PROCEEDINGS OF THE SEMI-ANNUAL BANQUET

OF THE

SOCIETY OF MOTION PICTURE ENGINEERS

STATLER HOTEL
DETROIT, MICH.

NOVEMBER 1, 1938

Nearly 200 members and guests of the Society assembled at the Fall, 1938, Semi-Annual Banquet held at the Hotel Statler, Detroit, Mich., on November 1st. Guests at the speakers' table were Mr. G. R. Giroux, of the Technicolor Motion Picture Corporation; Mr. J. Frank, Jr., Secretary of the Society; Mr. A. S. Dickinson, Motion Picture Producers and Distributors of America, Inc.; Mr. H. Griffin, International Projector Corporation; Mr. E. P. Curtis, Eastman Kodak Company; Mr. G. F. Rackett and Dr. H. T. Kalmus, Technicolor Motion Picture Corporation; Mr. S. K. Wolf, President of the Society; Dr. K. S. Gibson, National Bureau of Standards; Mr. E. A. Williford, National Carbon Company; Dr. J. B. Engl, of Berlin, Germany; Mr. J. I. Crabtree, Eastman Kodak Company; Dr. A. N. Goldsmith, consulting engineer; and Mr. M. Hobart, Technicolor Motion Picture Corporation.

After introducing those seated at the speakers' table, President Wolf announced the results of the annual election of officers for 1938, and introduced Mr. E. A. Williford, President-elect, whose remarks follow:

MR. WILLIFORD: Mr. Chairman, Honored Guests, Members of the Society, and Friends: I am not going to make a speech, but I think it would be really ungrateful of me if I did not express to you my deep appreciation of the kind ovation you have given upon the announcement of my election to the presidency.

Shortly after I was informed of my election, my education began. One of my very closest friends in the profession, one that I have

counted an intimate over the years, began to tell me what was wrong with the Society and with me, and there was much truth in what he said. From other sources since then I have learned that the job of being President of this independent thinking group of individualistic persons is a real job.

All I would like to say to you is this: those who are not as close to the scenes of what is going on in motion picture research and development probably think there isn't much progress being made. It looks very much like the same picture, sounds very much like the same sound; but those of us who are more active in it know that steady progress is going on and will go on for many years to come.

I only hope that in my administration of this Society's job, as President during the next two years, I can see the Society as an organization grow in usefulness and in service to the industry in the same manner in which our two particularly honored guests tonight have been instrumental in making progress in the industry itself.

Thank you all.

President Wolf next introduced the remaining officers- and governors-elect as follows:

Executive Vice-President	N. LEVINSON
Editorial Vice-President	J. I. CRABTREE
Financial Vice-President	A. S. DICKINSON
Convention Vice-President	W. C. KUNZMANN
Secretary	J. FRANK, JR.
Treasurer	L. W. DAVEE
Governors	M. C. BATSEL
	H. G. TASKER

The other officer and governors of the Society whose terms do not expire for another year were also introduced by President Wolf, as follows:

Engineering Vice-President	L. A. JONES
Governors	A. C. HARDY
	H. GRIFFIN
	R. E. FARNHAM

During the introductions, Mr. J. Frank, Jr., the Secretary, called for a rising vote of appreciation for the work done by Mr. Wolf during his incumbency.

Next, referring briefly to the two awards made each year by the Society, namely, the Journal Award and the Progress Award, President Wolf asked Mr. E. A. Williford to read the citation on the work of Dr. Kasson Stanford Gibson, prepared by Mr. N. D. Golden:

CITATION ON THE WORK OF KASSON STANFORD GIBSON

For the second year in succession a member of the staff of the National Bureau of Standards of the Department of Commerce is to be honored with the Journal Award of this Society. In 1937, Dr. Dean Brewster Judd was given this honor. It is my privilege on

KASSON STANFORD GIBSON

behalf of the Journal Award Committee to announce that the paper by Dr. Kasson Stanford Gibson, "The Analysis and Specification of Color," appearing in the April, 1937, issue of the Society's JOURNAL, has won this award for 1938.

It is appropriate to review briefly Dr. Gibson's career and scientific background. Dr. Gibson was born at Afton, N. Y., on January 7,

He received his early education in the public schools of Norwich, N. Y., graduating from the High School in 1908. In 1912 he received his Bachelor of Arts degree from Cornell University and in 1916 his degree of Doctor of Philosophy from the same University. Dr. Gibson was also elected to the honorary societies of Phi Beta Kappa and Sigma Xi while at Cornell, and was an instructor in the Department of Physics from 1912 to 1916.

