction. The "whole-industry" change was the introduction of the ISCO Ultra  $f2.0$  multi-coated projection lenses, with no cement, higher image contrast, and more light efficiency. The critical factor was that the discoveries of UltraVision as to incorporating the film shape into the lens design were accomplished, so that clear, corner-to-corner focus could be obtained on either a flat or curved screen of any cinema for the first time. An Academy Technical Award was received in 1979.

***Decade of the 1980s: More and Better Projection Lenses, New Curved Screens, New Scheme B Cinema Design by AMC***

By 1983, Schneider joined ISCO with a new multicoated projection lens

design, then ISCO released the seven-element Ultra-Star  $f2.4$  series in 1985, with unique lenses for 70mm film by 1990. These new lens series drove the older lenses out of use in new or recent cinemas. The development of curved screen design software permitted accurate designs, taken up immediately by AMC theatres in 1986, for their new, nearly square, auditorium designs. Later in the 1980s, the Tørus® compound curved screen was developed to perfect precise screen shaping for both film and video projection, maintaining both high efficiency and high uniformity. AMC also adopted this new concept. This decade also saw the development of digital sound tracks by Optical Radiation and Kodak.

***Decade of the 1990s: Digital Sound, Computer Image Effects, Larger Screens***

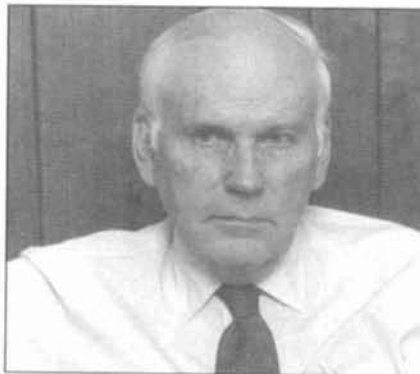
The development of digital sound tracks on film moved into standard

film production, by Sony and Dolby. New computer designs, with massive memory and speed, permit digital image manipulations and create awesome special effects. The design of the new cinemas takes two new directions: first, with much larger screens (formerly, large was 35 to 45 ft wide, now it is 55 to 76 ft wide), with high impact on the public; and second, the development of well-designed stadium (step-up) seating for clear, over-the-head viewing of the larger screens. Due to changes in management, equipment firms purchased other producers, which led to consolidation into fewer manufacturers, thus expanding volume but reducing research and development for the benefit of the cinema industry.

The unique topic of electronic cinema is being discussed seriously by the Technology Council and other groups.

— Glenn Berggren

## Thomas W. Hope



Thomas W. Hope

SMPTE has an impressive scientific record worldwide as a professional organization, although it is not widely known outside of the disciplines it nurtures. It has, however, played a significant role in developing technologies.

Products and systems that owe much of their success to the work of the Society, its members, and its official decisions are common household names — movies, television, radio, and others. That includes all the equipment, materials, and software that make them possible. In addition to the entertainment world, literally billions of people view and hear countless hours of visual and audio programs at work, in school, in church, and in many other daily activities. That is the audiovisual professional world.

In the annals of history several media will stand out as major factors in developing 20th-century presentation audiovisual systems; 16mm film,

2 x 2-in. 35mm slides, and the overhead will surely be listed. Newer AV systems, such as 1/2-in. videotape, the electronic slide, and multimedia (if a clear definition is ever determined) may make it some day. But to stand alongside 16mm, film they need at least half a century of active use even to be considered.

Of those formats that have already made the grade, 16mm film stands head and shoulders above all others. Introduced in 1923, 16mm film has made a distinguished contribution to

the human race the world over. Only 35mm film has had a longer life, although more restricted in its applications. An entire industry was established around 16mm film. More than three-quarters of a million film subjects have been produced worldwide using the 73-year-old 16mm — and production continues.

