

THE SOLAR SPECTRUM

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THE SOLAR SPECTRUM

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edited by

C. DE JAGER



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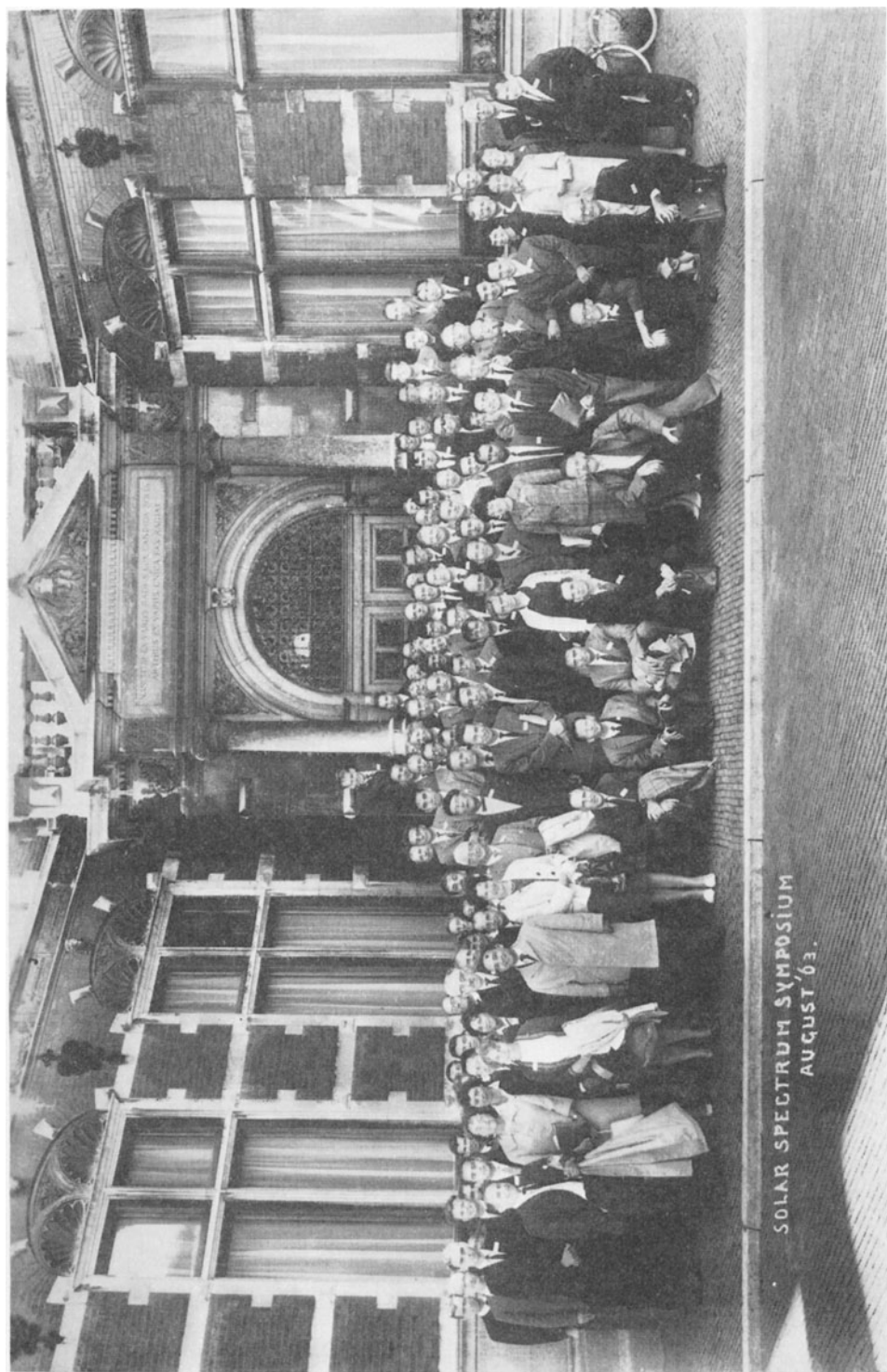
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*Dedicated by the authors to
Professor M. G. J. Minnaert
on the occasion of his seventieth birthday*



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INTRODUCTION

A good deal of our information on solar physics and on solar phenomena is derived from the solar spectrum. A quantitative interpretation of this spectrum was only possible after 1920, after the establishment of Bohr's atomic model, the discovery of Saha's law, and the development of spectrophotometry.

The resolving and light gathering powers of our instruments have greatly increased since. We have seen an enormous progress in our theoretical understanding of basic atomic phenomena, and of the intricate problems concerned with the transfer of energy through a complicated structure like the sun's outer layers. In particular the observable part of the solar spectrum tremendously enlarged since the introduction, in the years after 1945, of *radio-astronomy*, enabling us to study the solar spectrum between wavelengths of some mm to about 15 m, of *space research*, giving access to the whole electromagnetic spectrum below 3000 Å, down to about 0.01 Å. Further, the low and high energetic components of the solar particles spectrum have been discovered with space probes (the solar wind), rockets, balloons (the so-called sub-cosmic-ray particles) and cosmic ray monitors (solar cosmic ray bursts). The extreme wealth of this spectrum, much vaster in extent than the earlier investigators could only dream of, is an important source of information.

It looked appropriate to us, after the rapid development of this branch of science,¹ to invite the world's leading solar physicists to Utrecht for a summarizing symposium on the whole solar spectrum.

The time of this symposium has been chosen so as to coincide with the retirement from his University duties of Professor M. Minnaert who has been in the first ranks of solar physicists since the 1920's, and to whom this book is dedicated by the participants in the symposium.

This symposium could not have been possible without the help of many persons and institutes. It is with gratefulness that I acknowledge

- the generous financial assistance obtained from the Netherlands Ministry of Education, Arts and Sciences;
- the assistance obtained from the section "Organization of congresses" of the Ministry of Education, Arts and Sciences, and in particular from Mr. C. W. J. Rosenberg, in organizing the excursion;
- the invitation of the Mayor of Utrecht to receive the participants and their ladies in the City-Hall;

- the willingness of the speakers and participants to submit their communications during and shortly after the symposium, thus enabling a rapid publication;
- the cooperation of D. Reidel Publishing Company in having the Proceedings well printed;
- the helpful cooperation of all members of staff and personnel of the Observatory in making things run smoothly.

C. DE JAGER

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