

INTRODUCTION

The proposal to organize a Symposium on circumstellar matter and extended atmospheres in binary systems was first made by the Dominion Astrophysical Observatory to the Executive Committee of the International Astronomical Union in the summer of 1969. It received the support of the presidents of Commissions 29 (Stellar Spectra), 30 (Radial Velocities), 36 (Stellar Atmospheres), and 42 (Photometric Double Stars). Approval in principle was given by the Executive Committee almost immediately, and the Committee further suggested that the Symposium be officially designated the Struve Memorial Symposium. Final approval was given at the time of the 1970 General Assembly of the Union, when the dates of the Symposium were set for August or September, 1972. The Organizing Committee set up consisted of K.O. Wright (Chairman), A. H. Batten, K.-H. Böhm, A. A. Boyarchuk, G. Larsson-Leander, and M. Plavec. In addition, J. Sahade and F. B. Wood acted as advisory members. Local organization was entrusted to a committee consisting of A. H. Batten, E. K. Lee, and C. D. Scarfe. The final dates selected were September 6–12, 1972, and the Symposium was held at the Island Hall Hotel, Parksville, B.C., on Vancouver Island some 90 miles from Victoria.

The Organizing Committee attempted to arrange a Symposium of the type in which no contributed papers would be presented and discussion would range as widely as possible over the field covered by the six invited review papers. Inevitably some of the longer contributions to discussion bear a strong resemblance to papers, but they have all been presented in this volume as a record of continuous discussion. Because different review papers provoked differing amounts of discussion, it has been impossible to maintain a one-to-one correspondence between sessions devoted to review papers and sessions devoted to discussion. In general, the discussion session immediately following a review was concerned with that review, but both the Saturday sessions, and the Tuesday morning session, tended to be free discussion ranging over the whole field of the Symposium. Parts of other sessions were similarly free and a connection between the discussion and the review paper is not always apparent.

All discussion was recorded on tape, and all speakers had a chance to correct virtually all the transcripts. Further editing of the corrected transcripts was frequently necessary. Written summaries were provided for many of the longer contributions. These were frequently shortened and edited also. Some speakers wished to have their contributions bodily moved from the record of one session to that of another. This was rarely possible, but in the editing of the volume, a few cross references have been introduced. Within sessions, some departures have been made from the original order of presentation, and some stretches of dialogue have been reduced or eliminated by making a speaker's first statement more explicit.

Participants at the Symposium were welcomed by Dr. J. L. Locke, on behalf of the National Research Council of Canada, the Mayor of Parksville, Mr. R. G. Young, and Dr. J. Sahade, as Vice-President of the International Astronomical Union. Greetings were also received from the Canadian Astronomical Society. Dr. Sahade also spoke of his "Remembrances of Otto Struve" at the closing banquet of the Symposium on Monday, September 11. He said:

The kind of meeting that we are having here at Parksville is the kind of meeting that Professor Otto Struve would have enjoyed the most and therefore it is fitting to devote it to his memory.

When I think of the new knowledge we have acquired in the field of close binaries in the past few years through the developments of high resolution photometry, radio interferometry and space technology and through a more thorough analysis of objects like the β Canis Majoris stars, for instance, the figure of Otto Struve always comes to my mind. And I recall then his untiring enthusiasm and strong passion for Astronomy his wide field of interest, his open mind, his sense of humour.

He liked to talk about Astronomy practically all the time, he liked to talk with his colleagues and friends about their work and to hear comments on his ideas and thoughts. Struve was always an open-minded person ready to offer an explanation for an observational fact or to accept an alternative suggestion or to change his mind without much hesitation if necessary.

Let me mention as an example that he had worked on β Lyrae for many years and devoted much of his thoughts to find an interpretation for the system that would account for all the observational facts. He was somehow linked with the conclusions that considered that the mass of the primary component was larger than that of the secondary and had been accepted for about fifteen years. In spite of this Struve was receptive, without any conservative feelings, even with joy, to the possibility that the situation in regard to the masses was just the reverse. For him it was always more important to find a more adequate model than to stick to long-accepted ideas.

Struve was working on SX Cassiopeiae at the time I came to Yerkes to work with him. I had just finished my graduate work at La Plata and had no experience in close binary problems. One cloudy evening at the McDonald Observatory he described to me the observational facts and asked me for an idea that would explain them, an idea that, of course, I could not offer. This illustrates the way Struve always acted, he was ready to talk even to a student without feeling any sense of superiority – trying to spread his knowledge around, trying to arouse other people's interest in his own line of interest and trying to find solutions to the problems in a sort of a team work for which Struve was no doubt a leader. While in Berkeley he used to have afternoon tea with Su-Shu Huang and me and during tea we would talk about our research and he would also relay to us the queries he had in mind. One of the problems that concerned Struve then was gravity and how to plan observations that would disclose its nature.

Actually Struve was interested in a wide variety of problems and this is shown by

his very extensive work and also by his 155 articles in *Sky and Telescope* where he practically always made a suggestion or submitted an idea.

