BANQUET SPEECHES

PRESENTED AT THE SEMI-ANNUAL BANQUET OF THE SOCIETY, HELD AT THE HOTEL ROOSEVELT, HOLLYWOOD, CALIF., MAY 27, 1931

PRESIDENT CRABTREE: I wish, first of all, to extend a hearty greeting to all of you from the members of the Society of Motion Picture Engineers throughout the world; also, on behalf of the visiting members of our Society, I wish to thank those who have worked so hard to make our Convention such an outstanding success. We have been overwhelmed by your hospitality, which I assure you is deeply appreciated.

It was almost exactly three years ago that we held a meeting in Hollywood. By looking back and comparing our status then and now, we realize how our Society has grown, not only in size, but in its value to the industry and to mankind. The comparison also brings home to us the magnitude of the changes which have taken place in the technic of producing motion pictures.

In 1927 the tools of production consisted largely of cameras using orthochromatic film and arc lamps. The year following, panchromatic film was almost universally adopted and, in consequence of the improvements in photographic quality which resulted, the producers began to direct more attention to the technician because they saw that he also was a potential contributor to box-office values.

A study of the relative merits of arc and tungsten lamps for lighting sets was instigated by the American Society of Cinematographers and the Academy of Motion Picture Arts and Sciences, and these experiments were concluded just previous to the Hollywood meeting. The use of sound in conjunction with the motion picture was just beginning to be discussed, but with many misgivings. Our Society staged the first demonstration of Photophone equipment in Hollywood, but this attracted but slight attention from the producers. Six months later the sound revolution commenced. There was a mad scramble to build new stages and to modify old ones, and within a relatively short period of time there was an influx of a large army of skilled technicians to take care of the new equipment and procedure.

In the short space of three years remarkable advances have been made in the technic of recording sound and in the making of motion pictures, and it is, therefore, fitting that we should hold a national meeting in this center of production in order to exchange ideas and to discuss our new problems and recent researches.

But during these three years our Society has grown accordingly. For the benefit of those who are not well acquainted with our Society, it is a scientific organization patterned along the lines of many of the older scientific societies and serves as a stimulating, collecting, and coördinating medium for the technical and scientific knowledge appertaining to the motion picture industry.

Our membership of about eight hundred, which is distributed among eighteen different countries throughout the world, is as diversified as the various arts and sciences which serve the industry and includes research scientists from the universities and industrial research laboratories and theaters, and executives from all branches of the industry.

Eligibility for membership is determined by the Board of Governors, which has interpreted the word "engineer" to apply to anyone who contributes to the building of a motion picture, so that those who contribute literary, dramatic, and artistic talent are equally as eligible as those who direct the business of production and exhibition of motion pictures.

Membership is of four types: Associate, Active, Sustaining, and Honorary. Any one who is interested in motion pictures is eligible for Associate membership. Active membership is granted to those who have gained distinction in their particular field of endeavor. Sustaining members are those who contribute substantially to the support of the Society, while Honorary membership has been granted those scientists of international fame who, by their inventions and achievements, have been largely responsible for the building of this industry.

Conventions of our Society are held semi-annually and the various scientific papers and committee reports presented at the technical sessions, together with the discussions resulting therefrom, are published in the JOURNAL of the Society, issued monthly. In addition, the JOURNAL contains contributed papers, abstracts of current technical literature, patent abstracts, translations of outstanding articles appearing in foreign technical publications, reports of committee activities, and book reviews. During the year 1930, 1,500 pages of

scientific data were published, including over 100 technical papers dealing with the various aspects of production and exhibition.

The Society's *Transactions*, which were published quarterly from the year 1916 to 1929, together with the JOURNAL of the Society published since January, 1930, constitute the most comprehensive source of motion picture technical information in the world. The potential value of this knowledge to the industry is incalculable and the actual cost of the research work required to obtain it amounts to millions of dollars. The JOURNAL of the Society is distributed *gratis* to members but is available to non-members by subscription.

