

## PREFACE

Interest world-wide in the provision of new observational astronomical facilities in the form of ground-based optical telescopes of large aperture has never been higher than exists at present. The benefits to be gained from increased aperture size, however, are only utilised effectively if efficient instrumentation is also available. There have been significant improvements recently in this area, particularly in detector technology and data handling as well as in optical design, so that systems which are currently being developed have the capability of being vastly more powerful in terms of the efficient use of photons than those which existed only 5 years ago. The rationale for the decision by Commission 9 of the International Astronomical Union to hold IAU Colloquium 67, therefore, was to obtain reports on these developments with the emphasis placed upon overall efficiency of the complete observational system - from telescope aperture right through to detector output.

A fitting venue for the meeting was the site of the 6 metre BTA (Bolshoi Azimuth Telescope) at Zelenchukskaya in the Caucasus mountains, USSR. The BTA is operated by the Special Astrophysical Observatory located at Nizhnij Arkhyz, a few kilometres from the telescope itself. The meeting sessions (8-10 September 1981) were held in the dome of the BTA and participants had the opportunity on these and successive days of a detailed tour of the telescope installation and its instrumentation in the presence of the Chief Designer, Dr. Ioannisiani. Chairmen for the scientific sessions over the three days were Dr. T. Kipper, Dr. P.P. Petrov and Professor P.V. Shcheglov. For those who were not present at Zelenchukskaya, it was felt that the Proceedings would benefit by a status report on the BTA; this is included as the first contributed paper in this Volume although it was not presented formally at the meeting.

The Proceedings are divided into four sections into which most of the contributed papers could be categorised fairly easily, but the order of the papers here has been changed slightly from that of the meeting sessions into what is considered to be a more logical sequence. Question periods which took place after the presentation of each paper have been compiled into discussion units at the end of each section. Although some spontaneity is lost by having these removed from the papers to which they refer, there were considerable editorial advantages in doing this. One other invited paper (by Timothy, who was unable to attend) was considered to be of sufficient general interest to be included in the Proceedings, although not presented at the meeting.

The Scientific Organising Committee for IAU Colloquium 67 comprised: E.H. Richardson (Canada, Chairman), V.S. Rylov (USSR, Chairman of Local Organising Committee), C.M. Humphries (UK), A. Labeyrie (France), D.W. Latham (USA), N. Steshenko (USSR) and R.M. West (Denmark). Thanks are due to Dr. Rylov and his team for the local arrangements which were made and for the hospitality which participants received.

Several members of the staff of the Royal Observatory, Edinburgh have helped in the preparation of these Proceedings. The Editor is particularly grateful to Jane Stone and Janet Stevens (typing), Marjorie Fretwell (illustrations), Brian Hadley and his staff (Photolabs), and to Angus Macdonald who, as Librarian at the Observatory, provided much valuable information over a period of several weeks.

C.M. Humphries  
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