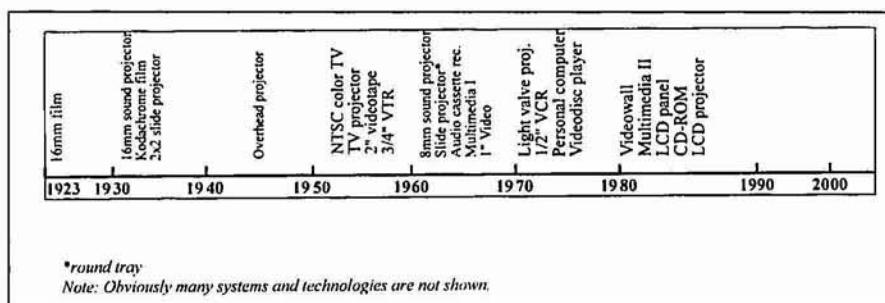
At its zenith there were thousands of 16mm production units. In our first count, made in 1983, we identified just in the U.S. more than 9,000 production units shooting 16mm film. In 1989 in the U.S. there were half a million organizations using 1,356,700 16mm projectors.

In recent years following the greatly improved 16mm color negative, use of 16mm as a production medium has been increasing, even more than videotape. Of course 16mm as a presentation medium has all but dried up.

Sixteen millimeter film's place in history is well established; for example, 16 million American men and women in World War II saw dozens of films in the world's first mass military training program. When the German

Thomas W. Hope is chairman/CEO of Hope Reports, Inc., Rochester, N.Y. He is a frequent contributor to the *SMPTE Journal* and a Life Fellow of the Society.

## MEMBERS' REFLECTIONS ON SOCIETY'S ANNIVERSARY



Product introductions timeline.

Army surrendered in April 1945, Field Marshal von Keitel is reputed to have credited the Allied victory to the speed with which Americans trained civilians to become military fighters through the mastery of the educational film.

When the National Defense Education Act of 1957 (NDEA) was enacted, 16mm film was one of the principal beneficiaries. The NDEA

was behind the U.S. effort to strengthen America's educational system. While emerging educational television received the lion's share of attention, 16mm film and the overhead quietly played significant roles.

The SMPTE has played a strong role in the 16mm film genre. Establishing various standards truly made 16mm a global medium.

Thirty-five years ago, cousins of 16mm, 8mm, and Super 8 film were coming on strong as a presentation medium. Their spectacular entry was short-lived, however, as 1/2-in. videotape came into the picture. By the early 1980s tape became the dominant professional AV presentation system for motion media.

The Society has been an important factor in my life for over 35 years. It was with patient guidance that *SMPTE Journal* Editor Victor Allen helped me develop the writing and reporting style that has become the mainstay of *Hope Reports*. It was the huge success of a series of articles about the nontheatrical film published in the *Journal* for 12 years that led me to found *Hope Reports* in 1970 as a market research firm specializing in this production and presentation industry.

— Thomas W. Hope

### David Horowitz

Without question, the most significant television developments in the last four or five decades have been NTSC color and videotape. Two companies, RCA and Ampex, were primarily responsible for these developments. Now, one company is gone and the other is apparently on the way out. I base my observation on the fact that at the 40th anniversary of quad videotape, the company who invented it saw fit to spurn the NAB exhibit floor and have a presence only in a hotel suite. The industry has lost a lot. Fortunately, many of the people who formed the heart of these companies resurfaced at other firms and continue to make contributions to the art.

In deciding on two developments I was tempted to write about the transistor, solid state, LSI, or computers. Since many other disciplines can also claim those same enabling technologies, I thought it was better to pick two that are strictly ours.

No one really has to expound on what color did for broadcasting. Its



David Horowitz

impact was enormous. For me, personally, it provided an opening into our industry. When the networks were colorizing in the mid-1960s, they were also expanding their engineering departments. Blair Benson and Frank Flemming at CBS took a chance on a young man, and the next thing I knew I was designing the installation for the first two color cameras for Walter Cronkite. They were Philips PC-60s, the forerunner of the PC-70.

At home, I was able to view the

broadcasts on my own color set thanks to an informal, and now forgotten, department policy of giving obsolete retired equipment to their engineers. There was a method to this madness. To get the gear working and to keep it working you had to learn about it, and the company benefited in the long run. My set, a late-1950s vintage RCA, had been used as the line monitor in the control room of CBS Studio 72. I never saw the studio or control room. It had been taken out of service before I joined the company. To change channels we needed a pair of pliers because the channel selector knob was long missing. I finally found a knob in an electronics store junk bin shortly before the set was really retired.

