TECH NEWS

by Rodger J. Ross

60th ANNIVERSARY OF THE S.M.P.T.E.

An event of more than usual interest in film and television circles was the appearance in July of a special issue of *SMPTE Journal* commemorating the Society of Motion Picture and Television Engineers' 60th anniversary. Founded originally in 1916 as SMPE, mainly to promote motion picture standardization, the Society added the letter "T" for television to its title in 1950. The first president – and one of the 10 engineers signing the incorporation papers 34 years earlier – was C. Francis Jenkins, an early television pioneer. Thus from the very beginning, the Society has been closely associated with the development of television systems, as well as motion pictures.

A particularly interesting feature in this special issue of the *Journal* is a reprint of an article from the *Transactions of SMPE,* September 1925, reproducing letters written by Thomas A. Edison, George Eastman, Thomas Armat and C. Francis Jenkins, describing their work in developing motion picture systems. Mr. Eastman tells in his letter how, in 1889, 100-foot lengths of transparent film base were made by coating large sheets of glass with a solution of wood alcohol and soluble cotton, the first nitrate film base used for many years in making professional 35 mm. motion pictures.

Photographs on page 493 show the glass table on which the first sheets of transparent base were made, and the modern casting wheels 18 feet in diameter and 5 feet in width, polished to a mirror finish, for continuous coating of safety base film.

Another feature article with the title "101 Years of Television Technology" reviews television developments from the year 1875 when George R. Carey in Boston, Mass., disclosed an idea for a television system that would transmit and receive moving visual images electrically. It was not until 50 years later that technical advances and new discoveries enabled these ideas to be transformed into actual working systems. John Logie Baird in England and C. Francis Jenkins in the USA succeeded in transmitting small silhouette images in 1925, but Jenkins is credited with making the first radio (over-the-air) transmission of moving images across the Anacostia River near Washington, DC.

This fascinating story, prepared especially for the 60th anniversary issue of the *Journal* by Richard S. O'Brien and Robert B. Monroe, includes a chart on page 459 showing the dates of many significant events in the long history of television development. A photograph shows Dr. Vladimir K. Zworykin with a display of television camera tubes, an area of development in which he made important contributions, starting with the filing of a patent in 1923 for an electronically scanned camera pickup tube and a cathode ray display tube. Another very interesting photograph shows the small group headed by Charles Ginsburg that was responsible for one of the most important technical developments in the history of television broadcasting – the Ampex videotape recorder.

The development of color motion picture processes is the subject of another article by Roderick T. Ryan, starting with the earliest crude methods of tinting and toning to the present high-quality multilayer subtractive color systems. In the course of 60 years over 100 color processes have been described in the technical literature, but only a very few have survived.

Over the years the emphasis has shifted from additive to subtractive processes. Complicated mechanical and optical devices for filming and projection have been abandoned in favor of conventional equipment developed originally for making black-and-white motion pictures. Color quality and uniformity have been improved over the years, and film speeds have increased dramatically. For the foreseeable future color film production seems to be committed to the use of multilayer materials. But the author of this article points out that an ancient system of rotating filter discs and sequential frame recording of colors on film has been given a new lease on life with the transmission by the NASA Surveyor of the first color pictures from the moon.

Sidney P. Solow of Consolidated Film Industries in Hollywood contributed an article for this special issue of the *Journal* on "Milestones in the History of the Motion Picture Laboratory". The birthday of the motion picture laboratory coincides with the date of August 1889 when George Eastman sent some film to W.K.L. Dickson at Thomas A. Edison's laboratory in Newark, N.J., for use in his Kinetoscope. They had two darkrooms, one for punching, trimming and joining the films and printing the positives, and the other for developing, fixing and washing the films. These operations were carried out with large black enameled drums suspended at each end and immersed in long shallow troughs.

In this article Mr. Solow describes the most important events in the evolution of motion picture laboratory technology in the last 25 years. The laboratories have had to continuously up-date equipment and procedures to handle the many new materials and processes as they were introduced – the change-over from nitrate to safety-base films; multilayer color films; electronic timing; additive color printing systems; liquid gate printing; color duplicating materials, and computerization of laboratory operations, to mention only a few.

The evolution of motion picture camera design is described in two profusely illustrated articles, the first by Edmund M. Di Giulio of Cinema Products Corp., and the second, a reprint of a paper from the July 1967 issue of the *Journal,* also by Mr. Di Giulio, who was then

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Long-time Supervisor of Technical Film Operations at the programming centre of the CBC, Mr. Ross is the author of two books, **Television Film Engineering** *and* **Color Film for Color Television** *and has just won the Agfa-Gevaert Gold Medal, awarded by the Society of Motion Picture and Television Engineers.*

vice-president of engineering with the Mitchell Camera Corp., and co-authors E. C. Manderfeld and George C. Mitchell. The earlier paper deals with the large-screen formats, while the article prepared for the 60th anniversary of the Society is devoted mainly to the enormous technological developments in the 16 mm. field.

A committee, headed by that world-famous personality John Frayne, has contributed another well-illustrated article with the title "A Short History of Motion Picture Sound Recording in the United States". This article presents a step-by-step outline of the many problems encountered and the ingenious solutions developed before the optically recorded photographic sound track as we find it today on release prints could become a practical reality.

