

# Motion Pictures and Television Education

By HERBERT E. FARMER, Education Advisor to the SMPTE President

**M**ANY OF THE problems facing the motion-picture and television industries may well be attributed to simple "growing pains." It is a generally accepted fact that a large percentage of the responsible technicians, artists and supervising personnel in motion pictures have been with the business since the early days of sound or before, and are fast approaching retirement. Many in television came from radio, having started in television about the same time. For the most part the industries, while concerning themselves with training programs to help their people keep up with technological advances, have not paid much attention to the education of those who will be holding the reins in the future.

Recognizing that any medium which has the capability of reaching and affecting the thinking of men should be of concern to higher education, many universities and colleges have instituted curricula in motion pictures and television. In general the goal has been to achieve professionalism in the arts and techniques but a more important goal is that of offering a background of knowledge to enable us to understand the world we live in, the people who live with us, and the scientific laws governing what happens to things. The most important goal is that of training young people to think and to draw valid conclusions based on facts.

Traditionally the motion-picture and television industries have looked upon themselves as trades and many people employed therein have felt that the only way to learn the trade was by apprenticeship and experience. While most students realize that experience is a great teacher and that there is no substitute for some of it, it is not necessary that they make all of the mistakes in order to learn. Too frequently a person speaks of twenty years experience when he means one years experience, twenty times.

There is no doubt but that the trend of thinking in the two industries is toward changing from trades or technical jobs to professions. When young people attempt to learn what they can from teachers and from publications, both students and teachers are giving *full time* to shorten the period of "apprenticeship." Guided experience in actual production is like a period of internship during which concentrated effort is made to telescope years of experience rather than face situations at random as they happen to come (the one year's experience, twenty times).

Fortunately many people outside the fields of education are beginning to think along these lines. The September, 1962, *Journal of the Screen Producers Guild* is devoted entirely to the problem. Lou Greenspan, Editor of that publication points the issue this way:

"... that unless the film industry does something about transfusing fresh blood into the veins of the business, it will surely die of anemia.

"There are many sides and many arguments to this recurring problem. Some say it is the fault of the crafts and their unions that young men and women ... are not given the chance they deserve.

"Should they be given the opportunity they seek?

"Nearly everybody is agreed they should— but how, where and when? . . .

"Perhaps the studios are as much to blame as the unions. There was a time when, . . ."

The titles of some of the other papers also indicate the urgency of the problem: "*Quick, Watson, The Needle*" by William Perlberg, "*Make Way for Youth*" by Mervin LeRoy and "*Where Is the Key to the Blood Bank*" by William Ludwig.

The papers which follow describe the training as it exists today, how it got there, and some of the thinking for the future. Young people *are* studying diligently and the talented ones *are* finding positions, although largely in the nontheatrical fields of industry, education, religion, government and the military. It is possible that when more of them find their way into entertainment, this will be mutually rewarding.

## Training Motion-Picture and Television Technicians for the Decades Ahead

By JOHN G. FRAYNE

**From the history of the progress of the motion-picture industry and from the briefer and varying pattern of the television industry there emerges part of the basis for planning the education of future technicians. Recent scientific discoveries and new technological developments, current or potential, require educational emphasis on the physical sciences and on new techniques of recording pictures from motion.**

**F**ROM WHAT happened in our industry's past, and considering the present art and science, we can predict the training needed for the decades ahead. As one studies this problem one is quite astonished at the relatively few basic changes that have taken place in the past 50 years. We have added sound and color and the wide screen. These have been

part of an evolutionary progress over the years. Professor Chrétien's anamorphic lens system, for instance, was described in this *Journal* 30 years ago.

What was the motion-picture industry like in say the 1910-1920 decade? The tools were simple and crude by today's standards but there was 35mm film with sprocket holes very much like those of today. There were Bell & Howell cameras, hand cranked, of course, and Bell & Howell printers varying only in details from the printers used today. The projectors had Geneva intermittent mo-

tion and were hand cranked in theaters here and throughout the world. There was heavier reliance on the use of sunlight, hence the location of the industry in Southern California in the ante-smog days of this fair metropolis. We had crude Moviolas, the standard speed was 16 frames per second, but this was only nominal since cameras were hand cranked, and motor-driven projectors were coming in but with doubtful speed control, if any.

### Personnel in the Past

What kind of people worked in the studios, laboratories and theaters of those days? There were no trade schools, there were no cinema departments in universities, so obviously the employees were picked up hither and yon and by dint of sheer effort they became the basis

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of the highly skilled technicians and craftsmen associated in the public mind with the Hollywood picture industry. As an interesting comment, the former head of one of the large motion-picture film laboratories told me that he was hired because of his physical strength, not because of any particular training or education, to slosh film in a developing solution in an oversized bathtub. This story alone indicates the crudity of the beginnings of film laboratories. The comparison is drastic between the technical complexity of the modern Hollywood motion-picture film laboratory and the crude bathtub, probably stuck off in a remote corner of some studio building 40 years ago.

