

PREFACE

Symbiotic stars were identified spectroscopically as M giants with a very strong He II 4686 emission line. After five decades of study by many astronomers, the first international meetings devoted to symbiotics were held at the University of Colorado (Boulder) and at the Haute Provence Observatory during the Summer of 1981. These conferences emphasized exciting new results obtained by modern satellite (EINSTEIN, IUE) and ground-based observatories. Although the vast majority of the participants were already fairly sure that symbiotics are almost certainly interacting binary systems, and not extremely peculiar single stars, it was not clear exactly which types of physical processes were needed to be invoked to explain their observed behaviour. Many were even worried that it might not be possible to clearly define a class of “symbiotic stars”, and thus establish a unique model applicable to any system.

Since the publication of the Haute-Provence proceedings, our understanding of the physical processes occurring in symbiotic stars (and in related objects such as cataclysmic variables and compact planetary nebulae) has greatly improved. We now speak confidently of a “symbiotic phenomenon”, in which an evolved red giant and a hot companion object (usually thought to be an accreting main sequence star or a luminous white dwarf star) happily coexist. Given this basic advance in our field, it seemed appropriate to bring together symbiotic aficionados from around the world to summarize our basic understanding of these binaries, to delineate the physical problems we have yet to solve, and thus to plan new observational and theoretical attacks on this important group of interacting binary system.

Our apparently improved understanding of symbiotic objects motivated a presentation that was significantly different from those of Boulder and Haute Provence. Rather than describe observations in distinct wavelength regions or discuss physical peculiarities of individual objects, the organization of this colloquium emphasized a multifrequency approach to our study of symbiotic stars and a description of the basic physical components (and their interaction). Thus, the meeting began with introduction to the observations and the working models constructed for symbiotic stars, continued with discussions of techniques designed to probe the physical structure of a symbiotic binary (e.g., orbital solutions, IR photometry and spectroscopy of the cool mass-losing component, radio/optical imagery, and polarization), and then turned to a description of physical models developed to interpret the multifrequency observations. With this physical background in mind, we then confronted cherished ideas with observational reality to

test our grasp of the symbiotic phenomenon. We hoped that this interaction would lead to a better understanding of our successes and failures, which could be used on the final day of the conference to place our field in the context of binary stellar evolution, to identify aspects of the symbiotic phenomenon in other stellar objects, and to discuss projects that remain to be accomplished.

The large attendance of this colloquium (91 participants from 23 countries) speaks highly of the growth of our field since Haute Provence. For this reason alone, we may consider the meeting successful, because many researchers entered the lively discussions and exchanged ideas. It was not possible to reproduce the full discussion in this volume, but summaries of the three general discussions are included. We are happy to see that many young scientists have begun to study the symbiotic phenomenon, so we can expect an exciting crop of new results and revolutionary ideas for the next symbiotic colloquium !

It was a happy circumstance that the Colloquium was held in the beautiful old town of Torun which actually was the birthplace of Nicolas Copernicus the founder of Modern Astronomy. The first director of the Torun Astronomical Observatory at Piwnice, the late W. Dziewulski was very active in the field of variable stars, and a postumus work is included in these proceedings.

We are grateful to the other members of the scientific organizing committee, D. Allen, A. Boyarchuk, E. Brandi, M. Hack, S. Kwok, B. Paczynski, R. Stencel, and A. Wozczyk, for their assistance in preparing the scientific program. We especially acknowledge D. Allen, H. Nussbaumer and R. Stencel for their extra efforts, particularly in planning the conference agenda. Light curves supplied by J. Mattei of the AAVSO highlighted the long-term behaviour of symbiotic stars, and emphasized the vital role that amateur astronomers play in our attempts to understand these objects. We finally thank the presidents of IAU Commissions 27, 29, 42 and 44 for sponsoring the Colloquium.

We extend our heartfelt thanks to the local organizing committee, R. Biernikowicz, C. Iwaniszewska, M. Mikołajewski, B. Ridak, A. Wozczyk, and J. Ziolkowski. We are especially grateful to the chairman of this committee, Prof . A. Wozczyk, for his careful attention to the many fine details and extracurricular activities that made this meeting so enjoyable. Additional thanks are due to many anonymous people for taking care of the day activities of a scientific meeting.

The Editors