The Society maintains local sections with headquarters in New York, Chicago, and Hollywood, which foster a spirit of coöperation among the members who cannot always attend the semi-annual conventions. The Hollywood section keeps the parent body in touch with activities on the West Coast and maintains contacts with the Academy of Motion Picture Arts and Sciences.

It is through the medium of the committees that the Society best serves the industry in a coöperative and coördinating capacity. The bi-annual report of the Progress Committee gives, in condensed form, the essential technical developments in the fields of production, distribution, and exhibition throughout the world.

The Standards Committee has facilitated the interchange of the essential parts of apparatus throughout the industry and has published details of these in booklet form in collaboration with the American Standards Association. The Society has also collaborated with the British, French, and German technical societies on matters relating to standards.

Other committees of the Society have dealt with progress in color, methods of securing better sound recording and reproduction, and improved methods of studio lighting, while the Historical Committee has prepared reports on the accomplishments of the industry's pioneers and is assembling historical apparatus which will be placed in a suitable depository.

The subject of projection has been given special attention by the Projection Practice, Projection Theory, and Projection Screens Committees and, as a result of their efforts, recommendations for standard layouts of projection rooms of various sizes have been made and data secured for formulating a tentative standard for screen brightness.

The past year has also been conspicuous by virtue of increased activity of the Society in relation to collaboration with other organiza-

tions and societies having interests related to our own. The Society has acquired membership in the American Standards Association which has recognized the various standards adopted by the Society, and also in the National Fire Protection Association which has invited the Society to collaborate with regard to safety measures in the handling of nitrocellulose film. Contacts have been made with the American Institute of Architects with a view to collaboration in the design of theaters, particularly with regard to projection and acoustical requirements.

The Society will be officially represented at the 1931 International Congress of Photography in Dresden and arrangements for the exchange of technical manuscripts have been made with the Deutsche Kinotechnische Gesellschaft, which has also conferred Honorary membership upon the Presidency of our Society.

The need for education in the fundamental principles of science as related to motion picture technology has also been recognized, and, as a result of encouragement by the S. M. P. E., the Massachusetts Institute of Technology has laid out a special four-year course of instruction for those who wish to enter the technical phases of the motion picture industry.

It has been suggested that possibly there is some duplication of effort on the part of the S. M. P. E. and the Academy. The Technicians Branch of the Academy is likewise composed of scientists and technicians whose activities are devoted to education of the industry's personnel, the publication of technical knowledge, the standardization of practices, and the directing of coöperative research, but its interests to date have been focused largely on problems relating to the application to the production of motion pictures of the tools which the engineer has devised; while the S. M. P. E. has been concerned, not only with the fundamental principles of science, but with the devising and making of the tools of the industry and with finding improved methods of their application.

There is adequate room for all technical organizations in this great industry. One organization cannot give adequate attention to all the technical phases involved; and, on the other hand, the greatest benefit is often derived when two investigators tackle a problem independently—they often see the problem from different angles, and their combined researches tend to constitute a more complete solution of the problem. However, we must coöperate closely and without rivalry. Each organization should draw attention to the publica-

tions of the other. The S. M. P. E. has paved the way by devoting a section of its JOURNAL to technical activities of the Academy. We shall be glad to circulate with our JOURNAL any information relating to publications of the Academy—it is our duty to disseminate knowledge—the matter as to when, or where, or how the knowledge originated is immaterial.

There must also be the closest coöperation between committees of the various technical organizations in the industry, especially those dealing with the standardization of practices.

But how can you producers and your executives be of assistance to our Society? By taking an interest in technical matters—by encouraging your men to keep posted on the latest technical developments as published in our JOURNAL—by urging them to attend conventions and sectional meetings, and to take an active part in the discussions—and by allowing them to spend some portion of their working time in the interests of the Society. At these meetings they will make new friends and get new ideas. The importance of cooperation was never so great as at the present time. The day is gone when we can depend on the genius in the garret for discoveries—nowadays they result from the combined efforts of many workers. The future of your business depends on your man power—you owe it to your men to help educate them, and they, in turn, must sort out the information which can be applied to your own individual problems. You can also help by taking out sustaining memberships in our Society. A thousand dollars spent in this way will be returned to you a hundred-fold by virtue of increased knowledge and elimination of duplication of effort.

