

Contents

1 Geohistory as a Discipline	1
2 The Earth as a Planet in the Solar System	5
2.1 Pre-Solar History	6
2.2 Condensation Theory – From Nebular Gas to Crystal Particles	21
2.3 Moon, Meteorites, and Other Planets – The Key to an Understanding of Early Geohistory	28
3 Evolution of the Earth	55
3.1 The Driving Force Behind the Earth's Evolution	55
3.2 Composition of the Earth – The Meteorite Analogy	58
3.3 The Layered Structure of the Earth	62
3.4 Formation of the Layered Structure	64
3.5 The Time of Core Formation, Based on Pb Isotopic Ratio Data	68
3.6 Mantle Differentiation	71
3.7 The Age of the Mantle	80
3.8 Origin and Evolution of the Atmosphere and Oceans	84
3.9 The Primordial Mantle and the Differentiated Mantle	93
4 Changes in the Earth's Crust	99
4.1 Rock Magnetism and Paleomagnetism	99
4.2 Ocean Floor Spreading, Continental Drift, and Plate Tectonics	110
4.3 Exchange of Material Between the Mantle and the Earth's Crust	119
4.4 Geochronology	122

5 Man and Geohistory	133
5.1 Bolide Impacts: Mass Extinction of Life?	134
5.2 The Fate of Radioactive Waste – The Oklo Phenomenon	142
5.3 Epilog	151
 Bibliography	 157
 Subject Index	 161