Now about the cabinet. RCA probably delivered the set in fine walnut, but that's not the way we received it. Our "cabinet" was plywood, painted black and white — and it was missing the top and back. They would have been annoyances anyway, given the endless tweaking the set required. We dressed it up as best as we could and put it in our apartment living room. We had color!

David Horowitz is president, Horowitz TV Technology, Yardley, Pa. He served as Governor, New York Region, for the 1991-94 term and is a Fellow of the SMPTE.

Where would our industry have gone without videotape? From its introduction as a West Coast program delay system, to its present ubiquitous status where its advantages have made it indispensable in every facet of our business, videotape has made an impact. Today, some of our prophets are saying, videotape is on its way out. Right, just like paper in our "paperless offices." Although I am, along with

the rest of the industry, developing system concepts using video servers, I personally don't believe manufacturers will shut off VTR development any time soon.

I didn't have to wait until I was with CBS to get my hands on a videotape machine. In my prior association with Philco Ford, I worked on a home VTR in 1964. Philco was working with a British firm, Telcan, on the develop-

ment of a 1/4-in., 60 in./sec. reel-to-reel, cross field head recorder. Please don't ask if it was color — we could barely get black-and-white out of it. A time base corrector would have been nice, but it was ten years too early and it would have cost ten times more than the VTR. The product never made it to market — what's this helical stuff the Japanese are talking about?

— David Horowitz

### M. Peter Keane

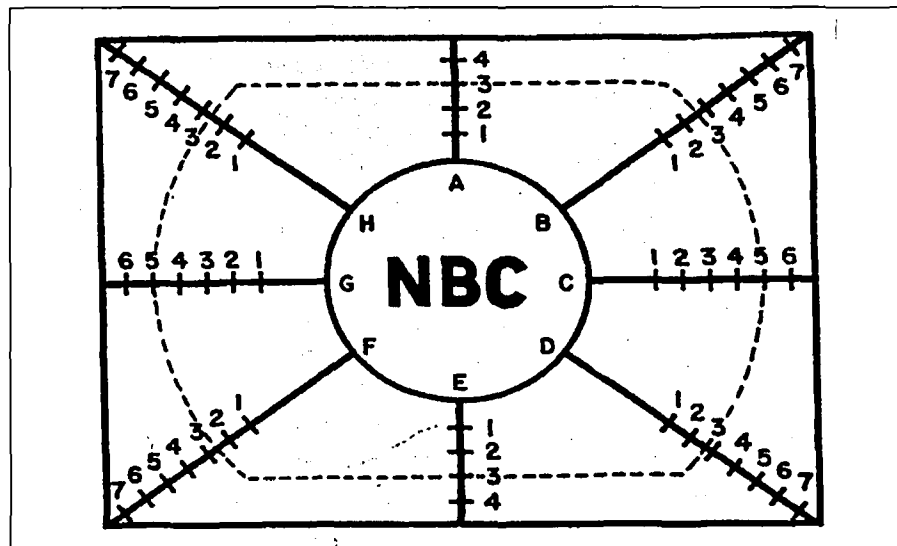
I will offer two related incidents that had bearing on the distribution of TV before 2-in. quad videotape.

When distribution of promotional TV commercials was done with 16mm film prints, it was obvious that the film's surface did not stand up to the film projectors with the rattling upper and lower loops. Scratches on the film surface soon made the repeated projection most undesirable.

While at Screen Gems, I experimented with then-available film surface treatments, which were supposed to harden and lubricate, but only moderate success was achieved. Film handling in rewinding and repeated intermittent projector movements still would create a multitude of disturbing scratches.

I kept records of Screen Gems 16mm prints and turned that information over to Howard Chin, then Chief Engineer for CBS. Howard did a statistical analysis and published the results in the *SMPTE Journal*. I do not remember the year or month.

At about the same time the advertising agencies were concerned with title cut-off, left and right, on many of the various home TV sets. The overscan in many TV sets had to account for voltage variations as well as border shape. With Charles Thompson of NBC, we arranged for a slide to be broadcast at about 6 a.m. (this was before 24-hour broadcasting came into being). The slide consisted of radiating lines from the center. The



Test pattern used in 1957.

lines were identified by letters (A, B, C, etc.). On each line were numbers (1, 2, 3, etc.), also radiating from the center.