After Dr. Gibson received his Doctor of Philosophy at Cornell University, he joined the staff of the National Bureau of Standards in 1916 in the Colorimetry and Spectrophotometry Section as an Assistant Physicist. In 1919 he rose to the position of Associate Physicist, in 1922 he became a Physicist, and in 1928 a Senior Physicist; in 1933 he was made Chief of the Section and in 1936 Principal Physicist, the position which he is now holding.

Dr. Gibson has published more than forty scientific papers and reports, in the Journals of the Optical Society of America, American Physical Society, Society of Motion Picture Engineers, Illuminating Engineering Society, and American Oil Chemists Society, in the Journal of Research of the National Bureau of Standards, and in the Proceedings of the Signal Section of the Association of American Railroads, the International Commission on Illumination, and the International Congress of Photography.

Dr. Gibson is a Fellow, in the American Association for Advancement of Science, and the American Physical Society, and holds membership in the Optical Society of America, having been an associate editor of their Journal since 1927, a member of their Board of Directors since 1935 and a Vice-President of the Optical Society since 1937.

Dr. Gibson is also associated with other scientific organizations, among which are the Illuminating Engineering Society, American Oil Chemists Society, Washington Academy of Sciences, and the Philosophical Society of Washington.

Dr. Gibson is a recognized authority in the field of colorimetry, spectrophotometry, heterochromatic photometry, artificial daylight, and spectral filters. It is with pleasure that I present to the Society of Motion Picture Engineers Dr. Kasson S. Gibson as the recipient of the 1938 Journal Award.

After receiving the Journal Award certificate from President Wolf, Dr. Gibson responded as follows:

DR. GIBSON: Mr. Chairman, Ladies, and Gentlemen: I appreciate this honor very much indeed. When the Chairman of your Journal Award Committee notified me that my paper had been selected for this honor, he spoke about the complexity of the subject of color. One of the reasons why the subject seems so complicated is because of the different ways in which the word "color" is used by various groups. You may be interested in some of these ways.

This afternoon, for example, I gathered that to the motion picture engineers color means a departure from black and white, and this usage of the word is consistent with that of the artist, who divides his palette into colors and grays. But I imagine if some of the ladies in the audience were asked the colors of their dresses they would not hesitate to say "white" or "gray" or "black," if the dresses didn't happen to be "cactus green" or "glamor gold" or "rhythm red."

The psychologist defines color as a sensation or perception, but the physicist talks about the reflection and absorption of colors; the chemist discusses whether or not colors obey Beer's law, and we have the paint manufacturer buying and selling colors by the pound, dry colors at that.

Then we have the expression "pure color." To the physicist that means that the light is of a single wavelength; to the dye chemist it means an unadulterated dye; to the psychologist it means one of the unitary hues; whereas to the designer it means maximum departure from gray.

The word "white" is used to refer to the color of daylight or sunlight or to any source that has a continuous spectrum; or it may refer to the color of the tablecloth, or to the color of water, as when certain liquids are designated as "water-white."

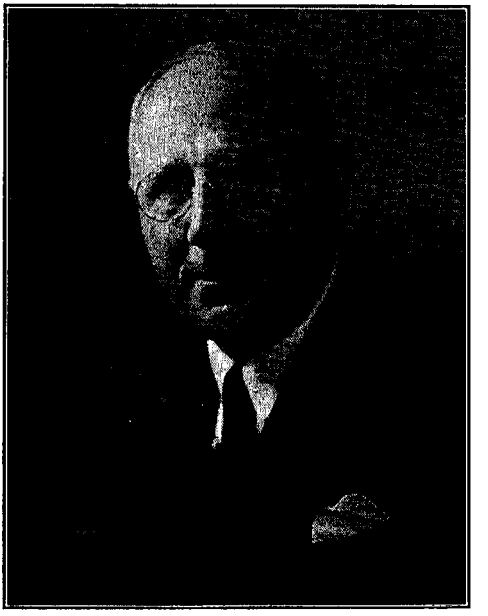
When my son comes home from school he tells me that his teacher says that black is the absence of color. That usage is certainly contrary to the one that designates the black race as the "colored race." Finally, as many of you know, we have the theoretical black body, which may be any color—red, orange, yellow, white, or blue, depending upon the temperature.

I therefore felt highly complimented when the Chairman of the Committee referred to the clarity with which I presented the subject of color. However, I assume the award was given for writing and not for talking, and I am therefore going to conclude these remarks immediately.

I wish to thank the Journal Award Committee and the members of

the Society for this honor. I deeply appreciate it, as I have said, and it will be a source of great encouragement to go forward with our work in color at the National Bureau of Standards.

