PRESIDENTIAL ADDRESS

Spring Meeting of the Society of Motion Picture Engineers

Roscoe, New York, 1924

Fellow Members and Guests:

IT AFFORDS me great pleasure to welcome you to this, the 18th regular meeting of the Society of Motion Picture engineers. Those of you who have had the good fortune to attend previous meetings know that they have invariably been occasions of both pleasure and profit; and I feel sure that this meeting will be no exception to the rule.

Looking back upon the development of this organization during the past eight years, we see continuous progress and growth. Our Society has been particularly free from those dissentions and disagreements which so frequently, in societies of this kind, retard progress and detract from the good feeling among the membership. We are to be congratulated that our membership consists of individuals of such high personal character and such unusual technical ability. The Society has accomplished a great deal toward the standardization of practice and the establishment of a recognized nomenclature. It has had powerful influence in promoting closer cooperation between the widely different elements of the industry and has stimulated research and investigation to a very marked extent.

Our published Transactions, which contain the technical papers that have been presented at our various meetings, and the sometimes voluminous discussions excited thereby, form a very comprehensive encyclopaedia of information relative to Motion Picture Engineering. In fact they are practically the only publications of any consequence in this particular field. I sometimes think we ourselves do not properly appreciate the quality and importance of these publications. We should indeed be proud that our Society has produced in the last few years such a valuable contribution to the literature of this field. Considering the past of the Society, therefore, there is very little which can be subjected to adverse criticism. We must not, however, be satisfied with past achievements and having advanced to our present state of well-being, it behooves us to look into the future and to so order our activities that the coming years may see a continuation of our growth and development.

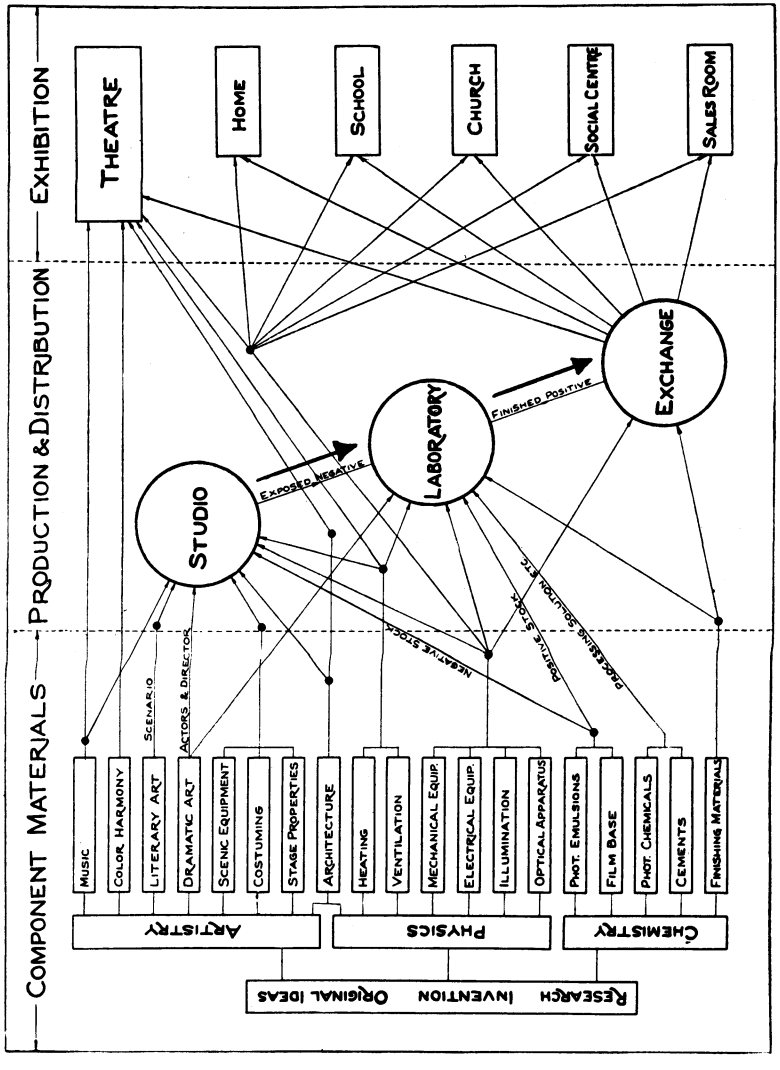
We have frequently heard the statement that nature abhors a vacuum and it seems to be equally true that nature abhors stagnation. There seems to be a fairly general natural law that in the case of vital organisms there must be either growth or degeneration. There

can be no standing still. This law, I think, applies equally well to organizations of individuals such as nations, states, churches, and societies such as our own. If we have the well-being and health of our Society at heart we must not allow ourselves to be lulled into a state of contentment and self satisfaction by our past achievements. If we hope to continue in a state of social health and vigor we must continue to grow, to expand our sphere of influence and to make ourselves more and more useful to the industry.