As the slide was being transmitted on the NBC network, an announcer explained the slide to anyone who might be watching his TV at that hour and asked the viewer to send in a postcard listing the number on each radiating line as the line reached the rim of the TV image. There were approximately 70 responses. I averaged the numbers for each lettered line. On graph paper I drew the Academy outside frame lines and then created the "average" TV set viewing shapes with dashed lines. Then I had the B&O Optical Company photograph the graph paper, aligning the Academy frame on the graph to match

that of their cameras. Thus, the resulting film image showed in dashed lines the "average" TV set safe area for lettering.

Negative film strips made by B&O, both in 16mm and 35mm, were mounted on a card containing the explanation. These cards were distributed by Screen Gems to cameramen who worked on commercials filmed for TV. To my best knowledge none of those cards still exist.

Ed DiGiulio published in the February 1994 *SMPTE Journal* the early "safe area" story with an illustration of a frame with the dashed lines. I phoned Ed and told him of my early participation and stated that I still have the original slide here at home in Connecticut (see photo).

— M. Peter Keane

M. Peter Keane, consultant, HBO, lives in Westport, Conn. He is a Life Fellow of the Society.

## Frank E. Pontius

Motion pictures were just an interesting curiosity until sound was added. Then, of course, their phenomenal growth is history. Realism in sound for motion pictures was never good enough. Motion picture sound had to be bigger than life and help tell the story or set the mood in a dramatic fashion. The actual sound available and recorded as the picture was photographed required embellishment, so post-production sound rerecording became an art form of its own.

The unique requirement for motion picture sound is its precise synchronism with the picture. The medium on which it is recorded, therefore, must be able to maintain this synchronism throughout the editing and rerecording process. Initially, phonograph records, the only recording medium available at the time, did not fulfill this requirement very well. The obvious solution was to record the sound on a film similar to that on which the picture was photographed. This was done, and for many years all motion picture sound was recorded photographically on 35mm film. On the sound stages, on location and in the rerecording studio, each track and every take required the exposing, processing, and printing of a negative to yield a print that could be played back and listened to. The results of your work could not actually be heard until the next day.

The introduction of magnetic sound recording for motion pictures was therefore a very significant development, an advancement in the state of the art comparable to the addition of the electric motor to the hand-cranked camera. In the early 1950s, the two major suppliers of recording equipment to the motion picture industry at that time, Westrex and RCA Photophone, introduced modifications of photographic recording and reproducing equipment as well as brand new designs using

35mm magnetic film. Instantaneous playback was the first benefit realized, in addition to an increased signal-to-noise ratio and lower distortion for the recording. Soon multitrack recording and stereophonic tracks were used and motion picture sound became more dramatic than ever. Cinerama, CinemaScope, and Todd-AO took magnetic multitrack sound into the theater.

In the early 1960s, the rerecording theater was given "rock-n-roll" interlocked motor drive systems together with punch-in, punch-out magnetic recorders. Mixers found this new flexibility to be another significant development in the continuing, sometimes tedious advancement in the art of creating sound for motion pictures.

In the rerecording of motion picture sound, the basic breakdown of tracks into music, dialogue, and effects is expanded by the use of many elements or separate tracks in each category. In a rerecording session, the crew in the machine room would load each separate track prepared by the editors on a reproducer (dummy) with the start marks all aligned for proper synchronism. The recorder would also be loaded with a fresh roll of film and the projector would be threaded, aligned, and interlocked by the projectionist. In the earlier days prior to magnetic recording, these would all be photographic tracks and the recorder, a photographic recorder. The system, less the recorder, would be rolled forward in interlock and the mixers would rehearse their corrections and enhancements. When an error was made or the reel completed, the system would be stopped, and the machine room crew would rewind each track to the start and rethread each dummy, and the projectionist would rethread the projector. The rehearsals continued until the mixers were happy. Then they would go for a "take" and the recorder would be put on-line.