Continuing the series of three articles on sound, Loren Ryder surveys the subject of "Magnetic Sound Recording in the Motion Picture and Television Industries" and Hans Chr. Wohlrab gives some "Highlights of the History of Sound Recording on Film in Europe". Mr. Ryder describes how, during the Battle of the Bulge in World War II, General George S. Patton's soldiers captured two tape recorders from German Army Intelligence. The quality of the sound reproduced with these recorders was far better than sound recorded on film or on disc, and even better than any wire or steel ribbon recording known at that time. These tape recorders used a smooth-surfaced paper tape coated on one side with a finely ground layer of brown iron oxide.

Dr. Wohlrab mentions in his article the work of Waldemar Poulsen of Denmark who, in 1889, developed a method of magnetic sound recording on steel wire. His Telegraphone had two reels carrying 1500 feet of steel wire 1/100 inch in thickness. This system gave fairly good results but it was too cumbersome for practical use in sound recording. The breakthrough came in 1940 when two engineers at the Berlin radio station in Germany began experimenting with ¼-in. plastic tape coated with an iron oxide layer, forerunner of today's widely used magnetic tape.

Other articles in this issue include: "Advancements in Motion Picture and Television Set Lighting Equipment", "Developments in Design of Projection Equipment", "Photoinstrumentation and the SMPTE", and "The Early Years of the Canadian Film Industry".

This last article, by Gerald Graham of the National Film Board, is a brief survey of the ups and downs of filmmaking and distribution in Canada, the formation of the Dominion Government Motion Picture Bureau in 1918, and its reorganization in 1939 by John Grierson as the present National Film Board. The most productive period of development work was in the period 1950-1960, when the big studio concept was dying out and European and Japanese manufacturers were beginning to realize the significance of the multi-million-dollar market for non-theatrical and television film production facilities.

In the introduction to this special issue of the *Journal,* President Kenneth Mason puts particular emphasis on the encouragement given by the Society to young people looking towards a career in motion pictures and television. Thirteen student chapters have been formed in colleges and universities, and the Society administers grants for both undergraduate and graduate scholarships. (One of the student chapters is at Ryerson Polytechnical Institute in Toronto.)

The Society has two sections in Canada – the Montreal/Ottawa/Quebec section, Robert B. Desrosiers, chairman; and the Toronto section with Peter Elliott as chairman. Altogether there are over 700 members of the Society in this country, represented on the Board of Governors by two well-known Canadians – Finlay J. Quinn of Quinn Laboratories in Toronto, and Stanley F. Quinn, head of the operations development department, Canadian Broadcasting Corp., Montreal.

EQUIPMENT NEWS

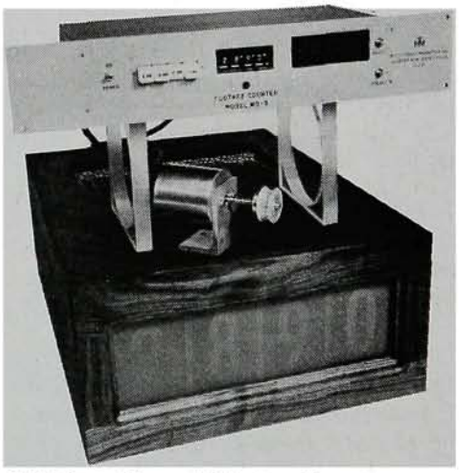
Note to Canadian distributors: We would like to include the names and addresses of Canadian distributors of equipment and services mentioned in this section. Please ask your suppliers to give Canadian sources in their publicity releases. Ed.

Research Products Special Effects Optical Printers

The complete line of Research Products special effects optical printers has been acquired by Bell & Howell Professional Equipment Div., 7100 McCormick Road, Chicago, Ill. Research Products optical printers have become world-famous for quality performance in special effects lab-including the aerial image optical printer, the standard optical effects printer and the registration contact printer, all with the optional Bell & Howell automatic additive color light source or a subtractive light source. In addition the newly introduced title-optical printer will be produced, offering high quality 16 mm optical effects printing at a surprisingly low price.

Solid-State Film Counter From MTM and Braun

MultiTrack Magnetics Inc. has designed a footage counter unique in the film and television industry. The MD-3 Dynamic Counter has four counting or dividing circuits that allow the user to cross-reference running times in 35 mm., 16 mm., Super-8 and time. This is a big advantage in 16 mm. for later blow-up to 35 mm. or reduction to Super-8. Editing for television use is now particularly easy with the almost instant comparison between footage and time. Additional comparator



Solid State Dynamic Footage Counter

blocks are available, to provide presetting functions for controlling the triggering of other equipment in the system. The footage counter can be used like a mini-computer for automatic looping and dubbing. The counter interfaces with existing equipment by use of an infra-red optical shaft encoder. Braun Electric Canada Ltd., 3269 American Drive, Mississauga, Ont., L4V 1B9 is the exclusive Canadian distributor for MultiTrack Magnetics equipment. Catalogues and prices on request. □

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