

Contents

<i>Preface</i>	<i>page xi</i>
1. THE ROMAN EMPIRE AND THE FIRST SIX CENTURIES OF CHRISTIANITY	1
Christianity and pagan learning	2
Hexaemeral literature: Christian commentaries on the creation account in Genesis	5
Christianity and Greco-Roman culture	7
The state of science and natural philosophy during the first six centuries of Christianity	9
The seven liberal arts	14
2. THE NEW BEGINNING: THE AGE OF TRANSLATION IN THE TWELFTH AND THIRTEENTH CENTURIES	18
Education and learning in the twelfth century	20
Latin translations from Arabic and Greek	22
The translation of the works of Aristotle	26
The dissemination and assimilation of Aristotle's natural philosophy	27
The contributions of Greek commentators	28
The contributions of Islamic commentators	29
Pseudo-Aristotelian works	30
Reception of the translations	31
3. THE MEDIEVAL UNIVERSITY	33
Students and masters	38
Teaching in the arts faculty	39

The curriculum of the arts faculty	42
Logic	43
The quadrivium	44
The three philosophies	47
The higher faculties of theology and medicine	47
The social and intellectual role of the university	49
The manuscript culture of the Middle Ages	51
 4. WHAT THE MIDDLE AGES INHERITED FROM ARISTOTLE	 54
The terrestrial region: Realm of incessant change	55
Motion in Aristotle's physics	58
Natural motion of sublunar bodies	59
Violent, or unnatural, motion	61
The celestial region: Incorruptible and changeless	63
 5. THE RECEPTION AND IMPACT OF ARISTOTELIAN LEARNING AND THE REACTION OF THE CHURCH AND ITS THEOLOGIAN	 70
The Condemnation of 1277	70
The eternity of the world	74
The doctrine of the double truth	76
Limitations on God's absolute power	78
Two senses of the hypothetical in medieval natural philosophy	80
The theologian-natural philosophers	83
 6. WHAT THE MIDDLE AGES DID WITH ITS ARISTOTELIAN LEGACY	 86
The terrestrial region	87
The causes of motion	89
Internal resistance and natural motion in a vacuum	89
Violent motion in a vacuum and impetus theory	93
The kinematics of motion	98
Motion as the quantification of a quality: The intension and remission of forms	99
The celestial region	104
The three-orb compromise	105
The number of total orbs	107
Celestial incorruptibility and change	109
The causes of celestial motion	110
External movers	111
Internal movers	112
Internal and external movers combined	112
Does the earth have a daily axial rotation?	112

The world as a whole, and what may lie beyond	117
Is the world created or eternal?	117
On the possible existence of other worlds	119
Does space or void exist beyond our world?	122

7. MEDIEVAL NATURAL PHILOSOPHY, ARISTOTELIANS, AND ARISTOTELIANISM 127

The questions literature of the late Middle Ages	127
Natural philosophy in other literary modes	131
The cosmos as subject matter of natural philosophy	133
The big picture	133
The operational details	135
What is natural philosophy?	135
The questions in natural philosophy	137
The techniques and methodologies of natural philosophy	141
Abstract methodology	142
Methodologies that were actually used	144
The role of mathematics in natural philosophy	148
The use of natural philosophy in other disciplines	152
Theology	152
Medicine	156
Music	158
Characteristic features of medieval natural philosophy	158
Aristotelians and Aristotelianism	161

8. HOW THE FOUNDATIONS OF EARLY MODERN SCIENCE WERE LAID IN THE MIDDLE AGES 168

The contextual pre-conditions that made the Scientific Revolution possible	171
The translations	171
The universities	172
The theologian-natural philosophers	174
Religion and natural philosophy in medieval Islam	176
A comparison of natural philosophy in Islam and the Christian West	182
The other Christianity: Science and natural philosophy in the Byzantine Empire	186
The substantive pre-conditions that made the Scientific Revolution possible	191
The exact sciences	192
Natural philosophy: The mother of all sciences	192
Medieval natural philosophy and the language of science	198

Medieval natural philosophy and the problems of science	198
Freedom of inquiry and the autonomy of reason	199
On the relationship between medieval and early modern science	203
On the relationship between early and late medieval science	205
Greco-Arabic-Latin science: A triumph of three civilizations	205
 <i>Notes</i>	 207
<i>Bibliography</i>	217
<i>Index</i>	239