Studio technical help appears to have changed very little either in type of person or in training until 1928 when sound first was introduced on a commercial scale in the motion-picture industry. Sound was not only revolutionary in itself but also using it required radical changes throughout the entire operation of the film industry. First, there had to be exact speed control of the sound recording camera, and the speed had to be tied in with the movement of the camera, hence the use of complicated interlock or selsyn motor control systems. External noises had to be filtered out from the sound stages, hence the introduction of acoustical engineers into the studios. The hit-or-miss method of developing picture negatives and prints, in which wide tolerances had been permitted, had to give way to precise sensitometric control required to produce sound of desirable quality. Means had to be developed for synchronizing and editing soundtracks with the picture. The whole art of re-recording had to be developed and finally the theaters had all to be equipped for sound projection with all the problems attendant on the use of the new medium.

#### **New Men for Sound**

It is quite obvious, of course, that all these developments which took place at a terrific pace could not be handled by the engineers and technicians associated with the old silent pictures, so there was a rush to Hollywood, mostly from eastern laboratories, of a new breed of sound engineers who, although ostensibly working for the sound departments, were called in to assist other departments, such as laboratories, lighting, projection and camera departments, to solve the new problems introduced by sound. Thus the whole level of technical competence in the industry was increased almost overnight and the profound impression made

on the industry by these people has continued to this day.

The photographic medium for picture registration remained pretty much unchallenged until several years ago when Ampex made the breakthrough of successfully recording video signals on magnetic tape. It is interesting to note that this new revolutionary concept has been largely adopted by the television rather than by the more highly developed and standardized motion-picture industry. Its acceptance by television was almost instantaneous since it filled an immediate need. Its acceptance by the motion-picture industry has been much slower, although the adoption of magnetic tape or some similar process is only a matter of time.

The video-tape technique naturally affects the standing of the famous Hollywood cinematographer who, so secure in his own world, had already failed to make his influence felt in the operation of the live television camera. A whole corps of highly trained television cameramen has already come to the fore with the rise of the medium. The successful introduction of the video technique into the motion-picture industry would undoubtedly play havoc with many of the recognized crafts, including those of cameramen and their associates, editors, cutters, film processors, etc.

The paper given at the 1960 SMPTE Convention in Hollywood by Dr. Glenn of the General Electric Research Laboratory on Thermoplastic Recording (*Journal*, Sept., 1960) opens up even newer vistas; and it is obvious that this 1960-1970 decade will see further remarkable scientific developments. If the motion-picture industry derives technologies from the new sciences, it is probably no exaggeration to predict the end of the photographic era as we have known it in the industry.

#### **New Technologies and Men**

The tremendous progress being made with new recording media in increasing the amount of information per unit area in the various missile and satellite developments in this country, along with the extremely rapid developments of high-speed data processing equipment, is bound eventually to have an impact on the motion-picture and television industries. For example, the rapid incorporation of transistors and associated circuit techniques and the improved packaging methods of items like tape recorders have resulted in the development of satisfactory recorders weighing less than ten pounds and consuming less than ten

watts of power. This means the beginning of the end of the bulky sound equipment and its associated power with which we have been familiar for the past 30 years or more.

These developments are bound to have an impact on the labor problem because one can hardly imagine a standard crew of four technicians standing around a package less than a six-inch cube in size and weighing less than ten pounds. The improved circuitry points to the fact that the highly talented mixer may disappear, or at least his job may disappear. The present cumbersome manually controlled re-recording systems may give way to punch-card, or punch-tape control once the parameters have been set. The moving film may even disappear because as the resolution of the new media is increased it may be possible to store on a fixed card, say approximately 8 by 11 in., the equivalent picture information now contained in 2,000 ft of 35mm film — these are not beyond the realms of possibility.

#### **The Call for the Future**

For the training for the future, what has just been reviewed means, I believe, that we must continue to raise the level of intelligence and basic education in the physical sciences for those who intend to operate in the studios. The unskilled and semiskilled jobs will disappear and more highly skilled jobs will result. It will place, I believe, more emphasis on our cinema schools to provide not only technicians equipped to handle these new processes but also to provide a suitable background for those who intend to be associated with the more creative arts of the industry.

Our recent past and the signs of the future mean that the kind of courses which have been given very successfully so far by the SMPTE Committee on Education will be in greater demand. The rush to take advantage of courses on video-tape recording gives emphatic evidence to the fact that the people inside and outside the industry are extremely anxious to keep up to date with the new arts.

It is hoped that the management of our motion-picture and television studios will, in the future, see fit to cooperate in a much greater degree than they have in the past with the efforts of this Society to raise and maintain a high level of technical competence for their staffs. It is also hoped that the powerful studio unions will join in efforts to raise the technical level of their numbers and thereby make their crafts more attractive to the graduates of our technical institutions.