CONTENTS

The Science Study Series	7
Foreword	9
1. THE PHYSICS OF A MOVING EARTH Where Will It Fall?—Alternative Answers— The Need for a New Physics	13
2. THE OLD PHYSICS Aristotle's Physics of Common Sense—The "Natural" Motion of Objects—The "Incorruptible" Heavens—The Factors of Motion: Force, Resistance, Speed, Distance, and Time —Motion of Bodies Falling through Air—The Impossibility of a Moving Earth	22
3. THE EARTH AND THE UNIVERSE Copernicus and the Birth of Modern Science —The System of Concentric Spheres—Ptolemy and the System of Epicycles and Deferents— Copernican Innovations—Copernicus versus Ptolemy—Advantages and Disadvantages of a Copernican Universe	36
4. EXPLORING THE DEPTHS OF THE UNIVERSE Evolution of the New Physics—Galileo Galilei —The Telescope: A Giant Step—The Land-	64

ments

13

15

19

19

scape of the Moon-Earthshine-Stars	Galore
-Jupiter as Evidence-A New World	

5.	TOWARD AN INERTIAL PHYSICS
	Uniform Linear Motion-A Locomotive's
	Smokestack and a Moving Ship-Galileo's Dy-
	namics: Inertia, Uniformly Accelerated Mo-
	tion, and Analysis of Complex Motions-
	Galileo's Predecessors—Formulating the Law
	of Inertia-Galilean Difficulties and Achieve-

6. KEPLER'S CELESTIAL MUSIC The Ellipse and the Keplerian Universe—The Three Laws—Applications of the Third, or Harmonic, Law—Kepler versus the Copernicans—The Keplerian Achievement

7. THE GRAND DESIGN—A NEW PHYSICS

Newtonian Anticipations—The Principia—Final Formulation of the Law of Inertia—"The System of the World"—The Masterstroke: Universal Gravitation—The Dimensions of the Achievement

Guide to Further Reading

Index