I think no one will deny that the engineer is destined to play an increasingly important part in this great industry; and the producer will have to depend to an increasing extent on the engineer to add novelty to his presentations. It is doubtful if there will be epoch-making engineering developments in the immediate future as revolutionary as the introduction of sound. The developments will probably be in the nature of improvements in quality both of black-and-white and colored pictures and of the sound, but these improvements will only be effected by paying the closest attention to minute details. There is hard work ahead.

The quality of the sound as reproduced in conjunction with the motion picture must be improved if the public is to remain entertained. The reproduction of speech is very satisfactory, but that of

music, as encountered in a very large proportion of theaters throughout the country, leaves much to be desired. There are serious leakages from the bucket of sound quality in the transfer from recorder—to laboratory—to projector—to loud speaker—and these must be reduced to a minimum. This can be accomplished only by research and education of personnel all along the line.

If I were a producer, before participating in the threatened revival of musicals, I should pay a great deal of attention to the subject of projection. Most producers are likewise exhibitors and realize that it is foolish to spend millions on a production and have the artistry of the picture destroyed by imperfect projection. The projectionist is one of the most important cogs in the complex motion picture mechanism, and he should be encouraged and educated.

In order to reproduce sound with a more perfect degree of realism, we engineers must extend the frequency and volume range of the reproduced sound, reduce ground noise still further, and add sound perspective. Recent researches have shown that the sound energy produced from a symphonic orchestra of only moderate size may be as much as 50 watts during the louder passages, which would require from 100 to 200 watts of undistorted power from the amplifying apparatus. When we consider that many of the existing sound installations are capable of handling only a maximum of 10 watts, it is realized that newer and more powerful equipment will eventually be required to give the public the degree of realism which it demands.

I think that in the future, the industry can expect a continued series of technical developments from the engineer such as have characterized the past few years. The application of these will require increasing expenditures if entertainment is to be forthcoming which is better than that which the radio and the home movie can provide in the home.

The theaters of the future must have larger projection rooms to accommodate the increasing amount of apparatus which will be necessary—manned by men who will watch over its operation with the skill and care of a conductor directing an orchestra. Such equipment may include machines for reproducing sound from a separate film record with multiple sound tracks to permit of sound perspective and special effects—with sound equipment having adequate reserve power to simulate every type of natural sounds—and with projectors capable of giving depth to the picture. Relief projection without the aid of auxiliary devices has recently been demonstrated, and these

experiments have revived the hope for the ultimate production of stereoscopic motion pictures.

Before it is possible to televise motion pictures in the theater which will be as clearly defined as the present theater picture, it is apparent that some new fundamental scientific discovery will have to be made. Utilizing present principles, the entire commercial broadcasting channel would be required to obtain sufficiently critical definition.

Color has not had a fair chance. I think that color inserts of pretty ladies are more fully appreciated, at least by the male public, than statistics would indicate. The sudden demand and the rush to obtain color prints without sufficient time for preparation made it difficult to get prints of satisfying quality. The complaint that some colored motion pictures have caused eye-strain was undoubtedly a result of the fuzziness of the pictures. The eye did not know whether the picture or itself was at fault and became all tired out trying to bring the picture in focus. This difficulty of securing colored pictures which are equally sharp as the black-and-white ones has now been practically overcome.

Much research is in progress on color work, and an ultimate solution is assured.

Investigations by the Standards Committee of the S. M. P. E. have shown that an extremely wide film is not necessary to produce a large screen picture. So far as can be predicted, a film 50 mm. wide is adequate for even the largest theaters; and, with only moderate improvements in film emulsions with respect to graininess, the present 35 mm. film would be adequate for the largest pictures possible in the average theater, especially if the picture and sound records were placed on separate films.

But these improvements will be accomplished only as a result of continued research on the part of many workers. Research work may be of two kinds—investigations in pure science or the unfolding of the secrets of nature, and industrial research, or the application of known fundamental principles to industrial practice. For example, the discovery by pure research that a hot body gives off particles of electricity and that light drives out particles of electricity from materials, was utilized by virtue of applied research to the development of vacuum tubes and photoelectric cells, which are the keystones of our modern sound recording and reproducing equipment.