It may be well at this time to consider our position relative to the motion picture industry and to inquire as to the direction in which we may reasonably expect possibilities of expansion. Our activities already include a very large number of different phases and in those fields in which we are already interested, there is undoubtedly room for much farther valuable work. I do not mean to convey the impression that our only possibility of further growth is in expansion into new fields, but I do feel very strongly that we can hope to reach our highest plane of usefulness only by including all of those activities embraced in the motion picture industry.

As the name of our Society implies, we are an engineering organization, and I have sometimes felt that the word "engineer" has rather discouraged certain types of individuals from being interested in our work. If this is the case it is because the word "engineer" is interpreted by these people in its older and narrower sense. It will be found that the word "engineer" originally applied to one engaged in the operation of an engine. This meaning, of course, was given to the word many years ago and since that time its meaning has been very greatly broadened. In a dictionary published several years ago, I find that "engineering" is defined as "the art and science by which the mechanical properties of matter are made useful to man in structures and machines." Since the publication of this definition, however, the word has undergone further broadening and at the present time it is applied to many other lines of activity than those indicated in the definition above. We frequently hear of efficiency engineers, purchasing engineers, etc. The efficiency engineer certainly deals with many things other than the physical properties of matter. He deals with the psychology of the employee and with many subjective phenomena. It is evident therefore, that the term "engineer" has been broadened so that it now designates the practical application as distinguished from theoretical work and research in pure science. It is not even limited to the application of science but includes also the application of such things as psychology and if it is justifiable to include as "engineering" the application to practical purposes of psychological data it surely is justifiable to extend its meaning to include the application of art. If we accept this broader definition of the term "engineering," there is no reason why those who contribute literary, dramatic, and artistic talent to the making of a motion picture should not be interested, and vitally interested, in the activities of our Society.

Being a firm believer in the efficiency of visual methods for the conveyance of information and ideas, I have attempted to show graphically the inter-relation between the various elements composing the motion picture organism.



This chart you will note is divided into three parts as designated by the captions at the top. In the first are placed designations of the component materials which go into the production of a motion picture

the second part includes the production and distribution and in the third is indicated the consumption of the finished product.

The lines which connect the various inclosures indicate in a general way the points in the process of production, distribution, and exhibition, at which the various "component materials" are introduced. It will be quite impossible in a diagram of this kind to show in detail all of the complicated inter-relations which actually exist. To attempt to do this would make the diagram so complicated as to defeat its real purpose, which is to present a rather clear and general conception of the inter-relations existing between the various phases.

Let us now consider briefly the more important of the "component materials" which go into the production of a motion picture. For convenience these may be grouped as derived from three main sources (a) Chemistry (b) Physics, and (c) Artistry. This last term, while not entirely satisfactory for the conveyance of the idea in mind, seems to be more satisfactory than any other available. It is used to include all of those components of the motion picture which are essentially artistic as distinguished from materialistic.

To the motion picture "Artistry" contributes music and color harmony (by which I mean the use of color for the creation of atmosphere in the exhibition of the finished picture and includes the use of color produced by the application of coloring materials to the stage setting or the use of colored light either static or mobile). These components are contributed to and used very largely in the theater where the motion picture is exhibited, although music is very frequently used for the creation of the proper emotional atmosphere in the studio or on location where the play is being enacted before the camera. It seems probable now that in the future motion picture color will play an increasingly important part. There is at the present time a great deal of work being done in the development of color motion picture photography. As this new phase develops, color and color harmony must assume a much more important role than in the past. A new art of composition must therefore be developed in the studio. While at present the scene is suitably composed for rendition in black and white, in the future, great attention must be paid to the color composition. For this purpose, the artist who is master of color harmony must be employed.

To "artistry" we must go for the literature upon which is based the scenario, and for the scenarios themselves. Artistry contributes also dramatic art and is represented in the studio by the actors and director. The director's activity extends also, to a certain extent, to the laboratory where the scenes taken in the studio are edited and assembled into the final reel before sending to the exchange. Artistry contributes also the design of scenic equipment, costumes, and stage properties and the artists who work in this field are of great importance to the success of the production.

