

COMMISSION 12: RADIATION AND STRUCTURE OF
THE SOLAR ATMOSPHERE (RADIATION ET STRUCTURE
DE L'ATMOSPHERE SOLAIRE)

Business Meetings, 21 and 29 August 1973

PRESIDENT: R. G. Athay.

1. The Commission endorsed the following Organizing Committee:

President: R. G. Giovanelli.

Vice-President: M. K. V. Bappu.

Organizing Committee: J. M. Beckers, P. Delache, C. Jordan, G. M. Nikolsky, E. H. Schroter, R. G. Athay (ex-officio).

2. New members of the Commission were endorsed as follows: M. Altschuler, L. Acton, R. Bonnet, A. N. Cox, P. Delache, S. Dumont, I. Elliott, R. Falciani, A. Gabriel, L. House, J. M. Pasachoff, F. Roddier, K. R. Sivaraman, A. Wyller, C. Zwaan.

3. *Working Groups*

(a) *Sunspot Spectra*. Dr Pierce, Chairman of the Working Group, advised that a photographic map of the solar sunspot spectrum by Dr J. Harvey would be published within a few months, and that an atlas of sunspot spectra by Dr D. Hall had now been published. In general there were not enough groups engaged in sunspot spectra to warrant coordination of their work on an international basis, and he recommended that the Group be dissolved. The Commission carried this recommendation.

(b) *High-Resolution Atlas of the Solar Spectrum*. The first part of a high-resolution atlas had been prepared by Dr Delbouille, while Kitt Peak has prepared on microfilm an atlas covering the region 2950 to 10000 Å for $\mu = 1$ and 0.2.

(c) *Solar Eclipses*. The Commission discussed a problem raised by the Chairman, Dr Rigutti, concerning aircraft diversion during eclipse times, and decided to endorse retention of Resolution No. 3 of Commission 12 in 1964.

The Commission also discussed the role of the Working Group and its relationship to groups such as NSF which were concerned with the collection of information relative to the organization of eclipse expeditions. It was decided that the Working Groups should be retained, but that the composition should be changed from time to time so as to include only those people concerned with any specific eclipse. Dr Newkirk was appointed chairman of the Working Group, his role being to act as coordinator with the Secretary-General of the IAU, and to find the best means of making arrangements for coordination for the various solar eclipses.

4. *Resolutions*. The following three resolutions were carried:

(a) The IAU wishes to express its appreciation to the National Science Foundation for its coordination of experiments during the last five total solar eclipses, and expresses the hope that this valuable service to the scientific community will be continued.

(b) The International Astronomical Union

being aware of the exploration made by astronomers from a number of IAU member countries during the last five years to find an excellent site for solar observations,

having been informed of the interim results during which some forty prospective sites have been investigated, which have led to the identification of three very promising prospective sites that will be subjected to final testing with medium-size solar telescopes during the years 1973 and 1974, *realizing* the far-reaching scientific importance of solar observations that would be performed from a site with really excellent seeing,

realizing further that a truly international solar observatory can be established only as an inter-governmental organization,

urges the governments of the relevant member countries to examine the possibility of establishing such an organization, if the final exploration of the sites shows at least one of them to have excellent day-time seeing,

draws attention to the importance of such an observatory being accessible to visitors, not only from the member states but also from other countries, and

asks that measures to that end be examined when establishing the final structure of the Joint Organization for Solar Observations as an intergovernmental organization.

(c) Commission 12 of the IAU strongly supports the Working Group on high resolution solar spectroscopy in the establishment of a center to bring together the observations and laboratory data for the publication of a definitive table of wavelengths, line strengths and identifications of solar Fraunhofer lines. Such work would provide the fundamental bases for the determination of solar and stellar abundances so important in an understanding of the Universe.

5. *Plans for the Future.* The following were suggested as possible items for future symposia or colloquia:

- (a) 'The Chromospheric Network', to be held at Big Bear Observatory.
- (b) Another Bildeburg conference, to be organized by Utrecht Observatory, taking into account the three-dimensional structure of the photosphere.
- (c) 'A Model of the Chromosphere', to follow about two years after the completion of the ATM.
- (d) 'The Fine Structure of the Corona'.

Scientific Sessions

The sessions of Commission 12 devoted to discussions of scientific topics were of an experimental nature of considerably different character than had been followed at preceding general assemblies. Each session was devoted to the discussion of an individual topic of current interest. The discussions were centered around one or two major review papers; most, or all, of the time being devoted to the presentation of the paper and discussion of it. This format provided ample time for both an extensive review and for short, unscheduled contributions from the audience. The experiment was successful in elevating the level of the scientific discussions and in providing a more effective role for the commission meetings.

A half day of discussion, on 25 August, was devoted to the topic 'Shifts and Asymmetries of Spectral Lines'. The focus in this session was on the complicated effects of velocity fields in the solar atmosphere on the shapes and locations of spectral lines. An extended review of these topics was prepared by J.-C. Pecker and C. Magnan.

A full day of discussion, planned jointly with Commissions 10 and 36, was held on 27 August. The topics for this discussion were 'The Next Decade of Research in Stellar Atmospheres' and 'The Next Decade of Research in the Solar Atmosphere'. L. Kuhi and P. Delache presented review papers, respectively, on observational and theoretical problems in Stellar Atmospheres. A review of problems in observational solar physics was presented by J. Beckers and a review of Problems in Theoretical Solar Physics was presented jointly by M. Kuperus and H. Rosenberg. The focus in these sessions was on the expected areas of development in observational capability as well as on those problems whose solutions seem to be particularly rewarding.

A second full day of discussion, planned jointly with Commission 36, was devoted to the topic 'Generation, Propagation and Dissipation of Waves in Stellar Atmospheres'. Extended review papers in these sessions, held on 29 August, were given by J. Leibacher and P. Souffrin. Although both speakers touched on all aspects of the problem, Leibacher placed main emphasis on wave generation and Souffrin placed main emphasis on propagation and dissipation. Both speakers led very constructive and extended discussions with a good deal of audience participation in the form of questions and clarifying comments.

It is planned to find a suitable means for collecting the various review papers presented in meetings of Commission 12 and in our joint meetings with Commissions 10 and 36 into a single volume that can be distributed to commission members and other interested astronomers.