When using the rock-n-roll system, the mixer has the option of stop-

ping the entire interlocked system and backing it up when an error or omission is detected. Starting forward again it is possible to pick up the recording or punch in just prior to the error and continue on with the reel. No rethreading is necessary. These "pick-up" rerecording systems were then further refined by adding the possibility of running either forward or reverse at high speed (6 to 15 times normal) to speed up the process. Automation made these systems even more efficient, and many are still in use today.

In the late 1950s, Dr. John Frayne at Westrex introduced a "light valve" photographic recorder capable of recording two separate optical tracks simultaneously in the same area used by the standard monaural optical track. The system was not used by the industry for stereophonic recording because it was incapable of producing a "real" center channel and it was felt that since most dialogue was center screen, this was an absolute necessity. The signal-to-noise ratio was also significantly reduced.

It was not until the early 1970s that Dolby and EMI studios in London, using a special RCA photographic recorder designed by Art Blaney, with two galvanometers, were able to demonstrate a photographic sound track with two tracks encoded down from four tracks that was capable, when decoded, of reproducing that solid center channel. It also had the left, right, and a surround channel and the Dolby noise reduction system. It was adopted by the industry as the Dolby SVA (stereo variable area) system, which is now (with numerous improvements) standard throughout the world. However, the Westrex stereophonic light valve is now used in all recorders, with the exception of one. Since this system has enhanced motion picture sound on such a grand scale, it must also be considered one of the most significant motion picture developments in the last four or five decades.

— Frank E. Pontius

Frank Pontius is owner/consultant, The Bridge Co., North Hollywood, Calif. He is a Life Fellow of the Society.

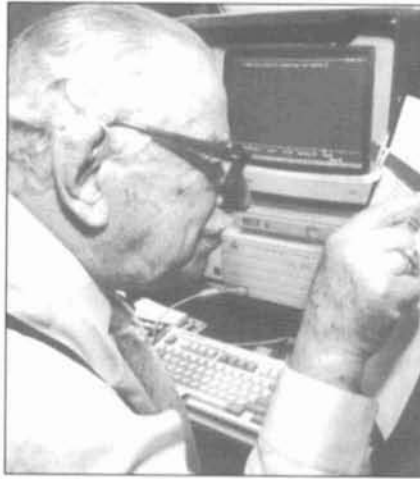
## Pablo Weinschenk-Tabernerero

I became a member of the SMPE (no T yet) in 1939. That makes me a member for the last 58 years. I lived in Argentina then and had not yet learned English. Each month, when the *Journal* arrived, was a most wonderful event. The rest of my family didn't see me then for the next several days, as I was totally engrossed in the word-for-word study of the material in the *Journal*. Because of my knowledge of German and Spanish, as well as the physics and chemistry of photography, I could understand everything the *Journal* told me. Not only did I widen my professional capacity — I was then a successful director of photography and later became the technical director of Argentina's best motion picture laboratory — but I also became fluent in English.

So, one day I plucked up enough courage and wrote a Letter to the Editor, then Vic Allen, in English and, would you believe it, he published it in the *Journal*. That was my first direct contact with the *Journal*. Since then it got better and better. From time to time Vic sent us manuscripts

---

Pablo Weinschenk-Tabernerero runs Exact Translations P.W.T., Hartsdale, NY 10530. He is a Life Fellow of the SMPTE.



*Pablo Weinschenk-Tabernerero*

containing some Spanish text for my translation. I felt happy and honored and was glad to be of help to this prominent Society.

When I finally came to the U.S. years later and started working for Movielab, Vic regularly sent me manuscripts that needed help, not only with bits of Spanish in them but also with typical motion picture technical expressions, screenplay and movie slang, if you will. As always, I was very glad to be able to be of help.

To my great surprise, when I was

only in my fourth year in the U.S., Vic offered me a job on the editorial staff of the *Journal*. I became the Technical Programs Coordinator. I jumped head over heels at this wonderful opportunity and spent the next 13 years — until my retirement in 1983 — in the stupendous companionship of the *Journal* staff. In time I became Associate Editor. You still can find my name among the Board of Editors listed on the inside front cover of the *Journal*. In 1976 the honor of Fellow of the Society was bestowed on me; later on I was made a Life Fellow. Generous awards for a humble helper!

