Foreword

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Editor of the Proceedings

Right from the beginning I was most impressed with the high quality of the work described in the papers submitted for presentation at the Fifth International Congress on High-Speed Photography. It was obvious that this technical material should be made available to as wide a public as possible with all speed. Here, though, was the main difficulty: a few papers were models of lucidity; most, however, had been written in such a way that they could be easily appreciated only by the few experts and specialists who were already familiar with the whole background of the particular subject. Much editorial work was necessary, but we hope that authors have not felt that the criticisms and suggestions were unnecessarily severe. Sometimes, too, a paper would present the advantages of a particular system without mention of the merits of other alternatives. I have, therefore, tried to group the papers so that together they present a rounded view. For the same reason, I have also included a few papers not originally on the formal program and some further contributions to the discussions.

To keep the whole volume within reasonable limits, it was necessary to restrict and condense the discussions. Accordingly, all questions and answers have been omitted where the subject matter is explicitly covered in the relevant papers. Also, we have had to omit almost all the late contributions unless they had a direct bearing and a new viewpoint on a subject already included. Similarly, contributions which were not strictly related to the field of high-speed photography have been omitted. For example, the contribution to the discussion by Professor Santorini on "Ultra Short Times" had to be omitted, largely for these reasons.

Some general and tutorial contributions have been omitted. Though they were valuable, the material they covered is already fairly widely available in current literature. A number of papers were presented at a technical session on October 19. These described the technical and scientific characteristics of equipment that is now commercially available. These papers, too, have had to be omitted.

We have been very conscious of the long delay from the receipt of the first complete manuscripts to the final publication of the volume of the Proceedings. Some papers could be made ready for publication months ahead of others. We have tried, therefore, to obviate some of the ill effects of the delay by publishing a number of representative papers in advance of the *Proceedings* as a whole. About forty papers chosen from the various branches of high-speed photography have appeared in issues of the *Journal* of the Society of Motion Picture and Television Engineers since October 1960, and in *Photographic Science and Engineering*. From all reports, this innovation has been well received by a wide public.

Had time been no object, much more might have been accomplished to improve the presentation. However, the amount of work involved to bring the volume to its present stage was very great and would never have been completed without the continued assistance of many people. Foremost of these was Vic Allen of SMPTE Headquarters. I am most grateful for the benefit of his wide professional experience and for his indefatigable help. Next I would mention Denis Courtney to whom is due most of the credit for the extensive task involved in translating between English, French and German. I would also like to thank Miss Lisel Löper for her help in collecting discussion material, and for the assistance she gave to Denis Courtney in the preparation of the French and German Abstracts. My deepest thanks go to the members of the Editorial Board, all of whom gave of their time and ability; and I would especially mention seven for their outstanding service—Berlyn Brixner, J. H. Hett, S. J. Jacobs, Karl Leistner, Albert May, F. H. Perrin and H. I. Trenary.

I would like to draw attention to the generous assistance given by Bell Telephone Laboratories, Incorporated. They have made available many valuable facilities and services and have been willing to allow much of the time of several members of their staff to be devoted to the editing and publishing of these *Proceedings*. They have asked only for the assurance that the work undertaken would be of value to the progress of science.

I wish, too, to express my thanks to my former secretaries, Miss P. Reissner and Miss V. Ruchala, for their extensive assistance until September 1960 and June 1961, respectively; and even more to my present secretary, Mrs. M. Cravis, for the great volume of correspondence, proofreading, indexing and other secretarial help that she has so un-

stintingly and competently undertaken. In addition, I wish to express my thanks to my colleagues, E. Eisner and J. W. McLaughlin, for their help in editorial and proof work; and to Mrs. A. Werner for her help with translations, particularly from the Russian.

I wish to express my thanks to Max Beard for his continued assistance and support in all aspects of the work; and also wish to thank all those of his colleagues at the Naval Ordnance Laboratory who have given such extensive advice and assistance in editing, translating, indexing, and elucidating so many of the technical questions that arose. In these respects, too, I am deeply indebted to Morton Sultanoff. Similarly, I wish to thank Glenn Matthews for his advice and guidance, and also his colleagues at Eastman Kodak for their very great help with a large number of editorial matters. I would also like to thank B. E. Drimmer of the Naval Ordnance Laboratory and Miss Rae Hargrave of SMPTE Headquarters for their most valuable help with the subject index. This index will contribute a great deal to the value of the volume.

Last, but by no means least, I wish to thank the many authors and contributors who have, almost without exception, done their best, and in so friendly a fashion, to meet the criticisms and requests made by the Editorial Board.

These *Proceedings* now contain more than one hundred technical papers and condensed discussions. They have been intentionally limited to this presentation of scientific and technical material. During the week of the Congress, there were many other activities. Some, and perhaps the most valuable, were the informal discussions between individuals. No record of these can be made. Other more formal occasions sponsored by the SMPTE included receptions, dinners, presentations of awards, guest speeches, film showings, equipment exhibits, papers describing new commercial equipment, committee meetings, etc. A brief record of these activities is available, not in these *Proceedings* but in the *Journal* of the Society of Motion Picture and Television Engineers, Volume 69, pp. 895–916, December 1960.

Crawford H. Greenewalt, President of E. I. du Pont de Nemours & Company, was the guest speaker on Monday evening, October 17. He presented a film, *Exploring Aerodynamics in Nature*, which showed some of his world famous studies of the flight of humming birds. On the following evening, J. Lewis Powell of the Office of the Assistant Secretary of Defense presented a most stimulating talk, entitled *Muscles to Missiles*, emphasizing the accelerating rate of change in the modern world. It is a matter of great regret that neither of these can be reproduced in these *Proceedings* as no written versions are available.

It has been a great experience to come into contact with so many authors and their work, and to hear so much constructive criticism and helpful comment. There has been something new to learn from each paper. I am confident that those papers now published will be of great help to many in their own research and development problems. This work can be the stepping stone to new and better work.

There is no doubt about the importance of high speed photography. The first step in any scientific investigation is to find out what is happening and how it is happening, for without this we cannot go on to find out why it is happening. Photography is probably the most valuable means we have for this purpose. The exposures required, and the intervals between successive exposures, become shorter the finer the detail we want and the higher the magnification we use. So, in the study of fast phenomena on a macroscopic scale, and even of slow events on the microscopic scale, we find we need more and more often the most modern and advanced techniques of high-speed photography. We hope that there may now exist a wider acquaintance with the methods of high-speed photography and its possibilities, and that we may now be able to apply these methods in industry and in fundamental research.