Report of the Committee on Education

By JOHN G. FRAYNE, *Chairman*

THE Society of Motion Picture and Television Engineers has over a period of years shown a marked interest in educational problems relating to the industry. The first publication in the *Journal* resulting from a formal Society effort was the Frayne report on college courses in motion-picture subjects, which appeared in the August 1946 *Journal*. This was followed later by the Morrison report which appeared in September 1950. As a result of continuing inquiry from students and members of the Society for further information and guidance in the fields of motion-picture and television engineering the Society in 1955 decided to establish a committee on education. This was further formalized by the passage of a constitutional amendment in October 1955 which added to the objects of the Society: "Guidance of students and the attainment of high standards of education."

While the scope of the educational committee is unlimited, early discussions with representatives of studio management, engineering personnel and labor union representatives indicated that the committee should first concentrate on improving the technical training of those already employed in the industry. Secondary emphasis was to be placed on developing curricula in colleges having cinema or allied departments. While this proposal does not augur well for the continuing future supply of trained personnel, it did meet a practical situation dictated by conditions of employment in the industry.

Under the Society's sponsorship, and with the active support and cooperation of union locals, three courses on motion-picture laboratory practice, color duplication and illumination optics were initiated at the Engineering Extension of the University of California at Los Angeles from September 1955 through February 1956. These were followed in the Spring of 1956 by a course in the theory and practice of sound recording at the University of Southern Californi .

Motion-Picture Laboratory Practice

Our belief in the need for this kind of supplementary education and in the desire of those in the industry to keep up to date on technological developments was substantiated by the initial response to, and sustained interest in, these extension courses. More than 100 registered and attended the 18 two-and-a-half hour sessions of the motion-picture laboratory course. The only prerequisite for this $27.00 course was experience in motion-picture laboratory work.

Because of the varying levels of training and experience of those taking all of the courses, material was presented on a practical rather than a theoretical level, using films and demonstrations wherever possible. After a brief introduction and historical survey the laboratory course lectures covered sensitometry, photographic chemistry, laboratory aspects of sound, practical laboratory practcie and color.

No textbooks were used, and the lectures were conducted by: Dr. John G. Frayne, President of the Society and Engineering Manager of Westrex Corp.; William E. Gephart, Jr., Processing Director, General Film Laboratories Corp ; Alan M. Gundelfinger, Plant Administration, Technicolor Motion Picture Corp.; Allen Haines, Chief Chemist, Pathé Laboratories, Inc.; Donald H. Kelly, member of the research staff, Technicolor; and Sidney P. Solow, Vice-President and General Manager, Consolidated Film Industries. At the final meeting of the course, which was an open forum and review, these six sat as a panel to answer questions posed by the students.

Color Duplication

The color duplicating course was conducted by four instructors from the Motion Picture Film Dept. of Eastman Kodak — Robert G. Hufford, Ralph Westfall, John M. Waner and Roderick T. Ryan. Because of the large attendance — 120 registered, and 100 attended 50% or more of the 18 lectures — it was necessary to divide the students into two sections, which met on successive evenings. Students came from the optical departments of most of the major studios and from the laboratories of Consolidated Film Industries, Pathé, General Film, Houston Color, De Luxe, M-G-M and Technicolor. They were required to have experience in printing and/or processing of color motion-picture film plus the consent of the instructors. The fee was $27.00.

The lectures covered the factors contributing to the making of color internegatives through the Eastman Color Negative process, a review of physics of light, filters, elementary sensitometry, fundamentals of color theory, photographic emulsion making, color sensitometry and densitometry, principles of masking in color, description of photographic materials, film dimensional stability, black-and-white and color duplicating, preparation of the duplicate, and variables which affect its quality.

Each lecturer distributed mimeographed sheets covering the high points of his talk. In addition, several reference books and *Journal* articles, as well as a Kodak publication, "Color as Seen and Photographed," were distributed or recommended to the students.

Illumination Optics

The illumination optics course met for two and a half hours each week under the direction of Wilbur Silvertooth, a member of the teaching staff at UCLA. Mr. Silvertooth's lectures covered elements of geometric optics, methods of lens design, elementary theory of lens aberrations, properties of light sources, discussion of specific illumination systems, interference phenomena and filters, and principles of colorimetry. To clarify some of the principles presented in the lectures, the class of 30 students visited the William Mann Optical Co., Monrovia, Calif.

In addition to Mr. Silvertooth, three guest lecturers addressed the students: Dr. Howard Cary and Roland Hass of the Applied Physics Corp. and Dr. Henry Hemmendinger of Davidson and Hemmendinger. The text used was *Technical Optic.*, Volumes 1 and 2, by Martin; and the fee for this course was $27.00.

Sound Recording

Those who planned the sound recording course at USC adapted a course on the regular curriculum of the University to meet the needs of operating personnel in the motion-picture industry. Little emphasis was placed on detailed and precise theory; and mathematics were only introduced when they seemed essential. In every instance theory was related to equipment or apparatus with which the students were already familiar.