To date the industry has put on the manufacturer the bulk of the burden of developing the science which it is applying, but the success-

ful producer of the future will contribute his fair share in order to insure an adequate supply of new entertaining media. But how can this be accomplished? It is not feasible for the S. M. P. E. or the Academy to establish a research laboratory, but they can help stimulate research and contribute toward the establishment of research fellowships in the various universities throughout the country. As a result of negotiations with the Massachusetts Institute of Technology and the School of Optics of the University of Rochester by our Society, I am authorized to state that these universities will, if the necessary funds are forthcoming, establish fellowships for the investigation of problems appertaining to the motion picture industry. I have in mind such problems as the effect of viewing motion pictures on eye fatigue and the merits of non-intermittent projection, which can only be conducted successfully by the collaboration of a large number of individuals. I know of no more valuable contribution which you can make for the welfare of the industry.

In conclusion, may I remind my co-workers of a tribute paid to the engineer from this platform three years ago by the late Milton Sills on the occasion of the banquet tendered our Society by the Academy. These were his words: "If I had my life to live over again, I should not elect to be an actor, but a scientific research worker. We actors get our names in electric lights, but we are soon forgotten and pass into oblivion. You scientists are making contributions of lasting value and are therefore giving one of the greatest services to the human race."

My first introduction is to one of our technical members whose researches have been largely responsible for the vacuum tube which is used in our sound recording and reproducing apparatus—Dr. Lee de Forest.

DR. DE FOREST: Chairman, guests, those who enjoy the Society of Motion Picture Engineers, and Motion Picture Engineers: it is a great pleasure to be here in Hollywood, and to greet the Convention as a resident. I am reminded as I sit here tonight of what happened 10 years ago this month, for I have here by my side the first talking motion picture cameraman and sound recorder, William Garrity. It was 10 years ago that Garrity recorded sound on picture film for the first time in America. That was in my laboratory in New York City. Microphones were not much in those days. On that occasion the small microphone used was concealed beneath Mr. Garrity's vest while he posed before the camera. The recording was what you

can well imagine it was. Mr. Garrity is now engaged in the very interesting work of recording the Disney cartoon films instead of trying to record the voice of human action. And had we contented ourselves at that time with the recording of the more or less imaginary sound of cartoons, we might have succeeded much more rapidly than we did. For those first recordings were much like those sounds which Mickey Mouse makes from the screen today. I know that we have a long program and I do not want to take up more time. I want to congratulate our President on his most enlightening discussion of the present state of this art. It was most interesting.

My position out here makes me think of the traveling salesman representing the Scottish mercantile firm, who was shipwrecked on the Hebrides Islands, and who sent a telegram to his home office asking instructions. They replied, collect, "Your summer vacation began as of yesterday." I feel, while I am out here enjoying the delights of watching what my successors are doing in this art, very much like that salesman, only shipwrecked on a South Sea Island. I am having a delightful time keeping in touch with the rapid strides, the impressive improvements which you motion picture engineers are making in Hollywood, and I am glad to know you all.

MR. FRANK WOODS: I was very much impressed by the statement made by your President of what the engineers have accomplished and some of the things that they hope to accomplish. My memory of this business goes back to the time when the engineer was unknown. The technical man was not even referred to in those terms. The technicians of those days—the earliest days of pictures—consisted of the cameraman, possibly a "prop" man, and the laboratory men. The art department was a painter who painted on canvas drops and sides. He sometimes painted an audience on the back of the canvas. In the picture *Ben Hur*, the first time it was made in 1907, the audience was painted on a back drop and when the wind blew the curtain, you really had a moving picture—the audience moved. The actor was afraid to work in motion pictures under his own name, so he would apply for the job of "posing" under a fictitious name. Some of those fictitious names became well known in pictures afterward. The director directed his pictures from what were called suggestions. There were no writers in motion pictures. If one wanted to sell an idea to a company, he would sell a suggestion. When I entered the business, the price of a suggestion was fifteen dollars. Some of the companies paid only five dollars. The author