Architecture contributes its share to the activities in the studio. You will note that architecture as shown in the diagram is indicated as dependent upon both physics and artistry. As a matter of fact, the architect himself must have training in both physical and artistic fields. The architect contributes largely to the theater and at this point I feel sure there is an opening for our Society to do some very good work. We certainly should encourage the architects who are engaged in the construction of theaters for the exhibition of motion pictures, to become more familiar with the particular problems of properly placing before the public the product of this industry.

It is apparent from a consideration of the chart thus far that art contributes very largely to the production of a motion picture. The individuals representing this phase of the work, while they cannot be expected to be entirely familiar with all of the physical and chemical details of the process, should at least have some understanding of the physical nature of the medium by which their emotional feelings are to be conveyed to the public. If they can be given a more complete understanding of the possibilities and the limitations of this medium, certainly their art can be expressed more satisfactorily.

Continuing now with the consideration of the diagram we find that the science of Physics contributes very generously to the production of the motion picture. The heating and ventilation of the studio, theater, and laboratory must be handled by men trained in this science. Complicated mechanical equipment is required at many points in the process of production. Mechanical equipment is necessary for the proper adjustment and control of the illumination and for obtaining the various effects called for by the director. Mechanical ingenuity is called on for the design of cameras and other accessories used in the studio. The processing machines, printing machines, and projectors used in the laboratory and theater involve the use of many mechanical features and require the services of expert mechanical engineers in their design and construction. In the non-theatrical field, the apparatus which is used for the taking and projection of the pictures involves mechanical, optical, and electrical components.

Electrical equipment is required at almost every point in the production and exhibition of the motion picture. Elaborate electrical lighting equipments are used in the studio and on location. The laboratory depends very largely on electricity for many of its processes. Electrical equipment of many kinds are required in the theatrical exhibition of the finished product and in the non-theatrical field of this industry, many electrical devices are essential. A detailed enumeration of the application of electricity would require many pages of text and I am sure that with the suggestions as shown by the lines of the chart, it will be very easy for each of you to supply for yourselves further details.

The optical apparatus used includes lenses, projectors, reflectors, etc. It will be seen, therefore, that the science of Physics contributes very largely to this industry.

We must go to Chemistry for the photographic sensitive materials upon which this great industry depends. The photographic emulsion carrying the sensitive silver halide and the flexible cellulose nitrate and cellulose acetate bases upon which these emulsions are coated are all products of this science.

To the studio, chemistry contributes negative stock, and to the laboratory, positive stock and processing chemicals, such as developers, fixing baths, tinting and toning materials, etc. To chemistry also we must go for such materials as cements, cleaners, waxes for polishing, and many other things used in the studio, laboratory, and exchange.

This brief outline, I hope, will serve to give you a general idea of the many different phases of both science and artistry which are called upon for their contributions before the finished motion picture is placed on the screen in the theater or home, for the entertainment or education of the audience.

At the extreme left of the diagram you will note that I have an inclosure indicated as "research, invention, and original ideas." From this source the component materials available for the production of motion pictures is steadily being increased. We may regard this as the fountain head for all of the materials used in this industry. Research, invention, and literary creation are continually producing new processes, new machines, new methods, and new emotional combinations. It is to this source that we must look for the future advances in our work. I do not wish to convey the impression that research and invention are completely divourced from the studio and laboratory; as a matter of fact, research and invention are continually going forward in these places. Demands arise in the production departments and these demands, going out through the research worker and into the research laboratories, result in new ideas and new inventions. The groupings shown in the chart are adopted only to emphasize the inter-dependence of the various phases of work.

This Society should realize very fully that continued progress in research is of vital importance to the future development of the industry. The word "research" is here used in its broader sense to include all original investigation and creative effort. No opportunity should be overlooked to encourage, stimulate, and extend work of this kind. At the present time there are many things of interest in what we may term the embryonic or research stage of development. As illustrative of these may be mentioned: The reproduction of sound by photographic methods, which some day may result in the production of motion pictures accompanied by speech, music, and all the acoustical phenomena usually associated with the scene being reproduced; the transmission of motion pictures by cable and radio; stereoscopic motion pictures; motion pictures in natural color; etc. Motion pictures in color is an example of a new contribution from research, which at the present time is just emerging from the research stage and is beginning to become of practical importance. These are

only a few of the more obvious problems at present before the research worker and it would be quite futile to attempt to predict the nature and magnitude of the results which we may expect future research and inventive effort to yield. I think, in speaking to this audience, that there is little need to emphasize further that this field of activity is one to which our Society should continue to give its careful attention.