PRESIDENT WOLF: The highest award that the Society can offer to its members is known as the Progress Medal. This award goes to the person selected by the Committee who has contributed most to the science and art of our industry. We have the pleasure tonight to present to you Mr. G. F. Rackett, who will read the citation for the recipient of the Progress Award Medal:



HERBERT THOMAS KALMUS

CITATION ON THE WORK OF HERBERT THOMAS KALMUS

Motion pictures are unique in being a commercialized art form whose combination of applied science and engineering, together with the modern creative arts, has engaged the widespread interest of the public over the world. It is not unexpected that such a field of endeavor would invite the energies of outstanding experts in the sciences, engineering, and the arts, with the consequence that per-

formance meriting distinction becomes distinction indeed. In the three Progress Awards that have been made by the Society of Motion Picture Engineers, its Progress Award Committee has exhibited judgment that merits the commendation of the motion picture industry and it is therefore with a feeling of pride and humility that I proceed with the great privilege of presenting the citation of the fourth recipient of the Progress Award medal, Dr. Herbert T. Kalmus. In addition to having a knowledge born of direct contact with the outstanding achievements of Dr. Kalmus during recent years, together with a review of his broad achievements of record previous to that period, it has been my further privilege to know him in work and in play, to become acquainted with his leadership, and to enjoy his friendship.

Dr. Kalmus is a rugged product of New England, with a background characterizing the stability, conservatism, and modesty of that older section of our country. This background took him to the Massachusetts Institute of Technology from which he received his Bachelor of Science Degree in 1904. It is noteworthy that, during his tour of education at M. I. T., among other things Dr. Kalmus was called upon to perform some consulting work in connection with the construction of the aqueduct which was later to supply the City of New York with water. The problem was solved with a directness and practicality characteristic of his subsequent achievements.

As a graduate fellow of the Massachusetts Institute of Technology Dr. Kalmus studied in Europe, first at the University of Berlin under Professors Paul Drude, Walter Nernst, and J. H. Vant Hoff, and subsequently at the University of Zurich where he completed his work for a degree of Doctor of Philosophy. His thesis was an extensive experimental and theoretical study of "Electrical Conductivity and Viscosity of Fused Electrolytes." Returning to M. I. T., Dr. Kalmus spent the next six years as Research Associate in the laboratory of Professors A. A. Noyes and H. M. Goodwin, conducting experimental investigations in the field of physical chemistry. Independently he published papers on various subjects in a wide field, including destruction of bacteria by radiation from electrical discharges, electromotive forces set up in the human body by emotions, etc.

In 1913 Dr. Kalmus left the Massachusetts Institute of Technology in response to an invitation to join the faculty of Queen's University, Kingston, Ontario, where he became Professor of Physics. Out-

standing performance was reflected in his appointment as Director of Research, laboratory of electrochemistry and metallurgy for the Canadian Government which led into important activities in the industrial field. His study of the then relatively little known metal, cobalt, was covered by six articles published by the Canadian Bureau of Mines, laying the groundwork for practical industrial uses of the metal. Other industrial applications included the recovery of metallic values of waste materials by centrifuging and the production of alumina from nephalene cyanates.

Interests seeking an equivalent of alundum and carborundum for the rapidly narrowing abrasives supply called on Dr. Kalmus to solve the problem. His work in this field, together with some patents resulting therefrom, were the basis of The Exolon Company which Dr. Kalmus developed to an important and profitable business, becoming successively vice-president, treasurer, and president. Dr. Kalmus retired from this business when its technical problems were well in hand and it had become an important factor in the abrasive industry. With Dr. D. F. Comstock, Dr. Kalmus organized a firm of consulting engineers, Kalmus, Comstock & Wescott, Inc., which investigated a considerable number of live industrial problems. Some of them were undertaken and solved with extraordinary facility.

One of these problems had long engaged the attention of many scientists, experimenters, and engineers in their quest to relieve the drabness of the black and white motion picture from its monochrome limitation and to bring to the screen the naturalness of color. Out of this endeavor Technicolor was born and has engaged the principal attention of Dr. Kalmus for the past fifteen years.

We were both entertained and instructed today when some phases of the romance of this development were described by Dr. Kalmus in his paper, "Technicolor Adventures in Cinemaland."

In charting the course of Technicolor so as to develop a practical engineering solution to the problems of putting natural color on the screen, Dr. Kalmus soon found much necessary work to be done not apparently connected with color. For it must be borne in mind that in the neighborhood of 1920 the state of black and white motion pictures was still relatively undeveloped, for cameras, photographic materials, processing and projection equipment were in an elemental state. Furthermore, at that time available facilities were extremely limited and had to be created as work proceeded.