Over the years, I wrote a few articles for the *Journal*. One day Vic made me very happy, by telling me that he was only an editor but that I was a writer.

As you can see, dear reader, the SMPTE and I were like a pair of brothers. The SMPTE made me a better technician and technical writer, and I gave my best efforts to the SMPTE. It has been a marvelous experience.

— *Pablo Weinschenk-Tabernerero*

---

## Rodger J. Ross

By far the most important event for the film industry, in my opinion, has been the introduction of television broadcasting, giving almost everyone direct access in their own homes to a previously unimaginable range of entertainment and information services. At the same time, electronic signal processing, as utilized in television, has demonstrated how easy it can be to convert one medium into another and at the same time enhance the visual quality of elec-

---

Rodger J. Ross is a TV film consultant in Oshawa, Ont., Canada. He is an Honorary Member of the Society.

tronically generated picture displays.

At a meeting in Montreal in early 1955, the chief engineer of the Canadian Broadcasting Corp., previously concerned mainly with sound broadcasting, announced that a limited television service (pictures and sound) would be made available to Canadian viewers, based on a small network of three stations — CBLT in Toronto, CBOT in Ottawa, and CBMT in Montreal — supplemented by a microwave link with already fairly extensive television broadcasting in the U.S. This new service, he said, would be available for a short time only each day, utilizing already prere-

corded programs. To encourage privately owned television stations to open up across Canada, CBC would supply each new station with 1 1/2 hours per day of prerecorded materials (at little or no cost).

At that time there was no easy way of recording a program originating in live television cameras. However, in the previous year CBC had had a remarkable success with the recording and rebroadcasting of the crowning of Queen Elizabeth II in London, England. This had been accomplished utilizing a 16mm film recorder made by General Precision Laboratories in New York. Two of these recorders,

along with the company's chief engineer, Dr. Frank Gillette, were sent to England for the crowning ceremonies, and an arrangement had been made with the British Broadcasting Corp. to provide the essential electronic link-up for the duration of the program.

After processing, the rolls of 16mm film were sent to Canada by high-speed trans-Atlantic air service, landing at Dorval Airport near Montreal. There a helicopter was waiting to take the cans of film to a downtown Montreal broadcasting center, where it landed on the roof of the building. All the operator had to do was run down the stairs with the films, put Roll #1 on a projector, and push the START button.

All went well until some television viewers in upper New York State started calling their stations, wanting to know how their competitors had managed to acquire rights for the Queen's coronation. It then transpired, so the story goes, that a small group of U.S. television broadcasters had chartered an aircraft and installed editing equipment, intending to prepare the recordings for immediate on-air release after landing in New

York. But someone failed to give the film crew a wake-up call, and when the plane landed the crew were faced with piles of partially edited film, unsuitable for broadcasting. A potentially embarrassing situation was avoided when fellow CBC workers offered to let them patch into the CBC network for the remainder of the program.

Later on in that same year, during another meeting to go over details of the proposed scheme to provide a limited television service in Canada, a questioner asked this commentator if anyone had taken into account the amounts of film footage that would be needed to sustain the proposed television service. He said he had made a rough calculation that turned up a figure of about 2 1/2 times the annual output of the National Film Board in Ottawa, and they already had about 500 people working there.

The film supplier recommended at first that batch processing should be adopted, but that method resulted in such large variations in the densities of the film recordings that it was replaced with a developer replenishing method controlled by small volume flow meters from elevated tanks.

By far the most difficult fault to avoid was a picture disturbance in the center of the picture frames caused by the loss or gain of picture information in frequency conversion between frames. The setting of the control for this multielectronic tube circuit was so critical that a test and, if necessary, a correction had to be made each time the film batch number was changed. Eventually a routine was adopted in which the film supplier sent a roll of each new batch to the recording center for testing in advance and the setting needed was given to the supplier on the telephone.

The usual practice in the film recording area was for the operators to leave their machines ready for the next upcoming recording in the schedule when they had to leave for meals or rest periods. This practice paid off many times when unexpected demands for recording were received. But then one day during the lunch hour, with only one operator on duty, the loudspeakers over the machines blasted out a command: "Turn on all the recorders — President Kennedy has been shot!"

— *Rodger J. Ross*