

OPENING ADDRESS

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On behalf of the organizing committee and of the Royal Institute of Technology I wish you welcome to this symposium. I need not stress the importance of the subject which we are going to discuss—as participants in this symposium all of us are aware of it. You also know very well how this field has been opened by Birkeland and Störmer, by Chapman, Cowling and Ferraro, by Hale, Swann, and many others. However, it is not until the last decade that the interest in this subject has become more general. Many different research groups are active but their ideas differ very much, which gives a good reason for meeting and exchanging ideas.

The first meeting in this field was called by Professor Bullard in London last year. The present one is the second meeting, and considering the rapid development I expect that there will be many similar meetings in the near future. Moreover, our field now tends to become important even for the peaceful use of thermonuclear energy, which adds technological interest to the purely scientific interest.

Concerning the programme it is obvious that a full coverage of the title ‘Electromagnetic phenomena in cosmical physics’ should also have included ionosphere physics, radioastronomy, the problems concerning the origin of cosmic radiation, and perhaps also the origin of the solar system. However, these branches have been excluded from the programme for different reasons. For example, radioastronomy was discussed only a year ago in Manchester. Even so there remain three important fields for the symposium:

(1) *Fundamental magneto-hydrodynamics* including currents in gases in the presence of a magnetic field. Although the emphasis has been and still is lying on the theoretical investigations, important experimental investigations will also be reported.

(2) *Stellar magnetism* is a rapidly developing branch of astronomy, which directs the interest to the importance of electromagnetism to stellar phenomena.

(3) *Electromagnetic phenomena within the solar system* may be an appropriate subheading including *solar electrodynamics, magnetic storms and aurorae*, and

cosmic ray intensity variations. It is an important purpose of the symposium to stimulate the fusion of these different fields into a common field of research, which at the same time gives us an example of the application of fundamental magneto-hydrodynamics to astrophysics.

The symposium will also include a visit to the Stockholm Observatory, Saltsjöbaden, and a demonstration of laboratory experiments with cosmical applications at the Royal Institute of Technology.