But Dr. Kalmus had an ideal, and, more importantly, the ability

to analyze the technical aspects of the problem, to develop and supervise a staff of scientists, experimenters, and engineers exploring and solving these problems in a well conceived and directed plan, travelling always toward the ultimate goal of natural color in a form practical for use in the motion picture theater. The story of Technicolor's achievement, first in exploring and ultimately abandoning additive methods of color photography, is generally known. This was followed by the exploration and development of a two-color subtractive process which remains today as the most practical solution to this intermediate stage of bringing natural color to the screen. This problem, however, was only completed to be abandoned, for it was but a step along the road to the problem visualized by Dr. Kalmus, which was not to bring part of the spectrum to the screen but to bring all of the spectrum to the screen. His comprehensive leadership is perhaps no better typified than in the wisdom and foresight which enabled him to authorize and direct the development of the first practical three-color subtractive process for motion pictures during the post-depression period when limited budgets and an industry busy with the developments of new technics in an expanding art form had little time, interest, or money to experiment in the color medium. In his accomplishment Dr. Kalmus is responsible not only for the leadership of the men who were directly responsible for the technical development and solution of this complex problem, but at the same time with a comprehensive view of the economics of the problem whose business aspects are fully as complex and demanding as the technical requirements. It is seldom in the annals of technical development that the ability to direct the business, economic, and technical aspects of a highly specialized enterprise have been successfully carried out by a scientist whose ability reached equally into the fields of technology, economics, and business.

This comprehensive ability invited and merited the support of business and financial leaders whose confidence in the record of Dr. Kalmus made available to him the necessary large units of finance to undertake this extensive work which embraced the development of a process and the construction of cameras, photographic equipment, manufacturing plants, and corollary facilities. These have developed into a Technicolor of international proportions whose principles and policies have reflected his leadership and have merited the outspoken commendation, not only of the motion picture industry, but of allied business interests.

The confidence reposed in Technicolor by the important producers of the motion picture industry is perhaps best exemplified by Technicolor's stewardship of the negative of major productions in which reside large investments whose return is dependent upon the rapid and reliable production of high quality prints. The organization of Technicolor, capable of assembling and delivering answer prints of twelve-reel feature pictures in approximately one week, the Technicolor plant in Hollywood with capacity of 130,000,000 feet per year and its plant in England with capacity of more than 25,000,000 feet per year, represent but a part of the enterprise which rests on the shoulders of Dr. Kalmus.

This citation would not be complete, however, if it were limited to an exposition of the past achievements of Dr. Kalmus. In engineering we plot progress curves, not entirely because we are interested in what has happened but also because we are interested in the indication of these curves as to what will happen. The progress curve of Dr. Kalmus leaves little doubt not only that it will continue to maintain its upward gradient but that its form will be exponential. This citation, then, is of a man whose achievements have been great and whose unspoken promise of achievement is looked forward to by all of his associates whose highest praise is probably couched in their frequent reference to the fact that he has never let them down. In his growing stature of technical and business leadership, Dr. Kalmus casts a lengthening shadow which, singularly enough, appears as a rainbow whose arc plots its points of natural color on the screens of the motion picture theaters of the world.

At the conclusion of Mr. Rackett's citation, the Progress Medal of the Society for 1938 was presented to Dr. Kalmus by President Wolf. Dr. Kalmus responded as follows:

DR. KALMUS: Mr. President, Mr. Rackett, Members of the Society, Friends: Frankly I was surprised when Dr. Goldsmith notified me some weeks ago that the award of the Progress Medal of the Society for 1938 had been made to me. I am greatly honored and I wish first to express my deep appreciation to the members of the Committee who made the recommendation, to the members of the Board of Governors of the Society who approved the recommendation, and to the Society itself.

This award has been made but three times before—to Dr. Edward C. Wente for the volume and importance of his contributions to

motion picture art; to Dr. C. E. Kenneth Mees for outstanding and distinctive achievement in the field of motion picture photography; and to Mr. Edward W. Kellogg for outstanding achievement in motion picture technology.

Tonight, in so graciously conferring this medal upon me, our President has stated that it is for pioneer activities, broad planning, and important contributions to the development of color motion picture photography. Mr. Rackett, too, has been most liberal in his praise of my efforts.

