

Contents

Preface

Chapter 1	The background of the <i>Zhou bi</i>	1
	The foundation charter	3
	The role of astronomy	4
	The problem of the calendar	7
	The structure of an astronomical system	20
	Calendrical astronomy under the Han	27
	Astronomy, cosmography and instrumentation	35
Chapter 2	The <i>Zhou bi</i> and its contents	67
	The text	67
	The mathematics of the <i>Zhou bi</i>	74
	The calendrical astronomy of the <i>Zhou bi</i>	92
	Instrumentation and observation in the <i>Zhou bi</i>	101
	The cosmography of the <i>Zhou bi</i>	128
Chapter 3	The origins of the work	138
	The sections of the <i>Zhou bi</i>	140
	Early external evidence	145
	The formation and closure of the collection	148
Chapter 4	The later history of the <i>Zhou bi</i>	157
	The <i>Zhou bi</i> in the period of division	157
	The <i>Sui shu</i> catalogue	163
	Li Chunfeng and the ten mathematical classics	164
	The printed texts	164
	Later studies	165

<i>Zhou bi suan jing: translation</i>	171
The preface of Zhao Shuang	171
A. The book of Shang Gao	172
B. The book of Chen Zi	175
C. The square and the circle	181
D. The seven <i>heng</i>	183
E. The shapes of heaven and earth; day and night	188
F. The <i>xuan ji</i> ; polar and tropical conditions	189
G. The graduated circle and north polar distance	193
H. The shadow table	196
I. Lunar lag	197
J. Rising, setting and seasons	201
K. Calendrical cycles	203
Appendix 1 Zhao Shuang and Pythagoras' theorem	206
Appendix 2 Zhao Shuang and the height of the sun	218
Appendix 3 Zhao Shuang and the diagram of the seven <i>heng</i>	221
Appendix 4 The old shadow table	224
References and bibliography	227
Index	237