

EDITORS

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**PROGRESS
IN
PHOTO-
BIOLOGY**

PROCEEDINGS OF THE 3rd INTERNATIONAL CONGRESS ON PHOTOBIOLOGY

58.171083
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PROGRESS in PHOTOBIOLOGY

PROCEEDINGS OF THE THIRD INTERNATIONAL
CONGRESS ON PHOTOBIOLOGY

The Finsen Memorial Congress

Copenhagen, 1960

Edited by

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with a Preface by

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PREFACE

The Third International Congress of Photobiology was a special occasion for photobiologists all over the world, because it celebrated the 100th birthday of Niels Finsen. It was called The Finsen Memorial Congress.

The Comité International de Photobiologie was happy to receive an invitation for this congress from the Danish delegation at the Turin conference. It provided an opportunity to honor the memory of the outstanding man in the photobiology field, Niels Finsen, who did so much to lay a foundation for the development of not only photobiology, but also radiation biology in general.

The opening session was devoted to honor Finsen's memory with two lectures, one on his basic contribution to photobiology and the other on his contribution to the medical field. Also on the occasion of the congress The Dansk Esso Fund installed a memorial plaque in a building occupied by Niels Finsen for some time during his career in Copenhagen.

The congress was concluded with the presentation of the Finsen Medal to Dr. P. B. Rottier at The Finsen Institute where the Institute was host to the International Congress.

Besides the two lectures given at the opening of the congress, four lectures were presented by guest speakers: 1. Plant cell response to visible light — excluding photosynthesis by H. Virgin of Stockholm; 2. Light induced phosphorylation by D. I. Arnon of Berkeley, Calif.; 3. The effects of long visible and near infrared radiation by Hans Mohr of Tübingen; and 4. Biologische Uhren by Jürgen Aschoff of Heidelberg. Seven symposia were given: 1. Strahlungsklima und seine Messung — Chairman, R. Schulze of Hamburg; 2. Biological action spectra — Chairman, K. V. Thimann of Cambridge, Mass.; 3. Photoreceptors in aquatic organisms — Chairman, N. Millott of London; 4. Lupus vulgaris — Chairman, P. v. Marcussen of Copenhagen; 5. Initial mechanisms involved in radiation effects — Chairman, R. Latarjet of Paris; 6. Photoreactivation — Chairman, A. V. Giese of Stanford, Calif.; and 7. Phototherapy — Chairman, Jean Meyer of Paris. In addition to the 60 symposia lectures, 90 personal communications were given, abstracts of which are included in this volume.

The meeting discussed many questions on basic photobiology as well as applied photobiology with special emphasis on the development of photobiology during the past three years. Twenty-six nations represented at this congress indicates the increasing interest in this field and the international character of the meeting.

The congress itself was capably planned and managed by the President, Dr. B. Chr. Christensen, with the assistance of a competent staff. The result was a well-organized proceedings, most of which are being reproduced in this volume. Special credit should go to the Danish scientists and government as well as to the many contributors who made this congress possible. Mention should be made of the generous hospitality at several receptions by different organizations in Copenhagen.

At the close of my term of office, I would like to express appreciation to the Secre-

tary-General, Prof. Dr. W. Burckhardt, whose untiring efforts and willingness have done so much for the organization. I also would like to thank the Executive Committee who so graciously cooperated in preparing for this congress.

I would also like to take this opportunity to welcome Dr. Raymond Latarjet as the incoming President of the Comité International de Photobiologie.

ALEXANDER HOLLAENDER

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PLENARY SESSIONS

OPENING OF THE THIRD INTERNATIONAL CONGRESS ON PHOTOBIOLOGY

THE FINSEN MEMORIAL CONGRESS

B. CHR. CHRISTENSEN

Isotope Laboratory, The Finsen Institute, Copenhagen (Denmark)

Your excellency professor Niels Bohr, dear members of the Finsen family, distinguished guests, fellow members of the Congress.

It is a great honour to us in Denmark to welcome The Third International Congress on Photobiology here this year. It is especially so because The International Committee on Photobiology decided to commemorate the 100th anniversary of the birth of the eminent Danish physician and scientist Niels R. Finsen by naming this congress The Finsen Memorial Congress.

To His Majesty King Frederik IX of Denmark, the Patron of our Congress, who by his patronage supported us in our work we owe our most wholehearted thanks. His Majesty regrets that he was unable to attend this opening because of a visit to Greenland. The Congress has sent a message of thanks to His Majesty.

We are very grateful to Mrs. Finsen who joined our honorary committee and by doing so assisted us so much in our efforts to make this Congress a dignified memorial to her husband Niels R. Finsen. We are very sorry that Mrs. Finsen cannot be with us to-day because of a sudden slight illness. We ask her daughter and son to convey to her our very best regards and most sincere wishes for a rapid recovery.

We want to thank our honorary president, his Excellency professor Niels Bohr, and the members of the honorary committee, the Danish Minister of Education, the honorable Jørgen Jørgensen, and the Director General of the Danish National Health Service, dr. Johs. Frandsen, for their assistance during the arrangement of the Congress.

As a whole the organization of this Congress has really been a wonderful experience since the name of Niels R. Finsen has made so many Governmental Institutions, Organizations, Funds and private persons assist us in our efforts. I therefore want to extend to all supporters our most sincere thanks.

This is the second time Copenhagen has the honour of being the host to a photo-light congress as in 1932 the Second International Congress on Light Research was held here. Much has happened to science since then. We live in the era of specialization and under the pressure of the flood of scientific papers. Every minute, night and day, year by year, about 2000 pages are printed. If one of us wanted to study the publications relevant to his own branch of speciality and if he used all his time he would over a year miss more than half a million printed pages. Science really is in a state of fission, fission in the sense that each new discovery opens at least two new avenues for research. Thus our scientists are forced to know more and more about less and less. No person and no group is able to make a complete synthesis of all the

developments even in his own field. I do not know how to stop or alter this development — perhaps it cannot be stopped — but it is my sincere hope that by some process of fusion we may bring together all areas of science to find a simple solution to our complex problems.

Throughout these days we have here physicists, chemists, biochemists, biologists, botanists, plant physiologists, plant pathologists, physicians and many others gathered to discuss problems of mutual interest. I consider a Congress like this, in which people from several branches of natural science meet to discuss a single topic — in this case light — as a step along the right track.

The great German philosopher Kant said that there were two outstanding wonders of God's creation. He said these were the light of the stars of the heaven above and the mind of man within. Niels R. Finsen's work was the result of a combination of these two. May we at this Congress witness a creative meeting of the light and the members of the Congress. With these words I declare The Third International Congress on Photobiology — The Finsen Memorial Congress — open.

Mesdames, messieurs

Au nom du comité organisateur danois j'adresse la plus cordiale bienvenue à tous au troisième congrès international de photobiologie — le congrès commémoratif de Finsen — exprimant la certitude que pendant les jours à venir nous assisterons à une rencontre inspiratrice entre la lumière et les membres du congrès.

Sehr verehrte Gäste und Kongressmitglieder

Im Namen des dänischen Organisationskomitees heisse ich Sie herzlich willkommen zum dritten internationalen Kongress für Photobiologie, — dem Gedächtnis von Finsen gewidmet. Ich bin überzeugt dass wir in den kommenden Tagen ein anregendes Zusammentreffen des Lichts und der Kongressmitglieder erleben werden.