To me all this signifies remarkable breadth of view among those gentlemen who are shaping the destinies of this great Society. As further evidence I quote from Mr. Kellogg's remarks upon receiving the award a year ago: ". . .It is only proper that we technical men should express our recognition of the fact that contributions to progress take many forms and that while the working out of purely technical problems is an essential part, there are other equally important roles. Directors and managers who express their faith in the future make progress possible by appropriating liberal sums to research, and by backing their men through periods of little apparent accomplishment. . . . Executives who see that emphasis is placed upon the most valuable projects and who can keep enthusiasm alive in their organization, engineers who put developments into commercial shape, salesmen who push the best things, workers in the field who find the best ways of using things and give us the benefit of their experience—all these play an indispensable part in furnishing the public with something better than it had before. . . ."

It was such a point of view as this which gave me the courage some years ago to abandon the relatively snug situation of conducting physical, chemical, and metallurgical research within the more or less cloistered wall of the University and to a considerable extent for the Government, in order to tackle the job of planning, managing, and financing a number of technical ventures.

I organized and had general direction of a group of scientists and engineers whose researches and experiments yielded the first two-color, additive Technicolor process. This was about 1916. Some twenty years later our very distinguished member, Dr. Mees, encouraged me not a little by remarking: "I don't know which is the greater achievement, the work you have done in planning, managing, and financing Technicolor through all these difficult years, or the actual scientific and technical progress that has been made."

It is especially gratifying to me that the story of my work should be presented here tonight by Mr. Rackett, who has been in the thick of the Technicolor fray with me during the last ten years, and to whom I give the greatest credit for having solved many perplexing engineering, operating, and plant personnel problems. The solution of these practical problems has made possible higher quality coupled with lower costs and has enabled us in Technicolor to employ as a part of our day-to-day print manufacturing procedure certain inventions of our research department which otherwise might have remained merely paper patents.

Some weeks ago my good friend, Mr. Albert W. Hawkes, President of Congoleum Nairn, Inc., and a director of the Technicolor companies, sent me a copy of an article from the August, 1938 issue of *Advertising Age*. It is too long to quote completely, but with apologies to Mr. F. C. Bierne, its author, I am taking the liberty of paraphrasing a portion of it as follows:

"An executive has to decide what is to be done; to tell somebody to do it; to listen to reasons why it should not be done, why it should be done by somebody else, or why it should be done in a different way; to follow up to see if the thing has been done; to discover that it has not been done; to listen to excuses from the person who should have done it; to follow up a second time; to discover that it has been done but incorrectly; to point out how it should have been done; to conclude that as long as it has been done it might as well be left as it is . . .; to consider how much simpler or better the thing would have been done had he done it himself in the first place; and finally to reflect sadly that if he had done it himself he would have been able to do it right in twenty minutes but that as things turned out he himself spent two days trying to find out why it took somebody else three weeks to do it wrong."

I admit that some days did seem like that and still do but they are the exceptions not the rule for as I look back over the years of struggle with Technicolor I am convinced that the choice of well-trained, able, resourceful, loyal associates and assistants, with whom no such procedure as that was necessary, was largely responsible for the progress that has been made.

In the earliest years and during the development of the two-color process, up to approximately the time of *The Black Pirate*, Daniel F. Comstock, W. Burton Wescott, and the late Professor E. J. Wall played leading parts, with J. A. Ball, E. A. Weaver, and the late

Leonard T. Troland assisting them. Later Ball and Troland carried on from where Comstock and others left off. In the transition to the present three-color process, Ball took the lead, whereas Troland was responsible for our earliest excursions into the field of monopack.

Through the years Natalie Kalmus and George Cave and more recently Robert Riley and Henri Jaffa have had much to do in the field of preparation, color direction, and photography, to bring together, smoothly and practically, the essential conditions for Technicolor and the existing practical procedure in the studio and on location. Mr. Frank R. Oates and Mr. Kay Harrison are carrying on in England, and I have already referred to the exceptional work of Mr. Rackett and his staff.

And last but by no means least, I would acknowledge the tremendous support which our endeavors have at all times received from Eastman Kodak Co. No account of Technicolor would be accurate without acknowledgment to Dr. Mees, to Mr. E. P. Curtis, and to Mr. John Capstaff of constant inspiration and much practical help.

And so, Mr. President, with full credit to all my associates and assistants, both within and without the Technicolor organization, except for whose able performance and splendid loyalty all leadership, whether planning, managing, selling, or financing would have gone for naught, and in the splendid broad spirit of this Society as exemplified by the language of the award itself and by the remarks I have quoted, I accept this medal, together with the extraordinary honor which it signifies, and the opportunity which it bespeaks for continuing in the job of trying to make better and less expensive motion pictures in color.