

INTRODUCTION

It is with a feeling of very great pleasure that I, on behalf of the Organizing Committee, welcome all of you to the Symposium on Wolf-Rayet stars and high temperature stars. Sponsored jointly by the International Astronomical Union and our local hosts the National Research Council of Argentina, this occasion is the forty-ninth in the series of an effort by the IAU in accordance with its role of fostering progress in astronomical research. These symposia have aided active workers in a field to critically assess on such occasions, the current status of achievement in order to best orient future efforts towards a maximum return. The measure of success has been varied in degree, as one would naturally expect in the diversity of topics covered to date. But if success as a parameter is measured by the yardstick of stimulus to many an individual, with no regard to national boundaries whatsoever, truly these occasions have justified the faith placed in them by those who have conceived them.

We thank our hosts for their very gracious invitation to have this Symposium here in Buenos Aires. It is never an easy task to examine the myriad of details that have to be ensured for the practice of hospitality to have a successful impact on guests of such diverse origins, tastes and requirements. In the few hours that we have been here we have already begun to feel the results of their efforts in this direction. We are confident that indeed our stay here will be memorable, invigorating and informative. We are particularly grateful to Prof. Sahade and his team of collaborators who have spent so much time and energy in looking into the various requirements that undoubtedly will ensure a successful symposium.

It would not be out of place for me to remark on the aptness of holding such a meeting at such a southern location. The brightest objects of the species which forms the principal theme of our discussions are in the Southern Hemisphere. Astronomy and astronomical research activity in South America, by a series of fortunate circumstances, is experiencing an expansion at a rate and magnitude that has never been witnessed anywhere before. Undoubtedly, many of the future developments in our area of interest will be the result of efforts on these southern objects. Where, obviously, should one generate that spark of enthusiasm, except where such a result is most likely to originate?

In planning the details of this Symposium the Organizing Committee considered the time opportune for taking a comprehensive stock of these objects and the limitations under which we operate currently. The Wolf-Rayet object is essentially one that displays a phenomenon, when at a particular stage a distinct atmospheric condition prevails that comes about for different objects with varying chemical compositions from different causes along the diverse evolutionary paths. In talking of the Wolf-Rayet stars our speakers will introduce the points of similarity as well as minor

discordances between objects as the WR stars and planetary nuclei, the Of stars and others that display characteristics that have a common factor. The dichotomy of spectral behaviour is one wherein we have as yet no clue as to the nature of the cause. The obvious non-equilibrium configuration of the atmosphere necessitates consideration of the mechanisms of excitation of the various levels and possible stratification effects that prevail. And unless we are clear in our minds about the details of the physical conditions prevalent in the atmosphere, we can hardly speculate on the causes which may be the origin of such behaviour.

To my mind, therefore, the target for this week of deliberation is to examine firstly our achievements in observation and inference in detail, with its limitations in precision and capability of evaluation, followed by detailed consideration of how we can fill in the lacunae in our information and ability to build up a picture of what constitutes a Wolf-Rayet star.

A little over a hundred years ago, Wolf and Rayet detected the spectacular appearance of the spectra of these objects located in Cygnus. A short interval later, at total eclipses of the Sun, spectroscopic detection of the solar prominences, solar chromosphere and the solar corona followed in rapid sequence. Four decades ago Meg Nad Saha speculated on the nature of the ultraviolet spectrum we would see if only we could by a new technology open a window of research in the electromagnetic spectrum, hitherto inaccessible. Less than a decade ago, we detected in the far ultraviolet spectra of early type supergiants violet-displaced absorption edges to emission features, of a magnitude that we had been accustomed to believe from the visual spectrum to exist only in a Wolf-Rayet star. These are the unifying factors, a common characteristic in extended atmospheres that we pick out in the Sun and the stars, massive, young and old. The problem of the Wolf-Rayet phenomenon is the problem of an extended atmosphere with its diverse sources of radiative and mechanical energy and kinematical and thermal characteristics. Treated thus with the magnitudes of the different features as variants, we have more than a ray of hope towards a successful solution. With this in mind I shall now request Dr. Thomas to commence our deliberations with some general comments on the problems of extended atmospheres.

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