

ADDRESS BY:

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Your Magnificence, Mr Teleki, Mr President of IAG, Ladies and Gentlemen,

It means a great honor for me that I have been entrusted to convene you to this symposium, the topic of which deals with a most important problem, especially in Geodesy and Astrometry, namely the problem of eliminating refractive influences from observations of various electromagnetic wave signals.

I am especially indebted to Dr Teleki, who is the official representative of the Astronomical Union here. He is also president of the Working Group on Astronomical Refraction in Commission 8 of the International Astronomical Union. He early suggested a joint symposium to be held between the International Astronomical Union (IAU) and the International Association of Geodesy (IAG) for the purpose of establishing a close cooperation in studying refractive phenomena, connected with the propagation of wave-trains toward an observer, transmitted by terrestrial or extraterrestrial signal sources.

Dr Teleki's intention was originally to arrange a symposium, with same title as the one you are now attending, in his home-country Yugoslavia, at its wonderful capital Belgrade. Due to some insurmountable difficulties, Teleki's idea of holding the symposium at Belgrade could not be realized. When he asked me for advice, I immediately told him that Uppsala University would probably help to arrange the symposium, if he and IAU together with IAG and the International Union of Geodesy and Geophysics (IUGG) liked to accept an invitation from the Swedish National Committee for Astronomy and from the Swedish National Committee for Geodesy and Geophysics to a symposium on the aforesaid topics at Uppsala University under my convener-ship.

Thanks to the very positive attitude to the proposal from aforementioned organizations, shown by the General Secretary of IAU, Mrs E. Müller, her Assistant General Secretary, Mr P.A. Wayman, and the General Secretary of IAG, Mr M. Louis, the symposium was approved and called IAU Symposium No 89 on "Refractive Influences in Astrometry and Geodesy",

xxi

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cosponsored by IAG. The IAU support to this conference has been twofold, namely, a substantial travelling support for invited participants and the printing of the proceedings of the symposium by the D. Reidel Publishing Co., Holland. IAG has contributed with money for the organization of the symposium and IUGG with grants for travelling to invited geodesists. The Swedish Natural Science Research Council (NFR), the Wallenberg foundation and the Rector of Uppsala University have also pecuniarily helped the Geodetic Institute to be able to carry through the symposium. I thank them all for their contributions.

Last but not least, - from the depth of my heart - I have to express my gratitude to all members of our small Local Organizing Committee, who have devoted every minute of their time to solving the organization problems. Especially I like to thank my secretary Miss Ingegerd Ohlsson for her efficient way of attacking every problem appearing during the preparation of this meeting.

The official guests of this symposium are, besides Dr Teleki, who represents the International Astronomical Union, the Rector Magnificus of the University of Uppsala, professor Holmdahl, and the President of the International Association of Geodesy, professor Kukkamäki.

Professor Holmdahl has kindly invited you to a reception in the University building this night at 7 p.m. Uppsala University has always been supporting international cooperation in science. I am glad, that also this international event has been observed by the highest authority of this university through professor Holmdahl's eagerness to make your acquaintance and to be informed of your work during the reception he will host today.

My old friend, professor Kukkamäki is not only an important official representative being the president of IAG. He as well as other people at his famous Geodetic Institute in Helsinki is a good friend of my small institute at Hällby since long time ago. His successor as director of Geodeettinen Laitos, professor Kakkuri, is also here to demonstrate our close cooperation in various fields of geodesy, not least in refraction.

Kukkamäki is also the great old man in the field of nivellitic refraction, a subject which is included as being very essential in the programme of the symposium. Not only that. He will actively participate in our work in this area by presenting a review paper on the subject.

I thank professor Holmdahl and professor Kukkamäki for their willingness to be here with us to demonstrate their interest in our work.

As chairman of the IAG Special Study Group I.42 on "Electromagnetic Wave Propagation and Refraction in the Earth's Atmosphere" I am glad to welcome very important members of this group, who liked to contribute to our discussions. Scientists as K. Poder, I. Brook, L. Hradilek, K. Ramsayer, J. Saastamoinen, P.V. Angus-Leppan, H. Kahmen, D.C. Williams,

J.C. de Munck, are all wellknown and their presence here convinces me that with them, the symposium must be a good one.

I am sorry, that we could not have among us this time a lot of geodesists, who have worked in the field of refraction as members of SSG I.42, e.g. T. Glissmann, M.T. Prilepin, M.C. Thompson, H. Hopfield, E. Livieratos, T. Parm, A.R. Robbins. We send them all our best regards, hoping that we may meet during a planned symposium on refraction in Canberra 1979, that is during the next general assembly of IUGG.

Signs of life from aforementioned members of SSG I.42 have, however, reached me. Several of these members have sent important papers to be discussed here. Some have only demonstrated their unhappiness because of impossibilities to attend the symposium for various reasons. In any case 42% of the members of the group are present here and they will all actively contribute to our work.

Dr Teleki's Working Group on "Astronomical Refraction" comprises 11 members. Of them, 5 are present here as active contributors. This means almost 50% participation, which result I like to emphasize with congratulations to the chairman of the group.

Hoping that this small but - at least as regards the number of attendants - representative symposium will be able to throw new light on the problem of wave propagation and refraction, of importance to all of us in astronomy and geodesy, I wish to welcome you all to a fruitful meeting.

I have not yet mentioned the role of meteorological expertness for our work. But it is clear, that meteorological information can never be avoided in our work, even if we believe that astronomical and geodetic refraction studies might perhaps give more to the meteorologists than they can give to us. The difficult theoretical investigations of atmospheric turbulence must be supported by observations of wave propagation and refraction, as was clearly understood by the famous meteorologist Brocks long time ago. Brocks also formulated the title of research "Geodetic Meteorology", a title which I like to reverse to "Meteorological Geodesy".

Some of our guests during this symposium are pure meteorologists. Professor Liljequist, chief of the meteorological department of the university of Uppsala, will join us at certain sessions and give us valuable information of his experience of anomalous refraction phenomena in the Antarctic, eventually confirming the experience obtained by Angus-Leppan.

Liljequist's assistant Dr Israelsson will also give us a lot of valuable informations as to the wave propagation in the turbulent atmosphere. I am very grateful for his contribution. His field is sound wave propagation. But the main principles of treating propagation questions are still the same for geodesists working in the spectral regions of optics

and radiowaves.

At the end of this talk, I like to tell you, that I have written to professor Tatarski in Moscow, asking him to review the situation as regards turbulence effects on wave propagation, if possible during our symposium. I got an answer from him, that the Soviet regulations did not permit him to attend at such a short notice (June 1978). But he was apparently extremely interested in our work. The books by Tatarski will, of course, constitute an important background for our discussions of wave propagation in turbulent atmospheres. Certain problems, connected with Tatarski's theory of such atmospheres will be touched by Kahmen and Ivanov.

I hope that you will feel well during this small symposium at the university of Uppsala, and that you will go home full of new ideas for solving this essential problem of refractive effects on wave-train information, important for Astronomy and Geodesy and through these sciences also of great value for studying turbulence in our atmosphere, which is of extreme importance for meteorologists.

So, Uppsala University and the Geodetic Institute at Hällby are both wishing that your participation in this symposium will give you something of value to carry home.