

Contents

Chapter 1	
Fundamentals of Stratigraphy	1
1 Definitions	1
2 Chronology of Events	1
3 Principles of Correlation	3
Chapter 2	
Elaboration of the Fundamentals of Stratigraphy	7
1 Lithostratigraphy	7
2 Biostratigraphy	8
2.1 Evolution, the Reference System for Age Dating	9
2.2 The Zone Concept of Oppel	10
3 Chronostratigraphy	12
3.1 The Concept of the Stage	12
3.2 Event Stratigraphy	15
3.3 The General Chronostratigraphic Scale	17
4 Conclusions	17
Chapter 3	
Modern Stratigraphy	19
1 Refinement of Concepts and Time Scales	19
1.1 Evaluation of Geologic Time Intervals and Rates	20
1.2 New Biostratigraphic Approaches	24
1.3 Search for a Rigorous and Universal Chronostratigraphy	33
2 New Methods of Correlation	37
2.1 Correlation by Sedimentary Rhythms	37
2.2 Correlation by Mineralogic and Geochemical Markers ..	47
2.3 Correlation by Paleomagnetism	56
2.4 Extraterrestrial Correlations	62
2.5 Conclusions	62

Chapter 4**From Stratigraphy to Paleogeography 65**

1	Principles and Methods of Paleogeography	65
1.1	Facies	65
1.2	Paleobiogeography	67
1.3	Cartographic Syntheses	68
2	Factors of Paleogeographic Evolution	75
2.1	Deformation of the Lithosphere	75
2.2	Volcanic Eruptions	77
2.3	Interplay of Erosion and Sedimentation	77
2.4	Eustasy	78
2.5	Polar Wandering	81
2.6	Conclusions: the Earth in Relation to Other Planets of the Solar System	82

Chapter 5**The Major Stages of Earth History 83**

1	The Precambrian	83
1.1	Boundaries and Subdivisions	83
1.2	Methods of Study	85
1.3	The Geography of the Precambrian	86
1.4	Early Segregation and Establishment of Fundamental Processes	87
1.5	Conclusions on the Precambrian	100
2	The Paleozoic: the Formation of Pangea	100
2.1	Lower Paleozoic	101
2.2	Upper Paleozoic	114
3	The Mesozoic and Cenozoic: Breakup of Pangea	132
3.1	The Mesozoic	133
3.2	The Cenozoic	155
3.3	Conclusions on the Mesozoic and Cenozoic	171

General Conclusions 173**References 177****Subject Index 185**