Carl N. Shipman, employed in motion-picture sound work in Hollywood for many years and an instructor at the Hollywood Sound Institute, was chosen as the principal instructor. He was supplemented by six guest lecturers from the industry: Thomas A. Carman, Business Representative, International Sound Technicians Local #695; Lorin D. Grignon, Twentieth Century-Fox Film Corp.; Frank E. Pontius, Sales Engineer, Westrex Corp.; Dr. Frayne; Fred R. Wilson, Supervisor, Sound Dept., Sam Goldwyn Studios; and Lloyd T. Goldsmith, Sound Dept., Warner Bros.

One hundred and two attended the first meeting and of this number 84 registered, paying a tuition fee of $60.00 each. Seventy-one of the registrants completed the course which consisted of 16 sessions of 2 hr 40 min each.

A report submitted on August 21, 1956, by John G. Frayne, Committee Chairman, c/o Westrex Corp., 6601 Romaine St., Hollywood 38.

The lectures dealt with present-day recording, methods, materials, equipment and personnel; physical elements of sound and acoustics; production techniques; microphones, mixers and recording equipment; and factors governing sound quality. Extensive use was made of projected diagrams and sketches, and in many instances actual equipment was available for inspection. The lectures were also supplemented by field trips to the Goldwyn and Warner Bros. studios so that the class could compare typical studio installations.

Future Program

Because of the amount of interest in the sound recording course, it is quite likely that it will be repeated. In addition, a more advanced course is being prepared in cooperation with UCLA for the next semester. It will be suitable for those who completed the first course as well as those in the industry who felt that the initial course was too elementary.

Consideration is now being given to have the color duplicating and laboratory practice courses repeated in the Fall semester of 1956.

Under the auspices of Desmond Wedberg there is underway a new study of educational courses being offered in the fields of motion pictures and television. This study should be completed by October 1957 and will be published in the *Journal* as soon as possible thereafter.

Lighting the Network TV Program

By E. CARLTON WINCKLER

Because network programming usually includes greater scope of subject material than is possible on local stations, the lighting of these programs also presents a greater variety of problems. The lighting of larger areas and the variations of this lighting to accentuate a wide variety of moods and camera angles become of paramount importance. The technique developed in lighting network programs uses interesting combinations of all types of lighting equipment and a wide range of wattages to obtain the balance and the intensities necessary for the cameras while operating within the dramatic structure. These techniques and methods are discussed.

So MANY discussions about lighting for television are concerned with the use and advantages of various types of equipment and control devices that there is a tendency to forget the main purpose of lighting which is to aid in presenting the program in the most effective way possible.

Whether the program is in color or monochrome, the lighting director must be able to visualize the effects to be achieved and to plan their execution. Not only must the lighting director know the technical side of lighting with its extensive range of equipment, performance curves and control devices, but he must also have creative ability which includes understanding of the dramatic values of the program and the skill to use light to help tell the story.

Creative ability is perhaps more important than technical knowledge. Many lighting men of great technical ability are never assigned to important shows because they lack feeling for drama. On the other hand, many lighting men with slight technical knowledge are often chosen for the big shows because of their appreciation of dramatic values and their ability to make light an effective tool in storytelling. It is a fortunate organization that has a man with real understanding of how his craft can best contribute to the final result.

In presenting a story, whether it is a drama, a dance, a song, a stunt, or an illusion, the actor is the center of interest. Other elements, including lighting, only help the actor to convey his meaning more clearly or more quickly.

One of the functions of lighting is to separate the actor from the background. Light on the background should be less bright than that on the actor. He must be placed in proper perspective with the scenic elements and modeled to avoid appearing as a paper cut-out.

A great deal of this separation and modeling is accomplished by the backlight which is directed toward the camera to rim the head, shoulders and arms so that they stand out away from the scenic elements or other background material. Special mention of the backlighting is made because many light men tend to project it at too steep an angle. It then becomes a sort of top light which has no value, causing the forehead and nose to be overlighted and cast unwelcome shadows. Good backlighting must be projected at a fairly flat angle to do the job of making the actor real, believable and important.

In pointing out, modeling and separating, it is essential that the audience can always see the actor's face and especially his eyes. The eyes are the actor's most expressive feature and, if they are just a shadow area, we would be better off as a radio show.

Lighting the face and eyes is best done with the fill-light or with special eye kickers mounted on the camera itself. Occasionally a special hand-held low-wattage floodlight may be required. But, whatever the inventiveness required to get the necessary light in—*light those eyes!*

The next step is to provide the proper mood for each scene in the story. Light can quickly set the mood of a scene. Pages and pages of dialogue or pantomime would be required to set a mood which light can convey to the audience at a glance!

Time and place — morning, afternoon, evening or night; interior or exterior — can be conveyed instantaneously without explanation or delay to the storytelling by properly directed, placed and keyed lighting.

Then there is the highly important matter of providing sufficient light to give adequate video information to provide a good broadcast or recorded picture. Here is where many lighting men meet their Waterloo and many video engineers lose their minds because at this point light men and engineers no longer seem to speak the same language. The moment when a program first goes on camera may well decide whether it is a success or failure — and the right path can only be the result of understanding and cooperation between the light man, the video engineer, and the director.

For example, the light man has set up his scene to the accepted standards of intensities according to his eye, his light

---

This paper was presented on May 2, 1956, at the Society's Convention at New York by E. Carlton Winckler, Program Dept., CBS Television, 485 Madison Ave., New York 22,
(This paper was received on July 25, 1956.)