# PHOTON AND PARTICLE INTERACTIONS WITH SURFACES IN SPACE

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# PHOTON AND PARTICLE INTERACTIONS WITH SURFACES IN SPACE

PROCEEDINGS OF THE 6TH ESLAB SYMPOSIUM,
HELD AT NOORDWIJK, THE NETHERLANDS,
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# PREFACE

The 6th ESLAB Symposium, organised by the Space Science Department (formerly ESLAB) of the European Space Research and Technology Center, was held in Noordwijk from 26–29 September 1972. This year the theme was "Photon and Particle Interactions with Surfaces in Space". More than 60 scientists attended mainly from ESRO Member States and from America.

The first part of the Symposium was devoted to introductory lectures and to papers on interactions with spacecraft. The second half dealt with the photon and particle interactions with celestial objects, and ended with a general discussion and presentations of areas where new developments are required.

The purpose of this Symposium was to throw light on the importance of the problems which are evoked by E. A. Trendelenburg in his introductory remarks, and to sum up our present understanding of these phenomena. It is hoped that this book will prove useful to physicists and engineers who are actually involved in space experiments and are concerned with interactions of these types.

R. J. L. GRARD

# OPENING ADDRESS

Gentlemen,

I should like to welcome you to the 6th ESLAB Symposium.

In the past we have always organised this Symposium jointly with our sister institute, ESRIN, in Frascati, but unfortunately reductions in the scientific budget have forced ESRO to terminate the activities of that laboratory. Nevertheless, we have decided to carry on the tradition, and we shall continue on our own organising this series of symposia on specialised subjects.

The reason for choosing this year's particular topic is almost historical. Several years ago, when I was appointed Director of ESLAB by the ESRO Council, I thought that we should devote some effort to Surface Physics. I felt, at that time, that progress in this domain would eventually benefit other fields of space research. Indeed, the importance of Surface Physics in space has outgrown my initial expectations, and today I find it extremely rewarding that the first symposium entirely devoted to this problem is being presented to such a distinguished audience.

Presently, spacecraft are venturing further and further away from the Earth, probing the tenuous medium of the magnetosphere and interplanetary space. More than ever we need to understand the influence of photon and particle fluxes on the electric properties of the surface of a space probe, and to evaluate the extent to which the output of a scientific experiment can be modified by such phenomena. Similar processes also occur at the surface of celestial bodies and may give the clue to phenomena which have been observed, but remain so far unexplained.

It seems to me very promising that physicists coming from different horizons of science – theoreticians, laboratory and space experimenters, as well as lunar specialists – have decided to gather and to compound their knowledge in the very specialised field which deals with the interactions between a surface and its environment in space. It can be expected that the outcome of the discussions between people having such different backgrounds will help to clarify and improve our present understanding of these important problems.

I hope that you will find this meeting useful and profitable, and I sincerely wish you a pleasant stay here in Noordwijk.

I now declare the 6th ESLAB Symposium open.

*26 September 1972* E. A. TRENDELENBURG

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