I still remember Struve's excitement when shown the radial velocity results of AU Monocerotis, which confirmed his interpretation of the discrepancy between the photometric and the spectrographic results of U Cephei, and when shown the radial velocity curve of XZ Sagittarii, which implied a large mass ratio between the two components at variance with the then accepted idea that in close binaries the mass ratio must be always close to unity. I still remember Struve's excitement when shown the emission lines found in Algol or the largely violet-displaced lines of He I $\lambda\lambda$ 3888 and 5876 in HD 47 129. And I could imagine how excited Struve would feel now when we are able to find such far-reaching evidence of interaction between gaseous streams and circumstellar envelopes in close binaries.

Struve was a very hard worker who worked practically without rest and in this context we can say that his life was one of constant and indefatigable endeavour. But in his task as an organizer, an administrator and a teacher, we can distinguish three distinct epochs. The first one covers his years at the Yerkes Observatory when his energies were devoted to the erection of the McDonald Observatory and to the aim of having of a brilliant and homogeneous staff of research workers. Struve gave dimension to the place, thus creating at Yerkes an atmosphere that was felt as soon as one entered the building.

The second epoch refers to Struve's years in Berkeley. He had then no telescope of his own at his disposal and had to do his observing at Mount Wilson. His efforts were devoted then to the students and to the goal of making the School of Astronomy at Berkeley the best in the United States.

Struve's third epoch as an organizer covers the last four years of his life. He had ambitious plans and was very optimistic about the role that the presence of a stellar spectroscopist could play in a radioastronomical observatory. Let me mention that among his plans he thought of extending the range of observations of β Lyrae to the radio region, something that was possible to accomplish successfully only recently. However, the administrative duties at Green Bank took most of his energies and what he could actually do was something different from what he had envisaged. Part of his time was going to be devoted to the writing of books; unfortunately there was no time for Struve to write except his *Astronomy in the 20th Century*.

Struve was characterized by his sense of humour. He would introduce all speakers at colloquia and the like by telling the audience any funny stories he would know about the speakers. And he would change an announced topic of a lecture of his on the β Canis Majoris stars to a paper on β Lyrae, stating that that was all right because the two subjects had something in common: the letter β .

Everybody respected Struve because he was a very kind, unselfish and modest person. He would never give orders, he would always suggest or, at most, strongly suggest. In his talks and reviews he would naturally mention his results, but without mentioning his name among those who contributed to the subject. He was always trying to help and had a deep feeling of loyalty to his friends and colleagues.

The contributions that Struve made in the field of close binaries stand today as the foundation of everything that was done afterwards. I am sure that without his work we would not be dealing here in Parksville with a subject in such a flourishing and exciting state as we are finding it today.

The admiration of all of us for Struve and his work is at the same time a stimulus, a challenge and a responsibility. Our Symposium shows that it is so.

In addition, informal reminiscences were shared with participants by D. M. Popper, A. D. Thackeray, O. C. Wilson, D. B. Wood, F. B. Wood and K. O. Wright. Greetings from the banquet were sent to Professor P. Swings, a long-time friend and colleague of Struve's who was unfortunately unable to be present; Dr. A. H. Joy, and Dr. L. H. Aller.

Other social events included excursions to Long Beach, Vancouver Island, to Little Qualicum Falls, and (for the ladies) to the Fish Hatchery on Qualicum River. A member of the staff of the Hatchery also showed participants a movie of his own making about the Pacific Salmon. There was a swimming race between photometrists and spectroscopists which was clearly won by the astronomers! The good offices of the Parksville and District Chamber of Commerce in helping to organize some of these activities are gratefully acknowledged.

Financial support for the symposium in the form of travel grants came from the International Astronomical Union and the National Research Council of Canada. The latter body also bore all the running expenses of the Symposium, and much of the social expenditure. We record with gratitude a generous donation from the Nicolaus Copernicus Observance Committee of Manitoba Inc. which helped to ensure that the exceedingly active group of astronomers in Warsaw was represented at the Symposium. Thanks are due to the chairmen of the various sessions, whose names appear at the heads of the respective records of discussion. Miss E. M. Edmond (Mrs. Cole) and Miss H. D. Mann undertook the taxing labour of transcription of the recorded discussion. Without their help, the production of this volume would have been impossible. Thanks are also due to Mrs. I. McColl, who did most of the final typing. Mr. E. K. Lee, Mr. B. W. Baldwin, and Mr. W. A. Fisher rendered invaluable service in the practical organization of the sessions. The courtesy and help of the management and staff of the Island Hall Hotel are also gratefully acknowledged. Finally the Editor wishes to thank all participants who have co-operated so well in correcting transcripts and supplying summaries.

The photograph of Otto Struve used as the frontispiece was taken by Mr. S. H. Draper when Struve visited the Dominion Astrophysical Observatory in 1955. The original print was autographed by Dr. Struve, and has been copied by Mr. Draper for this volume.

A. H. BATTEN

October, 1972