Turning now to the consideration of the production and distribution phase, we see that in the studio, the contributions of artistry, physics, and chemistry are thrown into the melting pot and under the supervision of the director, stage manager, camera man, etc., an exposed negative is produced. This is sent to the Laboratory where it is processed, resulting in a finished negative from which trial prints are made and inspected in the screening room. The work of cutting, editing, and assembling then begins and after many trials and tribulations, a finished negative is produced, from which the required number of positives are printed and sent out to the exchanges. From the exchange, this finished product goes to the theater, the home, the school, the social center, and the sales room. This diagram should not be interpreted too literally; for instance, the studio as represented here may not be the conventional indoor studio, but may include exterior locations and in fact any place where motion pictures are taken.

I think you will all realize from the consideration of this chart that the motion picture organism is extremely complicated, including as it does, personalities and individuals differing widely in type and temperament. Under such conditions, it is but natural that the worker in one field is prone to regard his particular part as the most important. The star and the director may be inclined to think that their's is the most important and most vital part of the organization. The photographic chemist who makes the emulsion upon which the picture is taken may feel that his contribution is most vital. The electrical engineer who provides the illumination in the studio where the pictures are taken is quite justified in thinking his contribution is of great importance. The projectionist, whose task it is to put the picture on the screen, may feel that his part is of the greatest importance, since, if it be not well done, all of the painstaking care of those who have participated in the production of the perfect positive (perfect from both the technical and artistic standpoints) will be of no avail. Each one is right in believing that his contribution is important, but the clear-thinking, fair-minded man must realize that his work is only a part of a long and complicated process, and that every step is of vital importance. Each individual who takes part in the production of the picture is only a link in the chain and, as has frequently been said, the strength of a chain can be *no greater than* that of its weakest link.

It is sometimes dangerous to attempt to draw analogies, but if we keep in mind that such comparisons must not be carried too far they

may be very useful in the illustration of ideas. Let us liken the motion picture industry, therefore, to the human animal having physical, spiritual, intellectual, and emotional attributes. In our motion picture organism we may then say that artistry represents the spiritual, emotional, and intellectual phases, while chemistry and physics correspond in a general way to the purely physical nature. The well developed, normal, and healthy human animal must be equipped with a healthy body, a well cultivated intellect and a properly developed emotional nature. The mind cannot function properly in a diseased and ill nourished body. On the other hand, a perfectly healthy and vigorous physique is of little use without a properly developed intellect and emotional nature. So in this motion picture industry, those interested directly in the artistic and emotional phases should be very much concerned that a healthy condition of development and progress exists in those fields of science and engineering which must supply the physical necessities. The scientist and engineer, on the other hand, should realize that the chemical process, mechanical devices, and optical instruments which he invents and constructs are only a means or a vehicle for the presentation of information, ideas, and dramatic art to the audience. It seems almost self evident that the health and development of this complicated motion picture organism must depend upon the proper functioning of every component organ.

An examination of our TRANSACTIONS will reveal the fact that most of our technical papers have dealt with subjects pertaining to the chemical and physical phases of the motion picture industry. We have had very little material from the artistic standpoint. We have not as yet succeeded in interesting to any extent the exhibitor, the producer, the director, and those concerned primarily with the field of artistry. It may be that we cannot hope to draw these people into active participation in the work of our organization; it does seem, however, that we should be able at least to induce them to take a greater interest in our activities than they have in the past. There is no doubt that anything which this society does to promote progress, growth, and development, reacts indirectly to the benefit of all those concerned in the industry. There are many phases of work very properly falling within our sphere of influence to which we have as yet given but little attention. There are many problems of vital importance on which but little work has been done. Looking into the future then, there seems to be no lack of opportunity for expansion, for there are many fields into which we have not as yet extended our activities, and in the fields in which we are already working there are many problems as yet unsolved.

I do not wish to impose further on the time of this meeting to analyze in greater detail the elements of this industry. I hope that these few, rather rambling remarks, may induce all of you to give this subject of our future growth and expansion, serious thought. I feel sure that you will agree that there is no evidence of our having reached

a state in our growth where further expansion is not to be expected. The field is very large and there are many problems as yet untouched. We have only just made a good start and I feel very confident in prophesying a future even more successful and fruitful than our past.

L. A. JONES

Roscoe, New York,
May 19, 1924.