was only known to the picture business as the person from whom we stole a story. It is a long way from that time to this—twenty-three or twenty-four years—not so long in time, but very long in things that have been accomplished. For example, the technicians have now become engineers. I think the word itself has an impressive sound to the producers. Engineers are now recognized by the producers as a class of people on whom they have to depend and to whom they cannot dictate, because as a rule they do not know what the engineer is talking about. The writer—he should really be called an author—has not yet arrived at that position, but he is improving in his standing. Through the Academy the screen authors of the present time are now preparing to negotiate an understanding by which they hope to achieve a greater freedom of authorship, all of which is meant to bring about better motion pictures. For this improved standing the screen authors must thank the engineers because it is due to the achievements of the engineers that the writers are now being better recognized and can lay claim to genuine authorship. When the engineers gave us the talking picture, it became more and more necessary that complete scripts including dialog should be written—scripts that could not be tampered with after having been composed. Hence the author owes to the motion picture engineers a great debt of gratitude.

MR. CLINTON WUNDER: President Crabtree, Mr. Chairman, friends of the Academy and of the Society: I am in a difficult spot because on one side of me is a granddaddy of the Academy, who was present at its birth and fed it from a bottle and nursed it through infancy, and on the other side of me is Mr. Crabtree who speaks a technical language about which I profess to know little. My duty remains to represent the Academy.

Twelve years ago, I made my first speech on motion pictures in New York City. At that time, there were seventeen speakers on the program. Tonight history is repeating itself for there are fifteen speakers on this program, which suggests to me that brevity is in order.

The combined technical and scientific intelligence of those who make up the ranks of the Society of Motion Picture Engineers and the Academy of Motion Picture Arts and Sciences have projected the human voice in a mighty volume which everyday rings out in twenty-seven languages into the ears of peoples of every community in the world where electricity can be had. A weekly world audience

of 250 million people (white, yellow, and black) hear what you record.

When silent pictures decided they wanted to speak, you gentlemen helped to teach them how. The speed with which they gained this vocabulary, the clearness of their pronunciation, the success of their words, they owe to you. Nor is entertainment the only product of your scientific achievements. The little red schoolhouse, the church, the university, and the great convention auditoriums now ring with the messages of education, the words of leaders of social thought, and the voice of great statesmen. The news weekly has become a news agency of vivid information and interest since sound came in. The comic cartoon has chased our gloom away to the tuneful antics of cows, goats, mice, and cats. The voice of the greatest clergyman is now heard in the smallest rural church accompanied by the choruses of trained singers which hitherto only the wealthiest congregation could listen to.

Therefore, not only Hollywood welcomes you today, but the people of two continents welcome you. They watch with interest that which you will say and do throughout your convention program. They will expect ever-continuing improvement of this vehicle you have taught them to enjoy. The Society and the Academy have much in common. Many belong to both the Society and the Academy. We benefit from the discoveries and the researches made by each other. Gains are placed together in the same treasury. Your interests and ours are the same. Your service and ours are interrelated.

The manufacturer of film, the equipment companies, the actor, writer, director, the sound engineer and technician, the cameraman, and the producers are of necessity partners. Into this partnership the public has come, by buying stocks in our companies and by placing money in the box-office. I am sure I speak for the entire Academy membership when I express the sincere hope that the acoustical properties of your convention hall's walls will be great enough to challenge anew the attention of that world audience which demands from us our best in supplying a never-ending program of films of quality to be seen, to be heard, to be enjoyed.

MR. FRED PELTON: Mr. Chairman, artists, and the Society of Motion Picture Engineers: there is a cloud over the industry at the moment. Three years ago we had not a gathering such as this, but a group of gatherings at the Biltmore Hotel, and at that time technicians of the industry contributed very greatly to reducing the

cost of making motion pictures and there was a general stimulation of technical activity. There is one problem which the S. M. P. E. can solve; and that is the problem of the silent motion picture camera. The cumbersome camera housing which we use today is a great consumer of time, and undoubtedly adds to the cost of making motion pictures. I understand that there are two manufacturer members of the Society who are producing silent movement motion picture cameras very little heavier than the old silent camera. One important thing for the Society of Motion Picture Engineers to do is to expedite the silent camera and get it into the industry as quickly as possible. This will help to dispel the cloud.

