

Contents

Frontispiece	<i>page</i> ii
Translator’s Preface	ix
Halley’s Ode	xxv
The Author’s Preface to the Reader	xxviii
The Author’s Preface to the Second Edition	xxxix
The Editor’s Preface to the Second Edition	xxxix
The Author’s Preface to the Third Edition	xlvi
Definitions	1
The Axioms, or The Laws of Motion	15
On the Motion of Bodies, Book One	31
§I.1. On the theory of limits, which is used to deduce later results	33
§I.2. On the calculation of centripetal forces	47
§I.3. On the motion of particles in eccentric conic sections	69
§I.4. On the calculation of elliptical, parabolic, and hyperbolic orbits	84
§I.5. On the calculation of orbits when neither focus is given	93
§I.6. On the calculation of motion in given orbits	122
§I.7. On the ascent and descent of particles in a straight line	135

vi	Contents
§I.8. On the calculation of the orbits in which particles revolve under any centripetal forces	146
§I.9. On the motion of particles in moving orbits, and the motion of the apsides	156
§I.10. On the motion of particles on given surfaces, and the swinging motion of a string pendulum	168
§I.11. On the motion of particles attracting each other by centripetal forces	183
§I.12. On the attractive forces of spherical bodies	216
§I.13. On the attractive forces of non-spherical bodies	235
§I.14. On the motion of particles attracted by centripetal forces towards the various parts of arbitrarily large bodies	247
On the Motion of Bodies, Book Two	255
§II.1. On the motion of particles moving against a resistance that is proportional to the speed	257
§II.2. On the motion of bodies moving against a resistance that is proportional to the square of the speed	269
§II.3. On the motion of bodies to which the resistance consists of one part that is proportional to the speed, and another to the square of the speed	297
§II.4. On the circular motion of bodies in resisting media	309
§II.5. On the density and compression of fluids, and on hydrostatics	318
§II.6. On the motion and resistance of string pendulums	331
§II.7. On the motion of fluids and the resistance of projectiles	363
§II.8. On motion propagated through fluids	406
§II.9. On the circular motion of fluids	425

Contents	vii
On Celestial Mechanics, Book Three	443
Introduction to Book Three	445
The Rules of Scientific Argument	447
Phenomena	450
Propositions	456
<i>On the Motion of the Nodes of the Moon</i>	535
General Scholium	632
Appendix A: Mathematical Notation and Results assumed in <i>The Principia</i>	639
Appendix B: Calculus in <i>The Principia</i>	653
Appendix C: Newton’s Astronomy	666
Appendix D: Newton’s Theory of Tides	670
Appendix E: Technical Terms used in the Translation	672
Appendix F: On Newton’s Style, and Translating <i>The Principia</i>	683
Appendix G: Some Difficult Words	698
Appendix H: Astrological Symbols	706
Appendix I: Glossary of Latin Terms	707
Appendix J: Technological Illustrations	725
References	728
Index	735