



# CONTENTS

<i>Chapter 1</i>	<b>DATA PERTAINING TO THE EARTH'S INTERIOR</b>	<b>1</b>
	1.1 Geochemistry and Petrology	2
	1.2 High Pressure and Temperature Effects	15
	1.3 Geochronology	38
	1.4 Geology: The Earth's Surface Structure	48
	Problems	57
	References	59
<i>Chapter 2</i>	<b>MECHANICAL AND THERMAL ASPECTS OF A PLANETARY INTERIOR</b>	<b>61</b>
	2.1 Gravity and the Figure of a Planet	61
	2.2 Seismic Waves	77
	2.3 Anelasticity and Creep	96
	2.4 Planetary Heat Transfer	105
	2.5 Construction of a Model of the Mantle	114
	Problems	123
	References	126
<i>Chapter 3</i>	<b>PLANETARY MAGNETISM</b>	<b>128</b>
	3.1 Spatial and Temporal Variations of Planetary Magnetic Fields	128
	3.2 Hydromagnetism and the Dynamo Theory	134
	3.3 Paleomagnetism	148
	Problems	155
	References	156
<i>Chapter 4</i>	<b>DYNAMICS OF THE EARTH-MOON SYSTEM</b>	<b>158</b>
	4.1 Generalities on Celestial Mechanics	158
	4.2 Orbital Dynamics of the Earth-Moon System	171
	4.3 Rotational Dynamics: Rigid	178
	4.4 Effects of Elasticity and Fluidity	185

4.5	Energy-Dissipating Processes	196
	Problems	206
	References	208
<b>Chapter 5</b>	<b>DYNAMICS OF THE SOLAR SYSTEM</b>	<b>210</b>
5.1	The Planetary System	210
5.2	Energy-Dissipating Processes	227
5.3	Small Bodies of the Solar System	231
	Problems	250
	References	251
<b>Chapter 6</b>	<b>OBSERVATIONS OF PLANETARY SURFACES</b>	<b>253</b>
6.1	Optical Observations	254
6.2	Infrared Observations	267
6.3	Radio Emissions from Terrestrial Planets	277
6.4	Radar	287
	Problems	297
	References	298
<b>Chapter 7</b>	<b>GEOLOGY OF THE MOON AND MARS</b>	<b>300</b>
7.1	Impact Cratering	300
7.2	The Surface of the Moon	311
7.3	The Surface of Mars	334
	Problems	339
	References	340
<b>Chapter 8</b>	<b>METEORITES AND TEKTITES</b>	<b>341</b>
8.1	General Properties and Classification	341
8.2	Chemistry and Structure of Chondrites	346
8.3	Chemistry and Structure of Other Meteorites	358
8.4	Isotopic Composition, Gas Content, and Dating	366
8.5	Origin of Meteorites	379
8.6	Tektites	385
	Problems	392
	References	393
<b>Chapter 9</b>	<b>CONSTITUTION AND ORIGIN OF THE TERRESTRIAL PLANETS</b>	<b>395</b>
9.1	Chemical Evidences	395
9.2	Planetary Models	414

	<b>CONTENTS</b>	<b>xiii</b>
9.3 Theories of Origin and Evolution		419
Problems		443
References		444
<b>BIBLIOGRAPHY</b>		<b>447</b>
<b>AUTHOR INDEX</b>		<b>475</b>
<b>SUBJECT INDEX</b>		<b>483</b>