MR. CAREY WILSON: Mr Chairman, and Ladies and Gentlemen: I have been waiting for just three years—since your last convention here—to get even with you guys. Three years ago I walked innocently into something which certainly appears to have had important consequences. Mr. Woods, of the Academy of Motion Picture Arts and Sciences, asked me then if I would attend the convention of the S. M. P. E., and read a paper. So I prepared a harmless little paper and read it, and was making a graceful exit to mild applause when the chairman called me back and advised me that all speakers were required to take the rostrum and answer questions. Rather helplessly I did so. We started out with such questions as "What is a scenario?" and I answered, of course, that I didn't know. We graduated in a few minutes to such more leading questions as, "How much money does Jack Gilbert really get every week?" And a little later we got into such serious problems as the desire to know Greta Garbo's telephone number. One of the questions that turned out rather badly, I'm afraid, and that started a lot of trouble was the question, "What can the engineer do to help the writer?" That was a tough one. Rather foolishly I said off-hand:

"I think the only way is for the engineer to give the writer new machinery, so that the writer will have a broader scope and a wider field in which to exercise his talents."

Well, gentlemen, one of you guys went home to his laboratory, picked up some pieces of wire, an old telephone transmitter, and went to work. Three weeks later we had talking pictures. Six months later half the people in Hollywood were out of work, and the other half didn't know anything about talking pictures, either.

I will never ask for any more help from the engineers.

I might say to all of you, and particularly to Doctor Mees, to please

have a heart and don't go inventing anything new for a little while, until we get caught up.

You gentlemen have certainly improved matters marvelously since the introduction of sound pictures. When talking pictures first came in, I monkeyed with the idea in a rather obscure studio. The first time I went on a sound stage, I discovered the problems were many: we had a microphone somewhat resembling a sewing-machine suspended from the ceiling; you had to group your actors around that microphone until they looked like a Notre Dame huddle; but the poor cameraman was in a worse spot. The sound stage of the early days resembled the home factory of that famous character created by Chic Sale.

Then, when I went to see the picture, it happened to be running in a small house. Gentlemen, that house reminded me of the City Hall Auditorium in the small town where I once put on a high-school show. I asked the man who ran the auditorium:

"How are the acoustics?"

He said, "We ain't got no acoustics."

In the early days of sound pictures you sat and listened to your picture and wondered who it was that had translated your dialog into Chinese.

I don't suppose any of you folks realize the chaos that resulted in our industry here with the introduction of talking pictures. I can tell you a story about a director who was a practical joker, which may illustrate our confusion and ignorance of sound. This director, Micky Neilan, asked an actor friend to make a sound test. The actor, who happened to have a very deep voice, came on the set and spoke certain lines in the test. When he left, Micky got his young girl secretary to speak those same lines on a separate sound track. When the actor came back several days later to hear his test, Micky ran the actor's photograph film synchronized with the secretary's sound track. When the lights flashed up in the projection room, the actor said:

"My God, Micky, I was afraid I wouldn't record well, but I didn't think I'd turn out to be a damned soprano."

I am sure, gentlemen, improvements will have to go on from this day as they have from the pioneer days of sound. To show my respect for your abilities, I can only say that I hope we here will progress as well as I know you engineers will.

CHAIRMAN: We have with us a guest who came all the way from

Germany, and who is a member of our Society and of the Deutsche Kinotechnische Gesellschaft. Perhaps he may have a few words to say to us.

MR. HANS BÖHM: I would like to express my appreciation at being able to attend this wonderful meeting of the Society in Hollywood. All my German fellow friends of the Deutsche Kinotechnische Gesellschaft, which is very much honored to have your President as its honorary member, envied me as I left for my visit to America; and I feel sure that they will envy me even more when I return and tell them of all that I have seen and heard over here in this marvelous country of progress, research, and science.