

expansion glass ceramics, there are other possible blank materials such as, for example, metal or silicon carbide. All materials have advantages and face specific problems. A problem closely related to the type of the blank is its support.

The summary of the support theories includes basic laws of elasticity theory, the early theory of Couder and modern theories, in particular of G. Schwesinger, to whom the book is also dedicated. Both the axial and the lateral support of meniscus mirrors are treated. It is nowadays accepted that mirrors with diameters larger than approximately three metres have to be actively controlled. Since the author was the inventor of this method as applied to *monoliths* and used for the first time in the ESO NTT 3.5-m telescope, the history and basic principles are comprehensively presented.

Of equal importance is the control of the local environment, that is the avoidance of temperature inhomogeneities introduced by the telescope itself. Particularly significant is the attempt to keep the temperature of the primary mirror in equilibrium with the temperature of the ambient air. The local environment can, for example, be passively influenced by the dome design and also actively by cooling the air in the dome or certain components such as the primary mirror. Chapter 4 treats the question of how the optical quality can be assessed in one or a few figures of merit and how the specification for the overall quality can be broken down into specifications for the subsystems. The method using the so-called Central Intensity Ratio, a kind of Strehl Ratio for telescopes working in the atmosphere, was extensively applied during the manufacture of the ESO VLT.

Chapter 5 includes a summary of the fast growing area of adaptive optics, the purpose of which is to correct the aberrations introduced by the atmosphere and reach the diffraction limit of the telescope. After a comprehensive introduction to the theory of atmospheric optics based on the work of Tatarski, Fried and Roddier, the design and performance of the first adaptive optics systems are discussed.

Chapters 6 and 7 deal with topics which usually receive much less attention, namely the reflecting coatings of the mirrors, the

design of the adapters, and the reduction of straylight through the use of baffles. Even the best coatings reflect at most 90% of the light over a reasonable range of wavelength, and the reflectivity degrades considerably if the mirrors are not regularly cleaned. Modern approaches as described in Chapter 6 are required to improve the situation. In modern telescopes, the adapters and rotators, which are often integrated into one unit, have to fulfil many tasks including guiding and wavefront sensing.

Finally, the short Chapter 8 stresses the importance of regular and systematic maintenance to preserve or even improve the quality reached after the commissioning of the telescope.

The book contains many more aspects and details than could be mentioned in this review. In fact, to the reviewer's knowledge it is the only monograph currently available which treats the whole range of modern optical technology of reflecting telescopes in a comprehensive way, whereby, as mentioned in the preface, interferometry between telescopes as well as solar and X-ray telescopes have been deliberately excluded as subjects which are too extensive or too specialised. (In contrast, a number of other modern treatments of the theory of Volume I exist, notably Schroeder's "Astronomical Optics"). It should be stressed that most of Volume II does not require a deep knowledge of the optical theory presented in Volume I. It should therefore also be of use to readers who are working in specialised areas or who simply want to get an overview of modern telescope technology. Special topics can easily be found with the help of the extensive name and subject indices, and thanks to the long list of references, the book is an entry point for more detailed studies.

Furthermore, amateur telescopes are getting bigger and better and are more and more computer controlled. Since many of the techniques and conclusions in this book can also be applied to these telescopes, the book should also be of interest for more ambitious amateur astronomers.

With the extensive name and subject index this volume should also be useful as a reference book.

L. NOETHE

PERSONNEL MOVEMENTS

International Staff

(1 October 2001 – 31 December 2001)

ARRIVALS

EUROPE

CIONI, Maria Rosa (I), Fellow
 CORBETT, Ian F. (GB), Head of Administration
 CRETTON, Nicolas (CH), Fellow
 DADDI, Emanuele (I), Fellow
 ETTORI, Stefano (I), Fellow
 GONTÉ, Frédéric (F), Optical Engineer
 KUNTSCHNER, Harald (D), Fellow
 RICCIARDI, Francesco (I), Software Engineer
 ROSSI, Silvio (I), Electronics Engineer/Senior Technician
 SOMMER, Heiko (D), Software Designer/Developer
 TACCONI-GARMAN, Lowell (USA), User Support
 Astronomer

CHILE

HEINZ, Volker (D), Mechanical Engineer
 LO CURTO, Gaspare (I), Operations Staff Astronomer
 MARCHESI, Massimiliano (I), Mechanical Engineer
 RASSIA, Effrosyni (GR), Student

DEPARTURES

EUROPE

ANDERSEN, Torben (DK), ALMA Antenna Team Manager

BOGUN, Stefan (D), Astronomical Data Reduction
 Specialist

KÖNIG, Norbert (D) on 30.09.01, Head of Administration
 LEDOUX, Cédric (F), Fellow
 MOUTOU, Claire (F), Fellow
 RAHMER, Gustavo (RCH), CCD System Engineer
 SOLLERMAN, Jesper (S), Fellow
 ZINS, Gérard (F), Software Engineer

CHILE

GRAY, Peter (AUS), Head of Engineering Department PAO
 LEISY, Pierre (F), Operations Staff Astronomer
 ROUCHER, Jacques (F), Electronics Technician

Local Staff

(1 September – 30 November 2001)

DEPARTURES

GARAGORRI ALA A PEDRO, Asistente Administrativo
 NUÑEZ CRUZ, HERNAN, on 31.8.01, Telescope
 Instruments Operator
 OSORIO BR LE MARIA ISABEL, Technical Secretary
 RIJO ARANCIBIA ARIELA, Electronics Technician,
 Paranal
 SANCHEZ VARAS FELIPE, Telescope Instruments
 Operator, La Silla